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January 29, 2010

Advice 3087-G/3608-E
(Pacific Gas and Electric Company ID U 39 M)

Advice 2430-E
(Southern California Edison Company ID U 338-E)

Advice 2144-E /1926-G
(San Diego Gas & Electric Company ID U 902-M)

Advice 4070
(Southern California Gas Company ID U 904-G)

Public Utilities Commission of the State of California

Subject: **Implementation of Prescriptive Whole House Retrofit Program in Compliance with D.09-09-047**

Consistent with Ordering Paragraph (OP) 21 of California Public Utilities Commission (Commission) Decision (D.) 09-09-047 (EE Decision), Pacific Gas & Electric Company (PG&E), Southern California Edison Company (SCE), San Diego Gas & Electric Company (SDG&E), and Southern California Gas Company (SoCalGas) (collectively referred to as the IOUs) submit this joint advice filing to implement the Prescriptive Whole House Retrofit Program, along with all necessary supporting documentation as shown in Attachments 1 through 5.

Purpose

The EE Decision approved the Statewide Programs for Residential Energy Efficiency (SPREE) of the IOUs with modifications. This advice letter submits for approval, the program implementation plan (PIP) for the Prescriptive Whole House Retrofit Program as part of SPREE (Attachment 1). The local Whole House Performance Program PIPs for each IOU are included for reference at the request of Energy Division (Attachment 2 – PG&E, Attachment 3 – SCE, Attachment 4 – SDG&E, Attachment 5 – SoCalGas).

Background

On July 21, 2008, the IOUs filed their 2009-2011 EE portfolio applications (A.08-07-021 et al). On September 18, 2008, the Commission adopted the California Long Term Energy Efficiency Strategic Plan (Strategic Plan) in D.08-09-040. Following the review of the

portfolio applications by the Energy Division, in compliance with the Strategic Plan and as directed through a series of Commission rulings, the IOUs amended their applications on March 2, 2009. As a result of D.09-05-037, issued May 21, 2009, the IOUs then supplemented their portfolio requests on July 2, 2009. On September 24, 2009, the Commission issued D.09-09-047 adopting three-year portfolio budgets for 2010-2012 for each IOU.

OP 21.a of the EE Decision expanded the Whole House Retrofit Program by adding a Prescriptive Program to SPREE to be offered by the IOUs. The EE Decision also authorized $100 million in funding for the expanded statewide Whole House Retrofit Program for 2010-2012.

OP 21.b of the EE Decision ordered the IOUs to file a PIP for the Prescriptive Whole House Retrofit Program by advice letter by December 15, 2009. On December 14, 2009, the Commission's Executive Director approved the IOUs' request to extend the filing date to January 29, 2010, to allow more time to incorporate feedback from the Energy Division (ED) and other stakeholders. On January 5, 2010, the ED circulated the draft of the PIP to Service List A.08-07-021 for parties to review prior to the public workshop, hosted by the Commission, on January 7, 2010. Informal written comments on the draft PIP were provided to the IOUs by midnight January 8, 2010. These comments were considered in the development of the PIP being filed today.

The EE Decision authorized a statewide budget of $100 million for the Prescriptive Whole House Retrofit Program (PG&E- $46 million, SCE- $33 million, SoCalGas- $8 million, and SDG&E- $13 million), and also approved the IOUs' related local Performance Programs. Per the Energy Division's request, the attached PIP shows the budget for both the Statewide Prescriptive Whole House Program and the local Performance Programs for each IOU.

PG&E's authorized allocation of $46 million funds both the Statewide Prescriptive Whole House Retrofit Program and its local Whole House Performance Program. SCE, SoCalGas, and SDG&E's authorized allocations of $33 million, $8 million, and $13 million respectively, fund the Statewide Prescriptive Whole House Retrofit Program only, with their local Comprehensive Home Performance Programs funded separately. All budgets are consistent with the IOUs' 2010-2012 Compliance Advice Letters.[1]

Effective Date

The IOUs are filing this advice letter as Tier 2 to be approved by **March 1, 2010**, which is 31 days from the filing date.

[1] IOUs filed advice letters in compliance with the EE Decision on November 23, 2009: PG&E's Advice 3065-G/3562-E, SCE's Advice 2410-E, SoCalGas' Advice 4041, and SDG&E's Advice 2127-E/1903-G.

Protests

Anyone wishing to protest this filing may do so by letter sent via U.S. mail, by facsimile or electronically, any of which must be received no later than **February 18, 2010** which is 20 days after the date of this filing. Protests should be mailed to:

CPUC Energy Division
Tariff Files, Room 4005
DMS Branch
505 Van Ness Avenue
San Francisco, California 94102

Facsimile: (415) 703-2200
E-mail: jnj@cpuc.ca.gov and mas@cpuc.ca.gov

Copies of protests also should be mailed to the attention of the Director, Energy Division, Room 4004, at the address shown above.

The protest also should be sent via U.S. mail (and by facsimile and electronically, if possible) to the addresses shown below on the same date it is mailed or delivered to the Commission:

Pacific Gas and Electric Company
Brian K. Cherry
Vice President, Regulatory Relations
77 Beale Street, Mail Code B10C
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San Francisco, California 94177

Facsimile: (415) 973-7226
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Southern California Edison Company
Bruce Foster
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Tariff Manager - GT14D6
555 West Fifth Street
Los Angeles, CA 90013-1011

Facsimile No. (213) 244-4957
E-mail: snewsom@Semprautilities.com

Notice

In accordance with General Order 96-B, Section IV, a copy of this advice letter is being sent electronically and via U.S. mail to parties shown on the attached list. Address changes to the General Order 96-B service list and all electronic approvals should be directed to email PGETariffs@pge.com. Advice letter filings can also be accessed electronically at: **http://www.pge.com/tariffs.**

Brian Cherry /ss

Vice President - Regulatory Relations

Attachments:

Attachment 1: California Investor Owned Utilities 2010-2012 Energy Efficiency Portfolio Program Implementation Plan Statewide Program Prescriptive Whole House Retrofit Program

Attachment 2: PG&E's Whole House Performance Program (WHPP)

Attachment 3: SCE's Comprehensive Home Performance Program (CHP)

Attachment 4: SDG&E's Comprehensive Home Performance Program (CHPP)

Attachment 5: SoCalGas' Comprehensive Home Performance Program (CHPP)

cc: Service Lists – A.08-07-021, A.08-07-022, A.08-07-023, and A.08-07-031

CALIFORNIA PUBLIC UTILITIES COMMISSION

ADVICE LETTER FILING SUMMARY
ENERGY UTILITY

MUST BE COMPLETED BY UTILITY (Attach additional pages as needed)

Company name/CPUC Utility No. **Pacific Gas and Electric Company (ID U39 M)**

Utility type:	Contact Person: Olivia Brown
☒ ELC ☒ GAS	Phone #: 415.973.9312
☐ PLC ☐ HEAT ☐ WATER	E-mail: oxb4@pge.com

EXPLANATION OF UTILITY TYPE

ELC = Electric GAS = Gas ☐
PLC = Pipeline HEAT = Heat WATER = Water

(Date Filed/ Received Stamp by CPUC)

Advice Letter (AL) #: 3087-G/3608-E **Tier:** 2
Subject of AL: Implementation of Prescriptive Whole House Retrofit Program in Compliance with D.09-09-047
Keywords (choose from CPUC listing): Energy Efficiency, Compliance

AL filing type: ☐ Monthly ☐ Quarterly ☐ Annual ☒ One-Time ☐ Other _____

If AL filed in compliance with a Commission order, indicate relevant Decision/Resolution #: D.09-09-047

Does AL replace a withdrawn or rejected AL? If so, identify the prior AL: No

Summarize differences between the AL and the prior withdrawn or rejected AL: No

Is AL requesting confidential treatment? If so, what information is the utility seeking confidential treatment for: No

Confidential information will be made available to those who have executed a nondisclosure agreement: N/A

Name(s) and contact information of the person(s) who will provide the nondisclosure agreement and access to the confidential information: No

Resolution Required? ☐ Yes ☒No

Requested effective date: March 1, 2010 No. of tariff sheets: N/A

Estimated system annual revenue effect (%): N/A

Estimated system average rate effect (%): N/A

When rates are affected by AL, include attachment in AL showing average rate effects on customer classes (residential, small commercial, large C/I, agricultural, lighting). N/A

Tariff schedules affected: N/A

Service affected and changes proposed: N/A

Protests, dispositions, and all other correspondence regarding this AL are due no later than 20 days after the date of this filing, unless otherwise authorized by the Commission, and shall be sent to:

CPUC, Energy Division
Tariff Files, Room 4005
DMS Branch
505 Van Ness Ave., San Francisco, CA 94102
jnj@cpuc.ca.gov and mas@cpuc.ca.gov

Pacific Gas and Electric Company
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77 Beale Street, Mail Code B10C
P.O. Box 770000
San Francisco, CA 94177
E-mail: PGETariffs@pge.com

Attachment 1:

California Investor Owned Utilities 2010-2012 Energy Efficiency Portfolio

Program Implementation Plan Statewide Program

Prescriptive Whole House Retrofit Program

CALIFORNIA INVESTOR-OWNED UTILITIES

2010–2012 ENERGY EFFICIENCY PORTFOLIO

PROGRAM IMPLEMENTATION PLAN

STATEWIDE PROGRAM

PRESCRIPTIVE WHOLE HOUSE RETROFIT PROGRAM

JANUARY 29, 2010

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1) Prescriptive Whole House Retrofit Program (PWHRP) statewide core sub-program
   PGE 21008
   SCE-SW-001
   SCG-SW-ResH – Prescriptive Whole House Retrofit
   SDGE-SW-ResH – Prescriptive Whole House Retrofit

2) Projected Program Budget Table

Table 1A: Projected Prescriptive Whole House Retrofit Program (PWHRP) Budget Table

IOU	Main Program Name/Sub-Programs	Total Administrative Cost	Total Marketing & Outreach	Total Direct Implementation Non-Incentive	Total Incentives	Total Budget By Program (Actual)
PG&E	Prescriptive Whole House Retrofit Program	**$ 3,185,000.00**	**$ 1,638,000.00**	**$ 8,763,300.00**	**$ 28,273,700.00**	**$ 42,038,814.00**
SCE	Prescriptive Whole House Retrofit Program	**$ 2,948,192.00**	**$ 2,187,948.00**	**$ 6,340,624.00**	**$ 21,523,236.00**	**$ 33,000,000.00**
SCG	Prescriptive Whole House Retrofit Program	**$ 694,455.60**	**$ 523,677.00**	**$ 1,661,780.40**	**$ 5,120,087.36**	**$ 8,000,000.36**
SDG&E	Prescriptive Whole House Retrofit Program	**$ 1,170,000.00**	**$ 780,000.00**	**$ 2,600,000.00**	**$ 8,450,000.00**	**$ 13,000,000.00**
Total	Prescriptive Whole House Retrofit Program	**$ 7,997,647.60**	**$ 5,129,625.00**	**$ 19,365,704.40**	**$ 63,367,023.36**	**$ 96,038,814.36**

Table 1B: Approved Local Whole House Performance Program (WHPP) Budget

IOU	Main Program Name/Sub-Programs	Total Administrative Cost	Total Marketing & Outreach	Total Direct Implementation Non-Incentive	Total Incentives	Total Budget By Program (Actual)
PG&E	Whole House Performance Program	$ 315,000.00	$ 162,000.00	$ 866,700.00	$ 2,796,300.00	$ 3,961,186.00
SCE	Whole House Performance Program	$ 771,119.00	$ 256,098.00	$ 1,517,344.00	$ 786,433.00	$ 3,330,994.00
SCG	Whole House Performance Program	$ 407,744.72	$ 369,000.00	$ 557,400.48	$ 4,322,205.15	$ 5,656,350.35
SDG&E	Whole House Performance Program	$ 221,476.00	$ 112,613.00	$ 1,677,544.00	$ 692,021.00	$ 2,011,633.00
Total	Whole House Performance Program	$ 1,715,339.72	$ 899,711.00	$ 4,618,988.48	$ 8,596,959.15	$ 14,960,163.35

Table 1C: Budget Totals

IOU	Main Program Name/Sub-Programs	Total Administrative Cost	Total Marketing & Outreach	Total Direct Implementation Non-Incentive	Total Incentives	Total Budget By Program (Actual)
PG&E		$ 3,500,000.00	$ 1,800,000.00	$ 9,630,000.00	$ 31,070,000.00	$ 46,000,000.00
SCE		$ 3,719,311.00	$ 2,444,046.00	$ 7,857,968.00	$ 22,309,669.00	$ 36,330,994.00
SCG		$ 1,102,200.32	$ 892,677.00	$ 2,219,180.88	$ 9,442,292.51	$ 13,656,350.71
SDG&E		$ 1,391,476.00	$ 892,613.00	$ 4,277,544.00	$ 9,142,021.00	$ 15,011,633.00
Total		**$ 9,712,987.32**	**$ 6,029,336.00**	**$ 23,984,692.88**	**$ 71,963,982.51**	**$ 110,998,977.71**

Direct implementation costs include, but are not limited to, engineering analysis, quality assurance and quality control, verification, rebate processing, contractor recruitment, and contractor training.

3) Projected Program Gross Impacts Table – by calendar year[1]

Table 2: Projected Gross Impacts Table by Calendar Year

		2010	2011	2012	Total
PG&E (PWHRP & WHPP)	Number of single family households	3,875	5,425	6,200	15,500
	GWh Savings	0.88	1.24	1.41	3.53
	Therm Savings	572,113	800,958.18	915,380.78	2,288,452
SCE (WHPP only)	Number of single family households	375	525	600	1,500
	GWh Savings	0.29	0.41	0.47	1.18
	Therm Savings	N/A	N/A	N/A	-
SCE (PWHRP only)	Number of single family households	2,580	3,612	4,128	10,320
	GWh Savings	1.06	1.49	1.70	4.26
	Therm Savings	N/A	N/A	N/A	-
SCE Total	Number of single family households	2,955	4,137	4,728	11,820
	GWh Savings	1.35	1.90	2.17	5.44
	Therm Savings	N/A	N/A	N/A	-
SDG&E (PWHRP only)	Number of single family households	852	1,112	1,192	3,156
	GWh Savings	0.54	0.51	0.90	1.94
	Therm Savings	87,412	98,701	97,404	283,517
SDG&E (WHPP only)	Number of single family households	50	150	250	450
	GWh Savings	0.07	0.21	0.36	0.64
	Therm Savings	8,059	24,177	40,296	72,532
SDG&E Total	Number of single family households	902	1,262	1,442	3,606
	GWh Savings	0.61	0.72	1.26	2.58
	Therm Savings	95,471	122,878	137,700	356,049
SCG (PWHRP only)	Number of single family households	2,361	3,320	3,553	9,234
	GWh Savings	N/A	N/A	N/A	-
	Therm Savings	151,247	212,681	227,607	591,535
SCG (WHPP only)	Number of single family households	300	405	705	1,410
	GWh Savings	0.14	0.19	0.33	0.65
	Therm Savings	201,496	272,020	473,516	947,032
SCG Total	Number of single family households	2,661	3,725	4,258	10,644
	GWh Savings	0.14	0.19	0.33	0.65
	Therm Savings	352,743	484,701	701,123	1,538,567

[1] Total number of single family households derived from KEMA, Inc. *"Final Report on Phase 2 Low Income Needs Assessment."* Prepared for the California Public Utilities Commission. Sep. 7, 2007, and discussed in Section 5d.of this document. Projections for PWHRP (and PG&E's WHPP) are based on the assumption that, of the 20% target reduction in household energy consumption: 19% is attributed to therm savings and 1% is attributed to kWh savings for PG&E; 14% is attributed to therm savings and 6% is attributed to kWh savings for SCE and SCG; and 16% is attributed to therm savings and 4% is attributed to kWh savings for SDG&E. WHPP projections for SCE, SCG, and SDG&E were taken from their respective local WHPP PIPs. PG&E did not project energy savings in its local WHPP PIP.

4) Program Description
   a) Describe program

The Prescriptive Whole House Retrofit sub-program (PWHRP) is a new addition to the 2010-2012 residential energy efficiency portfolio of the four California investor owned utilities (IOUs) – Pacific Gas & Electric Company (PG&E), Southern California Edison (SCE), San Diego Gas & Electric Company (SDG&E) and Southern California Gas Company (SCG or SoCalGas). The whole house approach will be promoted through the statewide PWHRP in close coordination with the IOUs' local Whole House Performance Programs (WHPP); these complimentary programs will be presented to customers as one comprehensive offering. PWHRP will offer a consistent program model that can be contractor driven and/or adopted by local governments for roll-out in their community and is also designed to be aligned with new and proposed efforts at the State and Federal level.[2]

PWHRP and WHPP are described below[3]:

- PWHRP is statewide and will offer customers and contractors an easy entry point on the path to home performance. The prescriptive program will allow customers to reduce energy usage while increasing the energy performance and comfort of their existing homes and minimizing lost opportunities for future comprehensive retrofit options. The program will also educate contractors and customers on the benefits of implementing comprehensive whole house retrofits on existing buildings that will provide systematic reductions in energy use. PWHRP will help to:
  - Funnel participation from core Energy Efficiency (EE), Demand Response (DR), distributed generation (e.g. California Solar Initiative) portfolios, and increase awareness through statewide coordinated marketing campaigns, and contribute to education and outreach activities with local government partners;
  - Utilize no-cost (to consumer) Home Energy Efficiency Surveys (HEES) as an entry point to identify opportunities for efficiency improvements[4];
  - Coordinate with the extensive network of heating ventilation and air conditioning (HVAC) contractors already participating in IOU programs;

[2] Examples include State Energy Program (SEP) funds, Retrofit Ramp-Up, Recovery through Retrofit, Retrofit for Energy and Environmental Performance (REEP), and HOME STAR; each of which will focus, at least partially, on residential retrofits.
[3] Program names (customer facing) are subject to change, pending additional market research.
[4] The HEES program provides residential customers with entry-level energy surveys online, over the phone, or by mail. The surveys are not intended to serve as an audit but are meant to provide consistent messaging and an easy on-ramp to PWHRP and WHPP. The HEES surveys are also an ideal link between the California Solar Initiative (CSI) and PWHRP and WHPP. This synergy will be discussed later in the document.

- Offer targeted marketing campaigns to engage participants that receive stand-alone EE rebates for completing qualified home improvement measures;
- Promote completion of retrofits based on preferred building science loading order (described below);
- Offer incentives to encourage progression along a preferred approach towards comprehensive retrofits;
- Continuously engage customers over time as they progress toward a home performance approach;
- Provide rigorous Quality Assurance and Quality Control, consistent with the Home Performance with ENERGY STAR® (HPwES) program, for elements completed within the prescriptive work scope;
- Offer a holistic path towards home performance by aggregating key elements of a dwelling into its core elements: building envelope and fixed lighting; heating, cooling and hot water, and appliances;
- Coordinate with communities, local governments, and allied third-parties for outreach on local retrofit and contractor training opportunities available;
- Coordinate with local financing opportunities, as appropriate;
- Define the project baseline for existing household energy usage; and
- Be compatible with Home Energy Rating System (HERS) requirements.[5]

- WHPP is a local utility program administered by the individual IOUs that will offer customers a more customized path to home performance than PWHRP. WHPP solutions will require participating contractors to obtain higher levels of expertise. The performance program will require diagnostic "test-in" and "test-out" whole house assessments consistent with HERS guidelines and the national Home Performance with ENERGY STAR® (HPwES) program. The test-in assessments will generate a comprehensive work scope that must include each measure in the PWHRP package (if not already installed) along with additional measures that are beyond the scope of PWHRP. The test-out assessments will be used to document that specified improvements have been properly sized and installed. Incentives associated with the performance programs will be correspondingly higher to reflect the verifiable levels of energy savings. WHPP will build off of the PWHRP and:
  - Require higher levels of contractor training and qualifications;
  - May utilize a commercially available and approved building simulation software and methodology to model performance sites and estimate energy savings for the project;

[5] PWHRP will not require a HERS rating or a performance-level audit upon completion of work. Participating contractors are encouraged to coordinate with HERS raters to provide homeowners with ratings upon completion of work as a method of educating the marketplace and leveraging an opportunity to draw customers to WHPP.

- Establish a project baseline by a "test-in" and "test-out" method compatible with the requirements of California Energy Commission (CEC) HERS assessments;
- Typically be completed in a condensed timeframe; and
- Provide greater incentives than PWHRP.

This Program Implementation Plan (PIP) is for the statewide PWHRP that will be offered consistently across the IOU service territories. The PIP is intended to align with the goals established in the California Long Term Energy Efficiency Strategic Plan (Strategic Plan) and is a culmination of statewide efforts to design PWHRP.

PWHRP offers a comprehensive approach to delivering prescriptive retrofit solutions to Californians by recognizing the essential interplay and relationships between groups necessary in the delivery of a successful program. PWHRP is designed to build customer and contractor[6] awareness of the house-as-a-system approach to residential retrofits and the many corresponding benefits of improving the energy savings potential and comfort of their dwelling. Customers will move along a prescriptive path influenced by the national HPwES program. A successful prescriptive program will acknowledge customer and contractor barriers and drivers for participation while offering a flexible pathway towards comprehensive retrofits.

In order to rapidly scale PWHRP, special efforts will be undertaken to leverage opportunities brought about by interested local governments, communities and collaborators. In aggregate, the attention focused on residential retrofits has created an unprecedented opportunity for market coordination, and PWHRP has been designed to seek local partnerships and leverage applicable local government efforts.

The statewide PWHRP will follow an energy efficiency loading order.[7] Whole House programs encourage contractors and customers to approach the house as an integrated system rather than a collection of individual widgets or separate systems. The essence of the house-as-a-system approach is that an optimized building shell (thermal boundary) provides increased comfort and indoor air quality while enabling smaller and more affordable space conditioning equipment

[6] A successful program recognizes the need to develop the pool of qualified home retrofit contractors (with the help of third party implementers) to engage in – and have the opportunity to profit from – performing quality work. Through comprehensive training curricula (currently available in the marketplace) broken into the key elements of a home: Building Envelope and Lighting, and Heating, Cooling and Hot Water delivery (major systems); skilled tradespersons will have the opportunity to enter the home retrofit market and grow their businesses.

[7] The loading order specifies improvements in the following sequence: (1) air sealing to obtain a tight building envelope; (2) insulation to complete the thermal boundary; (3) proper sizing, design, installation and commissioning of space heating and cooling systems; (4) proper sizing, design, installation, commissioning and insulation of the hot water system, including distribution; (5) efficient lighting and appliances, and demand response measures; and (6) renewables.

and reduced energy use associated with space heating and cooling. The thermal boundary consists of two layers or components – air barrier and insulation – which should both be continuous as well as contiguous (in contact with each other) for optimum performance. Because of the interaction between the thermal boundary and space conditioning loads, heating or cooling system upgrades are ideally not to be performed until the building shell is optimized. Building shell and duct air sealing will be addressed in conjunction with combustion appliance safety and indoor air quality tests. Base load reduction measures involving major electrical appliances, lighting, plug loads, and demand response can be performed at any time without compromising the loading order.

Customer outreach and education efforts for the statewide PWHRP will be coordinated with other IOU DSM program offerings (e.g., Home Energy Efficiency Rebate (HEER), Appliance Recycling Program (ARP), Comprehensive HVAC, SmartAC and other Residential Demand Response programs, Low Income Energy Efficiency, California Solar Initiative (CSI) and Summer Discount Plan (SDP)) to leverage multiple customer touch points. PWHRP and WHPP will provide an ideal platform to utilize the concept of continuous energy improvement for residential customers; tracking and encouraging a logical sequence of energy improvements made by customers over time, creating an ongoing, actionable dialogue with each customer regarding their energy use. The CSI, in particular, offers a unique opportunity to leverage a coordinated statewide educational and marketing campaign with customers to "first reduce, then produce" in order to optimize efficiency and renewable opportunities within their home.

PWHRP will serve as an entry point for interested service providers to increase California's sustainable energy workforce in the home energy efficiency retrofit market. PWHRP will leverage available opportunities to move customers to WHPP by informing them about available local or third-party financing options and other complementary revitalization efforts that may be available within a particular jurisdiction. Incentives will be available for customers to offset a portion of the cost of specific comprehensive retrofits. Incentives may also be made available for contractors.

The IOUs expect PWHRP to achieve broad participation through several strategies. First, customers will be educated on the benefits of participating in whole house programs: improved indoor air quality and a reduction in electric, gas, and water usage. Coordinated marketing and education efforts from across the IOUs' portfolios, in conjunction with local government community-based organization outreach, will also serve to increase customer awareness and empower them to make informed choices about their energy use.

Second, as part of the effort to empower homeowners with information to support their choice to participate in PWHRP, prospective participants will be encouraged to participate in the IOUs' statewide HEES program to gain insights about ways

to change their energy use behavior and to identify opportunities to make efficiency improvements within their homes. Additionally, the tool will serve as a lead generator for potential program participants.[8]

Finally, PWHRP offers an opportunity for customers to implement a broad array of home efficiency improvements and empowers them to make the choice that best suits their particular situation while encouraging a progression towards comprehensive home performance retrofits.

b) List measures

The IOUs are working to develop the most appropriate level of incentives and measure offerings for PWHRP customers and contractors. PWHRP will seek to address the building shell as the first major component of the residential energy efficiency loading order described above. Subsequently, PWHRP will include measures that address air infiltration and insulation. Measures will be added to the PWHRP as engineering and research indicates the potential to capture cost-effective energy savings throughout California's diverse climate zones. PWHRP will also include combustion safety testing to ensure that each home with a tightened building shell remains properly vented. The chart below provides a list of measures to be included in PWHRP and WHPP, and how they might be presented to customers and contractors in a more seamless format.

[8] The IDSM and HEES teams are currently working to expand the capabilities of HEES to better complement PWHRP and WHPP. The HEES program will be used as an entry point to provide consistent messaging to customers and to generate leads to increase participation in PWHRP and WHPP. Per D. 09-09-047, the surveys are not intended to be full energy audits.

Package	Eligible Measures
PWHRP	
Customer incentive up to $1,000	Air Sealing
	Attic Insulation
	Duct Sealing
	Insulation of Domestic Hot Water
	Combustion Safety
	Optional:
	Permanent Lighting Fixtures and Controls
	Entry Points:
	HVAC QI/QM
	Appliances
WHPP*	
Customer incentive up to $3,500	**PWHRP Package** (if not already installed)
	Wall Insulation
	Distribution System
	Heating Equipment
	Cooling Equipment
	Variable Speed Motor Air Handler
	Pool Pump and Motor
Base Load**	
	Appliances
	Visual in-home displays
	Room Air Conditioners
	Shower Heads
	Thermostatic Low Flow Restrictive Valve
	Low Flow - Self Install EE Kit
	Faucet Aerators Self Install EE Kit

* WHPP packages will be based on comprehensive work scopes that are generated by performance audits.

** Base load measures are not likely to be required in either package but can be included at any point in the loading order without sacrificing a great deal of efficiency.

c) List non-incentive customer services

Most PWHRP participants will benefit from improved thermal comfort and indoor air quality.

The HEES program will be used by IOUs as an entry point to provide complementary information to customers with the goal of increasing participation in PWHRP through lead generation.

PWHRP will implement marketing and outreach campaigns to recruit contractors and educate home owners on the benefits of implementing comprehensive whole house retrofits (and the need to reduce energy use in existing buildings).

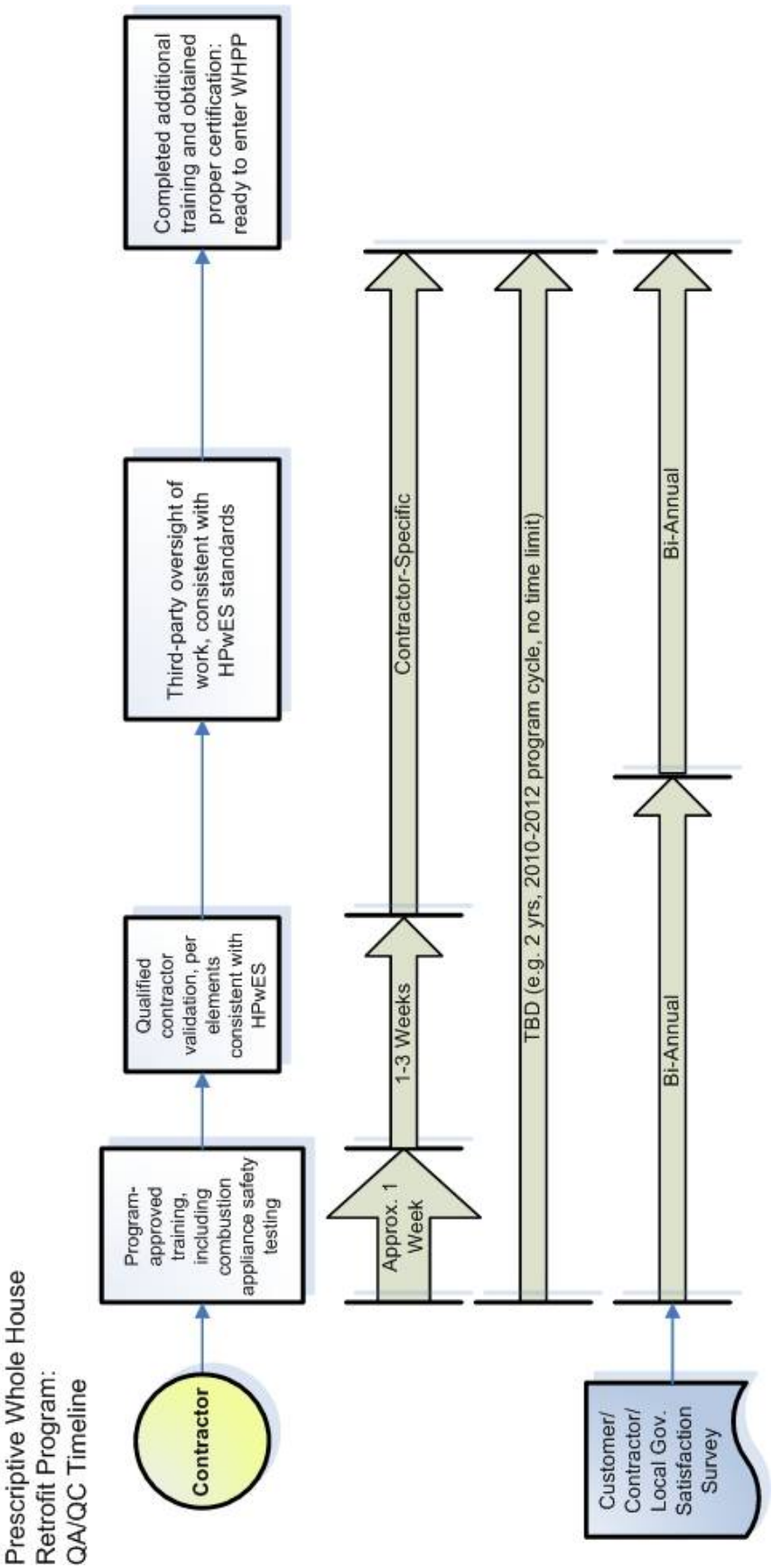
The statewide PWHRP will also enforce, through third party program implementers, robust Quality Assurance and Quality Control (QA/QC) measures to enhance customer satisfaction, contractor performance, local government participation, and a seamless transition into WHPP. PWHRP has modeled its design on the ideals exemplified in the national HPwES program. In order to

provide an aligned, credible, and recognizable effort across California, program efforts will inform local governments and allied retrofit entities to aspire towards the same national standard of program design, deployment and QA/QC.

The QA/QC program will include the following elements:

- Confirmation that interested contractors have proper bonding (and are in good standing) and appropriate licensing through the California State Licensing Board (CSLB);
- Contractor participation agreement;
- Customer, contractor and local government partner satisfaction surveys;
- IOU-provided toll-free lines to field customer questions and provide program details;
- Contractor compliance and dispute resolution coordinated by third party program implementers;
- Building permits shall be pulled on all work that is appropriate per local jurisdiction requirements;
- Third party verification;
    - More stringent verification for new entrants to the program;
    - PWHRP Quality Assurance protocols will be consistent with the nationally recognized standards of the HPwES program;

The QA/QC elements are shown below in timeline format:


Prescriptive Whole House
Retrofit Program:
QA/QC Timeline
Contractor
Program-approved training, including combustion appliance safety testing
Qualified contractor validation, per elements consistent with HPwES
Third-party oversight of work, consistent with HPwES standards
Completed additional training and obtained proper certification: ready to enter WHPP
Approx. 1 Week
1-3 Weeks
Contractor-Specific
TBD (e.g. 2 yrs, 2010-2012 program cycle, no time limit)
Bi-Annual
Bi-Annual
Customer/ Contractor/ Local Gov. Satisfaction Survey

5) Program Rationale and Expected Outcome
The program is designed to provide an easy entry point for customers and contractors to implement home energy efficiency improvements that follow the loading order described previously. The IOUs recognize the need for a large-scale prescriptive program to elicit participation from customers from various entry points and in ways that meet their ability to participate. The program also serves as a conduit to expand the supply of contractors who are qualified to install the approved measures in the program while recognizing the importance of leveraging regional efforts in local retrofit programs, job creation campaigns, and financing opportunities.

a) Quantitative Baseline and Market Transformation Information
The Market Transformation (MT) metrics discussion has been fully developed, cited, and presented within Sections 5a and 5b of each IOU's statewide and local Program Implementation Plans, as approved in D.09-09-047. These metrics will not be repeated here. Please refer to the corresponding discussion for details.

In summary, considerable research supports the notion that MT metrics should neither be used for short-term analyses nor for specific program analyses; rather, they should focus on broad market segments. By its nature, MT occurs as a result of numerous factors, and cannot be directly attributed to all program efforts. MT metrics cannot be readily offered for this program at present.

Table 3: Quantitative Baseline Metrics (under development)

b) Market Transformation Information
MT draws heavily upon diffusion of innovation theory, with the state of a market characterized by adoption rate plotted against time on the well-known S-shaped diffusion curve. In practice, however, the diffusion curve of products may span decades. Market share tracking studies conducted 3, 5 or even 10 years after the start of an MT program may reveal only small MT effects. Therefore, it is problematic, if not impractical, to offer internal annual milestones towards MT sectors and specific program activities.

By its nature, MT occurs as a result of numerous factors, and cannot be directly attributed to all program efforts. MT metrics cannot be readily offered for this program at present.

The IOUs recognize that MT metrics are a critical component of the program. Based on forthcoming statewide market research, the gathering of best practices, and a focus on continuous improvement, the IOUs will address MT metrics during the public workshops.

Table 4: Market transformation metrics cannot be readily offered for this program

c) Program Design to Overcome Barriers

According to a report released recently by the Office of the Vice President, "homes in the United States generate more than 20 percent of our nation's carbon dioxide emissions, making them a significant contributor to global climate change."[9] The challenge of addressing residential emissions has been a significant topic for California stakeholders and was addressed when D.09-09-047 acknowledged, "Improving the energy efficiency of all households is necessary to achieve the target outcome for the 2020 existing residential Strategic Plan goals."[10] The Office of the Vice President report also identifies three market barriers to comprehensive residential retrofits:

1) Lack of customer and contractor awareness and access to information;
2) Lack of access to financing; and
3) Lack of access to skilled workers.

A shift in market perception, both for contractors and homeowners, towards a whole house approach must take place to drive customer action. PWHRP is designed to offer a one-stop approach to whole-house energy efficient improvements that recognize the need for customers to participate over varied timelines. To assist in the effort to overcome these problems and market barriers, PWHRP will:

1) Offer a statewide prescriptive whole house program to help build the home performance contracting industry and offer customers an easy entry point on the path to home performance (barrier 1);
2) Educate customers on the house-as-a-system concept and to encourage behavior changes that increase residential energy efficiency (barrier 1);
3) Educate contractors on the benefits of learning how to properly sell and install whole house measures as part of coordinated WE&T efforts (barrier 1& 3);
4) Offer incentives that influence customers and contractors to undertake comprehensive residential retrofits (barrier 1); and
5) Coordinate with relevant external funding and financing mechanisms at the county, state and federal levels (barrier 2).

d) Quantitative Program Targets

With the understanding that the target of 130,000 homes is a statewide market goal including customers served by Publicly Owned Utilities (POUs), the California IOUs look forward to playing a leading role in moving the market towards larger reductions in energy usage by residential customers. The IOUs recognize that a 20% annual energy reduction in home energy use is an interim target necessary to keep the state on track towards achieving 40% purchased energy reductions in all existing homes by 2020. IOUs and the CPUC's Energy

[9] Middle Class Task Force. Council on Environmental Quality. "*Recovery Through Retrofit.*" October, 2009. Page 1.
[10] D. 09-09-047. Page 110.

Division agree that 20% energy savings is an average across all homes treated by PWHRP and WHPP.

After examining a number of scenarios considering the program budget and varying incentive and program participation levels (for both PWHRP and WHPP), the estimated number of homes that could potentially be served in each IOU service area was determined and is shown below. It is assumed that a majority of the homes served in SCG's service area during this program cycle will be joint customers with PG&E or SCE.

The IOUs plan to decrease the incentive levels for PWHRPP and WHPP over the course of the program cycle (the status of which will be shared in public workshops). The projections below assume that participation in PWHRP will be greater than in WHPP throughout the 2010-2012 program cycle, with participation in WHPP rising gradually over time. Additionally, the projections assume that overall participation will increase over time. Incentive level decreases of a few hundred dollars do not greatly impact the overall number of homes that can be served but would likely have a negative impact on program participation, especially considering the relative immaturity of the home performance industry.

Modeled (Theoretical) Maximum Number of Homes	
PG&E	22,980
SCE	16,500
SCG	6,980
SDG&E	6,760

The total addressable market for initial launch of PWHRP is comprised of single family homeowners, not including customers who are now served by the Low Income Energy Efficiency Program (LIEE), which comprises a total of 5.2 million homes (including rented homes)[11] or 52,000 homes at the 1% goal. The IOUs acknowledge the critical importance of low income, middle income and multifamily customers and will seek to expand the program offering during the 2010-2012 program cycle to include multifamily housing units. The IOUs will look to the LIEE program to serve low income customers and will track the results of the income-qualifying process which could eventually help identify middle income customers. In addition, the IOUs will look to apply the best practices and lessons learned from PG&E's lower-middle income direct install offering and will explore similar efforts by the individual local IOUs to meet the needs of these customers.[12] The IOUs may develop a middle income direct install component, as deemed appropriate.

[11] KEMA, Inc. *"Final Report on Phase 2 Low Income Needs Assessment."* Prepared for the California Public Utilities Commission. Sep. 7, 2007.
[12] PG&E will launch a Middle Income Direct Install (MIDI) program during 2010 through a number of local government partnerships. Program teams are currently exploring the feasibility of expanding the

To further assist this effort, statewide market research (discussed in section 6.a.iv. below) will include all California income levels above LIEE, multifamily customers, and renters.

In determining how to achieve the goal of treating 1% of residential homes, the IOUs considered the following:

In PG&E's service area, there are approximately 5,400,000 households (that include 1,600,000 low income residents). 64% of the eligible (non-LIEE) households are single family residences and 65% of those homes are owner-occupied. Subsequently, 1% of the addressable market for both PWHRP and WHPP in PG&E's service area is 15,500 homes.

In SCG's service area, there are approximately 5,300,000 households (that include 1,700,000 low income residents that are jointly served by SCE, PG&E, and 11 electric municipalities). 64% of the eligible households are single family residences and 65% of those homes are owner-occupied. Subsequently, 1% of the addressable market for PWHRP and WHPP in SCG's service area is 10,644 homes.

In SCE's service area, there are 4,240,631 households (that include 1,399,408 low income residents). 64% of the eligible households are single family residences and 65% of those homes are owner-occupied. Subsequently, 1% of the addressable market for the PWHRP and WHPP in SCE's service area is 11,819 homes.

In SDG&E's service area, there are 1,203,806 households (that include 337,066 low income residents). 64% of the eligible households are single family residences and 65% of those homes are owner-occupied. Subsequently, 1% of the addressable market for PWHRP and WHPP in SDG&E's service area is 3,606 homes. [13]

MIDI measures to mirror PWHRP measure options. PG&E will provide lessons learned to other IOUs on this effort.

[13] KEMA, Inc. *"Final Report on Phase 2 Low Income Needs Assessment."* Prepared for the California Public Utilities Commission. Sep. 7, 2007. (Reference for numbers described for each IOU)

Table 5: Program Targets[14]

Table 5: Program Targets

		Program Target During 2010	Program Target During 2011	Program Target During 2012
Target 1: Enrolled and Completed PWHRP and WHPP Projects	PG&E	3,875-5,745	5,425-8,403	6,200-9,192
	SCE	2,955-4,125	4,137-5,775	4,728-6,600
	SCG	1,745-2,661	2,443-3,725	2,792-4,258
	SDG&E	902-1,690	1,262-2,366	1,442-2,704
Target 2: Completed Program Overview Courses	Targets 2 and 3 will be updated as part of the Program Performance Metrics Advice Letter discussed below.			
Target 3: Enrolled Contractors				

Target 1 in Table 5 is intended to serve as an estimate of statewide program participation during the 2010-2012 program cycle and may be increased if the market response creates additional demand. The Target 1 estimates are shown as a range from the addressable market to a stretch goal that was derived from the budget analysis, both of which were described above. Given the considerable number of unknown factors affecting the residential market (i.e. ARRA stimulus funds, HOME STAR, SEP funding distribution, Recovery through Retrofit, AB 811, and AB 758), it is anticipated that the projections in Table 5 will be continuously updated and discussed in public workshops.

Pursuant to Rule 16.6 of the Commission's Rules of Practice and Procedure, the IOUs requested and were granted an extension until May 21, 2010 to submit the Program Performance Metrics Advice Letter in compliance with the D.09-09-047. PWHRP metrics will be included as part of the Program Performance Metrics Advice Letter.

e) Advancing Strategic Plan goals and objectives

The PWHRP program design is consistent with the requirements of the Strategic Plan. It addresses the Whole-House Strategy of the Strategic Plan by influencing contractors and homeowners to implement comprehensive home retrofit energy efficiency measures.

The program will help to achieve the following goals identified in Section 2 of the Strategic Plan:

[14] PWHRP metrics will be included as part of the Program Performance Metrics Advice Letter.

Table 6. Whole House Alignment with California Long Term Energy Efficiency Strategic Plan			
Residential and Low Income Goal 2: Existing Homes			
Goal Number	**Strategy**	**PWHRP Strategy**	**Integrated Programs & Activities**
2-1	Deploy full-scale Whole-House programs. CPUC 2010-2012 Statewide Goal: Drive the market to retrofit at least 1% of California homes in the utility service areas to at least 20% annual savings.	Help drive the market to reduce the annual energy usage of 1% of residential customer homes by 20% on average by December 31, 2012.	Programs: PWHRP and WHPP, Solar, Demand Response Marketing: Customer segmentation and local coordination EM&V: Studies to provide early feedback and establish baselines
2-2	Promote effective decision-making to create widespread demand for energy efficiency measures.	Continue to offer HEES programs online, by mail, and over-the-phone to provide customers with information to promote effective decision-making, in combination with other segment specific marketing outreach and educational activities.	Programs: HEES, PWHRP and WHPP Marketing: Customer and contractor education to promote building efficiency and appropriate EE behaviors in a segmented manner
2-3	Manage research into new/advanced cost-effective innovations to reduce energy use in existing homes.	Coordinate with Emerging Technologies and other programs to integrate market-ready technologies into the Whole House offering when appropriate.	Programs: Emerging Technologies, Demand Response, Solar, and others
2-4	Develop financial products and programs such as on-bill financing to encourage demand for energy efficiency building products, home systems, and appliances.	Coordinate with local financing districts to ensure that customers are aware of the most effective and attractive financing packages are available to them.	Programs: PWHRP and WHPP Coordination: Local government partnerships and other state/federal financing entities
2-5	Increase Title 24 compliance through specific measures leading to aggressive statewide enforcement.	Partner with local governments to expedite the permitting process to decrease the barriers to entry in the home performance industry.	Coordination: Local government partnerships

6) Program Implementation

a) Statewide IOU Coordination

PWHRP is a statewide program that will be offered and administered by California's IOUs. Ongoing collaboration efforts will provide a venue to share experiences and best practices with the intent of improving PWHRP over time. The IOUs hosted a series of workshops throughout the state to gather stakeholder input during the program design process. Attendees included municipal-owned utilities, researchers, service providers, local government representatives, and other interested stakeholders[15]. The IOUs will continue statewide discussion and coordination to ensure collaboration and consistency by holding at least two stakeholder meetings per year. Additionally, PWHRP will coordinate with the extensive network of contractors already participating in IOU HVAC programs.

i. Program name

Prescriptive Whole House Retrofit Program (PWHRP)

ii. Program delivery mechanism

PWHRP delivers more basic whole house measures than those of WHPP and is intended to provide an easy entry point on the path to home performance. The program includes marketing, education and outreach activities designed to engage and encourage customer and contractor participation PWHRP will also serve as the pathway to drive participation in the local WHPP.

In addition to traditional marketing efforts, the IOUs will work through service providers and vendors to engage qualified tradespersons in the crafts that they have chosen. For example, there are many skilled HVAC-installers with North American Technician Excellence (NATE) or equivalent certifications that are presently not qualified to perform whole house retrofits, just as there are insulation experts who are not familiar with HVAC system performance. By being inclusive rather than exclusive, PWHRP will leverage the service provider industry to meet the demands of a growing home retrofit market by helping to expand contractor business models and fostering a successful comprehensive retrofit industry.

To increase the number of qualified contractors and contribute to the creation of a sustainable workforce, PWHRP will assist third party program implementers with the solicitation and screening of qualified residential repair, renovation, and HVAC contractors. The program will also include marketing activities to help educate customers on program services and provide additional customer leads, through third party program implementers, to trained contractors. Participating contractors may receive an incentive

[15] First public meeting: October 13, 2009 in San Ramon, CA. Second public meeting: October 27, 2009 in Ontario, CA. Third public meeting: November 12, 2009 in Downey, CA. Fourth public meeting: January 7, 2010 in San Francisco, CA. Stakeholders also participated in six sub-groups, each of which had a series of conference calls that were held in the weeks between public meetings.

during the initial program phase for performing an established number of quality retrofits and reporting on all jobs, as assured through the program's rigorous post-retrofit quality assurance testing. PWHRP will align with consistent standards identified in association with the national HPwES program.

As discussed in later sections, PWHRP will work to leverage local government relationships with contractors and customers to further promote the whole house approach.

The program will employ a number of integrated delivery strategies:

1) Educate contractors and residential customers on the concept of home performance;
2) Coordinate with existing residential program offerings (e.g. HVAC) within the utility portfolios;
3) Provide robust quality assurance and quality control protocols that encourage quality installation and drive contractors to obtain additional training and qualifications;
4) Provide robust EM&V feedback loops to inform program enhancements;
5) Integrate with marketing efforts of the new statewide brand, when launched, and deliver complementary marketing messaging to drive customer demand and contractor participation;
6) Coordinate contractor training, marketing and outreach efforts with local governments, as appropriate; and
7) Develop an incentive structure that drives customers and contractors to undertake comprehensive residential retrofits.

iii. Incentive levels

In order to promote participation and encourage early adopters of the program, Whole House incentives will be tiered based on barriers to entry and desired actions. The intent is to drive early participation of customers and contractors by providing attractive incentives and a sense of urgency. The program will leverage core portfolio measures and reward additional incentives for performing program elements completed in their entirety, and properly.

It is expected that the incentive structure will generate several outcomes. First, the incentive structure will reward participants that follow the preferred loading order. This is accomplished by offering greater incentives to participants that progress from the PWHRP measures to WHPP measures.

A second desired outcome of the incentive levels is the creation of a sense of urgency to motivate customer participation now, rather than to defer their participation into the future. To leverage external funding and financing mechanisms (e.g. American Reinvestment and Recovery Act (ARRA)

stimulus funds, State Energy Program (SEP) funds, HOME STAR, tax credits, AB 811 and municipal financing districts), the CA IOUs will periodically analyze rebate levels and will adjust them based on external market drivers. These decision points will be marked by relevant changes in the home retrofit sector. For example, launch of the federal HOME STAR program, Recovery through Retrofit, and implementation of AB 758 legislation will drive regular IOU evaluation of contractor and customer pull related to IOU incentives and external funding. Recognizing that the marketplace is motivated by deadlines, changes to program incentives will be announced in a public forum to provide adequate adjustment time for contractors and homeowners. The IOUs commit to discussing the status of program incentives at each public workshop.

The average PWHRP customer incentive is expected to be in the $1,000 range[16] but could vary depending on the size of the home and the baseline rebate. The customer will receive the entire rebate amount as a direct result of participating in PWHRP. IOU internal processing will combine applicable incentives from existing core programs with incentive dollars from the PWHRP budget with the goal of making the overall process appear seamless to the end-use customer.

Additionally, PWHRP incentives will be:

- Consistent statewide;
- Lower than the WHPP incentives;
- Compatible with municipal financing options; and
- Implemented so as to leverage external funding where appropriate.

The initial customer incentive amount will be based on further analysis of:

- Preliminary engineering estimates of energy savings based on climate zone and home characteristics;
- Preliminary Total Resource Cost (TRC) estimates;
- Amount of incentives available for PWHRP measures in the California Statewide Program for Residential Energy Efficiency (CalSPREE);
- Customer willingness-to-pay research; and
- Compatibility with external incentive dollars and financing.

Contractor incentives in the $200 range may also be included in PWHRP during the initial program phase to help offset the initial capital expenditures associated with program participation. With the understanding that the ultimate goal of PWHRP is to drive participation in WHPP, any contractor incentives will be discontinued at an appropriate time during the 2010-2012 program cycle. As mentioned previously, the IOUs commit to discussing the status of program incentives at each public workshop. Contractor incentives will also be provided in the form of:

[16] This value could change based on the pre-determined baseline energy use and budget for each IOU.

- Building science background courses;
- Combustion appliance safety training;
- Program marketing collateral; and
- Quality assurance and quality control.

In D.09-09-047, the Commission stated that "we clarify that utilities should only claim savings to the Commission from measures receiving ratepayer funds, and should not claim savings from any non-resource program or project that does not receive ratepayer funded incentive dollars. Where there are projects or programs that receive both ratepayer and ARRA funding, the utilities (or the third party) should where possible track sources of costs and savings, and must ensure against double counting savings. We will review this as needed when the DOE releases final ARRA guidelines."[17] Accordingly, all savings from whole house measures receiving ratepayer funds will be counted toward the energy savings goals.

iv. Marketing, Education and Outreach plans

Summary of Stakeholder Input
PWHRP marketing efforts have been informed by input from the stakeholders who attended the public workshops and participated in conference calls. Stakeholder recommendations included the following:

- Supporting all key market actors – not just consumers;
- Addressing the entire customer experience;
- Creating a consistent message to avoid confusion;
- Leveraging touch/action points;
- Targeting communities of high density opportunity;
- Considering the neighborhood approach or other target marketing to support; including community based organizations and partners;
- Establishing a process for referrals;
- Creating a simple application process;
- Utilizing trusted sources and influencers;
- Coordinating with local governments, contractors and municipalities;
- Evaluating point-of-sale displays;
- Considering outreach to schools;
- Considering additional, near-term market research; and
- Collaborating with local government or municipal efforts, as appropriate.

Objectives

- Generate greater awareness, understanding and appreciation for the house as a system concept;
- Drive response among qualified customers to seek out whole house projects; and
- Build demand in the marketplace for home retrofit services.

[17] D. 07-09-047 p.103-104

Target Audiences

PWHRP marketing and outreach aims to include all stakeholders in the retrofit process, throughout the life of the program. This will help to ensure that all audiences receive consistent information and will enable a more informed dialogue about program specifics, in an effort to continuously engage stakeholders in the energy efficiency retrofit process. The target group is comprised of the following audiences:

- Single family residential homeowners in proposed targeted segments
    - Priority segments - and opportunity-sizing - to be determined through proposed primary statewide research (see Research and Data Needs below)

- Residential contractors and other third parties
    - Contractor interest and education will be driven by relationships with local chapters of various trade associations and targeted commercial contact databases.
    - This strategy helps empower the trained contractors to act as public educators and marketers

- Local governments, community-based organizations and other stakeholders
    - Efforts may target select public events and work with local earned media to publicize the program's benefits.

Keys to Success

Execution of a successful campaign that introduces customers and contractors to the benefits of comprehensive home energy efficiency retrofits will largely be dependent on funding available to support outreach to all audiences. With that in mind, following is the proposed approach and specific tactical recommendations that the IOUs aim to pursue, funding permitting:

- Utilize a statewide naming convention and establishing consistent messaging and a creative envelope for WHPP marketing efforts to avoid market confusion;
- Co-brand where feasible;
- Consider the feasibility of a statewide website portal to act as a comprehensive communications tool for residential customers, contractors, community groups, cities and municipalities;
- Coordinate with local governments;
- Engage contractors and local governments in generating customer demand; and
- Provide collateral pieces to participating contractors to assist in lead generation and education.

The following chart outlines proposed ideas, by type/responsibility, which may include:

Prescriptive Whole House Retrofit Program: Alignment of activities, by type/responsibility

	Marketing	Education	Outreach
Statewide	• Development of consistent, shared messaging framework • Develop overarching strategy for—and implementation of– consistent marketing efforts and web-based activities. • Creation of core design elements for the program, which can be applied to SW and local marketing • Formulate comprehensive research plan, stimulus and fielding that represents all unique IOU attributes and needs • Establish core set of success metrics (individual goals to be established at IOU level) • Define and prioritize core set of marketing targets	• Creation of contractor-facing materials, which may include collateral, sales-enablement materials, other • Coordination with national and regional retailers to secure point-of-purchase placements for program information • Consider holding webinars or other group forums for disseminating information to 3Ps and GPs • Development of web property that can serve as universal information access point for customers statewide	• Develop engagement strategy for engaging Local Governments, LGPs and Community Outreach • Provide local governments with clear and consistent co-branding guidelines and opportunities • Outreach to solar contractors and potential solar customers • Hold conference calls with interested local governments to refine the scope of co-branded materials
IOU-specific	• Execution of Customer-facing marketing tactics • Placement in earned media channels • Sharing results on local marketing efforts • Implement efforts that demonstrate ongoing dialog with customers • Integration of WHP with existing/other DSM program marketing	• Education materials for: contractors, industry organizations, homeowners, HOAs, neighborhood associations • Coordination with specific retailers to secure POS placement, marketing events, etc. • Statewide education curriculum can be implemented at the local level	• Work closely with specific local governments to act as the point-of-contact for community-based social marketing campaigns. • Spread message to HOAs, Building Associations and Neighborhood programs • Coordination with mortgage lenders and energy-efficiency mortgage programs

Timeline

Pending approval of the statewide PIP and respective funding, a preliminary roll-out of the above proposed ME&O activities might look like the following:

	Q1 2010	Q2/Q3 2010	Q2/Q3 2010	Q4 2010
Phase	PIP Submission, Review and Approval; ME&O strategy development	Execution strategy and Creative Development	In-Market Deployment	Initial Results
Potential Activities	Define and prioritize core set of marketing targets Establish core set of marketing success metrics (individual goals to be established at IOU level) Develop engagement strategy for engaging local governments, LGPs and community outreach Formulate comprehensive research plan, stimulus and fielding that represents all unique IOU attributes and needs Development of consistent, shared messaging framework	Develop overarching strategy for—and implementation of–consistent marketing efforts and web-based activities. Hold conference calls with local governments to refine the scope of co-branded materials; Creation of core design elements for the program, which can be applied to statewide (SW) and local marketing Development of Customer-facing marketing tactics Creation of contractor-facing materials, which may include collateral, sales-enablement materials, other Development of web property that can serve as universal information access point for customers statewide	Placement in earned media channels Integration of WHP with existing/other DSM program marketing Outreach to solar contractors and potential solar customers Spread message to HOAs, building associations and neighborhood programs Work closely with specific local governments to act as the point-of-contact for community-based social marketing campaigns Coordination with mortgage lenders and energy-efficiency mortgage programs Implement efforts that demonstrate ongoing dialog with customers Provide local governments with clear and consistent co-branding guidelines and opportunities	Sharing results on local marketing efforts

Research and Data Needs

To assist development and marketing of the retrofit options, the IOUs will utilize relevant market segmentation studies and best practices from a number of residential retrofit programs already in operation in the United States. Additionally, the IOUs plan to conduct primary statewide research among both homeowners and contractors. The IOUs will include Community Based Organizations (CBOs), social marketing firms and the Energy Division as part of an informal advisory committee on the marketing research plan.

Objectives of a proposed statewide survey among homeowners would seek to:

- Understand under what circumstances homeowners would participate in a whole house retrofit program (move-in, lifecycle stages, etc.);
- Include all California income levels above LIEE, multifamily customers, and renters;
- Determine how much homeowners are willing to invest, and in what specific components of a whole house retrofit;
- Identify the perceived benefits of a whole house retrofit versus a piecemeal or single-item improvement;
- Determine what program elements would be most important and motivating, and understand what types of messages would have the greatest appeal; and
- Determine what characteristics and attributes are associated with greater interest in a whole house retrofit. Characteristics may include: geographic, demographic, socio-economic, housing, and others.

Objectives among contractors include:

- Understand how contractors think about and approach whole house retrofit projects;
- Determine contractor needs and issues regarding a utility whole house retrofit program; and
- Elicit contractor opinions regarding homeowner interest and implementation of whole house retrofit projects.

Results of the primary research will help the IOUS to:

- Consider a scaled incentive design for Lower Moderate Income (LMI) customers;
- Implement experimental methods of marketing outreach that may include:
    - Targeted outreach to neighborhoods with similar vintage homes; and
    - CBO/social marketing-based outreach (especially in moderate income communities and regions that are less engaged in external residential retrofit efforts).

The IOUs will summarize the market research and share the findings, as well as any resulting program enhancements, at future public workshops. The full research results will be available to interested parties upon request.

Coordination with Local Government Partners and Program Providers

The current confluence of stimulus funding and municipal financing programs has provided a unique opportunity for IOUs to work with local governments to engage homeowners at the community level.[18] Coordination with contractor[19] and local government delivery channels will be critical as it is important that a consistent message is delivered to customers. Successful marketing implementation will raise customer awareness of the house-as-a-system concept and help to engage communities through local government outreach.

v. IOU program interactions

Coordination with statewide HVAC QI/QM initiatives:
PWHRP will coordinate with existing and planned statewide HVAC programs to encourage contractors to expand their businesses and deliver quality service that produces real savings. Current IOU HVAC programs utilize a network of contractors who have, in turn, developed relationships with customers. By including these contractors in PWHRP, IOUs can leverage contractors who have already received training on HVAC measures – a large piece of the house-as-a-system concept. These contractors are in a unique position to educate customers during routine appointments for system maintenance and installation.

Coordination with local Whole House Performance Programs:
Each IOU will implement a local WHPP in the 2010-2012 program cycle. PWHRP is intended to serve as an easy path for contractors and customers to learn about whole house retrofits. PWHRP will raise awareness for both programs and eventually help to drive the market to performance-based work.

[18] In their book, Fostering Sustainable Behavior: An Introduction to Community-Based Social Marketing, Doug McKenzie-Mohr and William Smith provide evidence to suggest that "Community-based social marketing is an attractive complement to regulatory and information intensive campaigns."

[19] Key to creating successful customer pull will be careful monitoring of the home performance contracting network throughout each IOU's service territory. The marketing strategies discussed herein will be deployed in geographical regions that can satisfy customer demand. As described previously, contractors will receive training for assistance with marketing techniques through utility training centers and state and federal workforce development programs. Contractors will be encouraged to utilize software platforms to maintain a customer lead database.

Coordination with local government programs:
The variety of stimulus dollars focused on residential retrofits has created an unprecedented opportunity for market coordination. Local governments and municipalities across the state will begin to deliver residential retrofit programs and municipal financing mechanisms for their communities. PWHRP will be designed so that it is compatible with a variety of local government efforts.

The matrix below illustrates the possible on-going opportunities for engagement and interaction between the IOUs and local governments to support home performance. To simplify local government and IOU coordination throughout the state, IOUs will offer a limited number of packaged offerings that can be modified as appropriate. The packages will include program elements that are meant to enhance local government (LG) programs and avoid duplication.

The local government categories of "Highly", "Moderately" and "Minimally Engaged" are meant to provide guidelines for categorizing different levels of engagement for different local governments. This engagement model is intentionally left blank to be a starting point for organizing discussions between the parties and determining roles of the IOUs and local governments in developing a partnership approach to working with customers. This process may also provide the foundation for tracking of funding associated with roles, programs and offerings and a basis for any agreements that might be appropriate between the IOU and local government.

Level of LG Engagement	Marketing	Education	Training	Contractor Qualifications /Education	Financing
Highly Engaged LGs – Res. Retrofit & Municipal Financing					
Moderately Engaged LGs Res. Retrofit OR Municipal Financing					
Minimally Engaged LGs					

Highly engaged local governments are likely to be heavily involved in each area identified in the matrix and will likely launch residential retrofit programs along with municipal financing options. The program efforts will likely include some form of local policy creation and program design (including rebate and/or financing offerings) that will leverage local government channels for outreach to various communities. Many of the highly

engaged local governments are likely to launch unique marketing and training efforts to leverage IOU programs and best practices. Generally, local governments will take the lead in utilizing IOU programs to complement other funding and accomplish strategic goals. Each IOU will designate a single point of contact who will serve as a liaison to other IOU staff members who engage regularly with local governments.

Moderately engaged local governments are likely to be heavily involved in fewer areas identified in the matrix. Program efforts will likely include residential retrofit programs or municipal financing options, but not both. Implementation may also encompass some form of local policy creation or local government program design but will likely focus a majority of resources on leveraging local government channels for outreach to various communities. Many of the moderately engaged local governments are likely to utilize a combination of unique marketing and training efforts in addition to IOU offerings and best practices. Generally, local governments will take the lead in utilizing IOU programs to complement other funding and accomplish strategic goals. Each IOU will designate a single point of contact who will serve as a liaison to other IOU staff members who engage regularly with local governments.

Minimally engaged local governments will likely leverage local government channels to promote existing IOU programs. Program efforts are not likely to include residential retrofit or municipal financing options and will rely primarily on IOU marketing and training efforts. The point of contact for these efforts will be designated by each IOU.

Each local government is encouraged to leverage those IOU program elements that enhance local offerings. In addition to establishing points of contact for local governments and engaging throughout the program cycle, IOUs anticipate local governments will leverage:

- IOU-coordinated conference calls and webinars to explain program elements;
- Co-branded and coordinated marketing, education and outreach materials (customer and contractor facing);
- Background training courses for contractors;
- A list of participating contractor qualifications and requirements;
- Program QA/QC protocols;
- Customer and potentially contractor incentives;
- Assistance in tracking work that leverages ARRA and IOU dollars, to the extent feasible; and

The above scopes will be expanded over time as a result of the recent AB 758 legislation that directs the CEC to establish a regulatory proceeding to develop a comprehensive program (addressing both residential and nonresidential retrofits). Coordinated efforts between

the CEC and IOUs will enable all entities to drive consistent market demand.

IOUs have already been in contact with:

Local Government Outreach Conducted for Whole House Performance Workshops

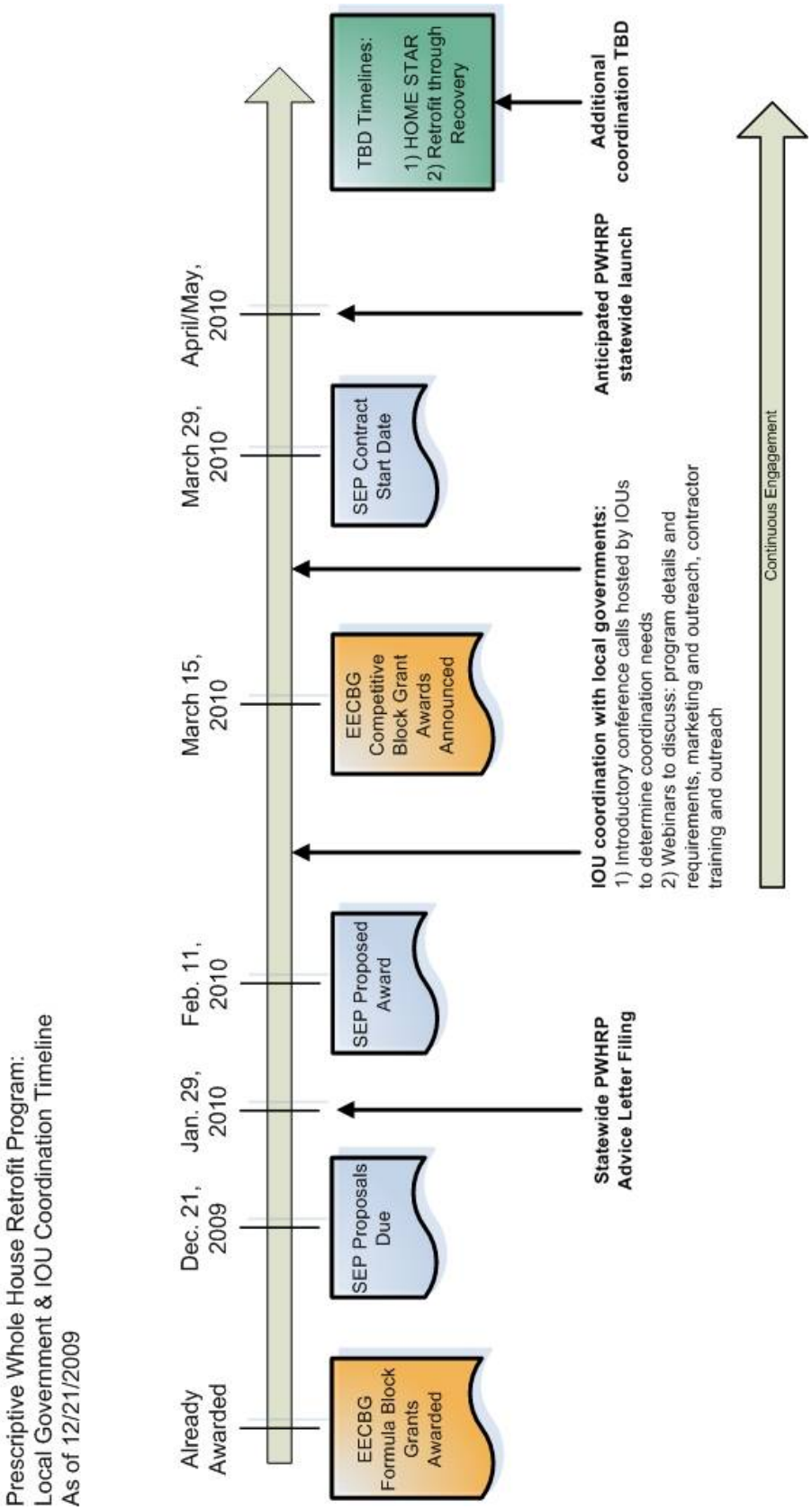
City/County/Local Government Partnership/Regional Association or Group	Cities/Areas Covered
Association of Monterey Bay Area Governments (AMBAG)	Counties of Monterey, San Benito, Santa Cruz
Beaumont	City of Beaumont
California Center for Sustainable Energy (CCSE)	Representing the San Diego region
City Chula Vista	City of Chula Vista
City of Irvine	City of Irvine
City of Visalia	City of Visalia
City of West Hollywood	City of West Hollywood
City of Yucaipa	City of Yucaipa
City San Bernardino	City San Bernardino
City San Diego	City of San Diego
Community Energy Partnership	Cities of Brea, Corona, Hermosa Beach, Irvine, Moreno Valley, San Bernadino, Santa Clarita, Santa Monica
County of Los Angeles	County of Los Angeles
County of Orange	County of Orange
County of San Diego	County of San Diego
County of Santa Barbara Partnership	County of Santa Barbara, City of Santa Barbara, City of Goleta, City of Carpentaria, City of Santa Maria, City of Guadalupe, City of Buellton
County San Bernardino	County San Bernardino
Desert Cities	Cities of Blythe, Cathedral City, Palm Springs, Indian Wells, Desert Hot Springs, Rancho Mirage
Desert Cities Partnership	Cities of Palm Springs, Cathedral City, Desert Springs, Rancho Mirage, Indian Wells, La Quinta, Indio, Coachella, Blythe, Agua Caliente Band of Cahuilla Indians, Cabazon Band of Mission Indians
East Bay	Counties of Alameda, Contra Costa and Solano
Eastern Sierra	Cities of Mammoth Lakes, Bishop, Mono County, Inyo County
Fresno City	City of Fresno
Fresno County	Fresno County excluding the City of Fresno

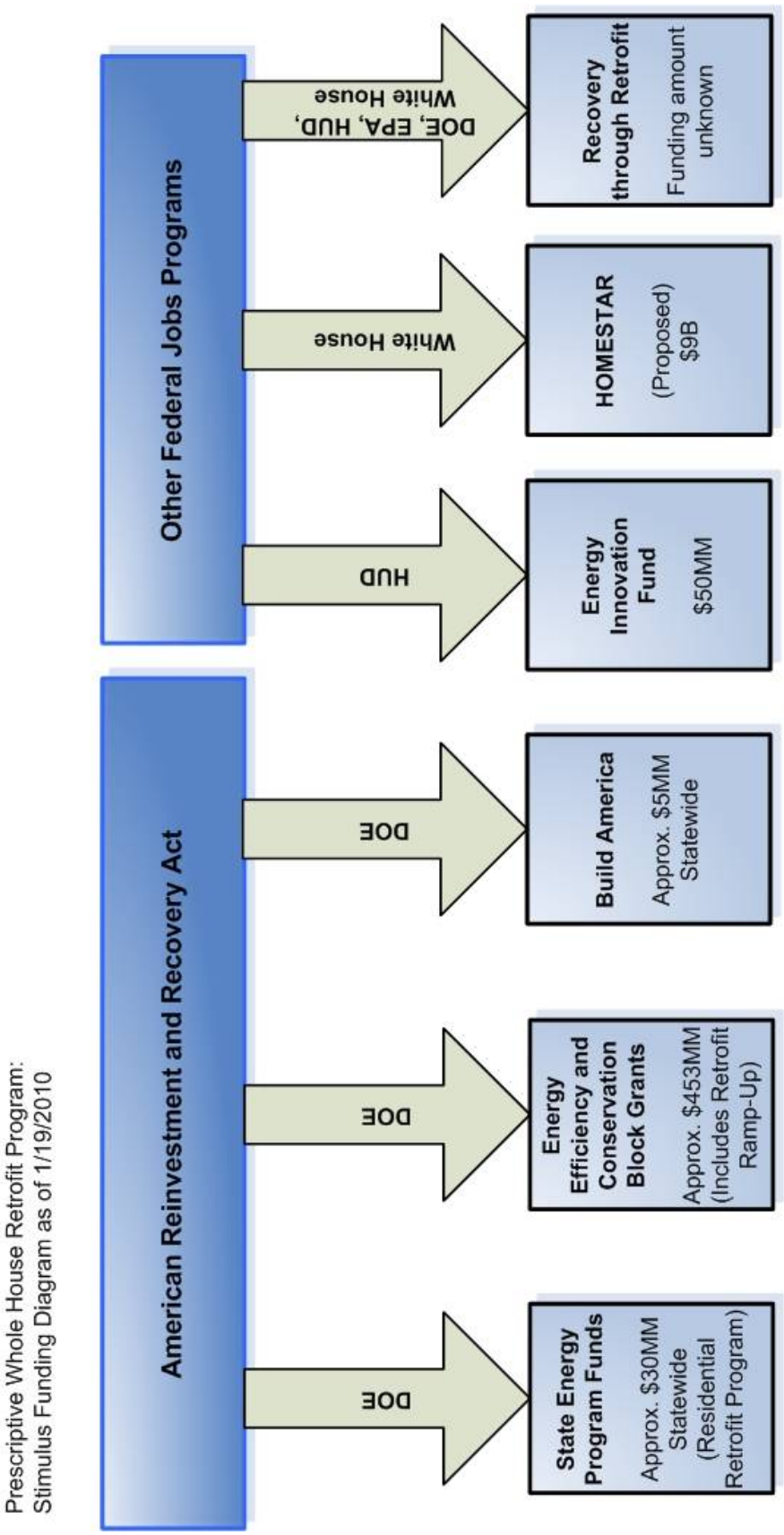
Local Government Outreach Conducted for Whole House Performance Workshops	
Kern Partnership	County of Kern, City of Bakersfield, City of Arvin, City of Delano, California City, Maricopa, City of McFarland, Ridgecrest (PGE), City of Shafter, City of Taft, Tehachapi, City of Wasco
Lake County (Proposed New Program)	Lake County
Long Beach	City of Long Beach
Madera	Madera County
Marin County	Marin County
Mendocino County	Mendocino County
Napa County	Napa County
Orange County Cities	Cities of Huntington Beach, Costa Mesa, Fountain Valley, Westminster
Palm Desert	City of Palm Desert
Redlands	City of Redlands
Redwood Coast	Humboldt County
Ridgecrest	City of Ridgecrest
San Francisco	City and County of San Francisco
San Gabriel Valley	SCAG, SGVCOG, Alhambra, Arcadia, Azuza, Baldwin Park, Bradbury, Claremont, Covina Diamond Bar, Duarte, El Monte, Glendora, Industry, La Canada-Flintridge, La Puente, La Verne, Monrovia, Montebello Monterey Park, Pomona, Rosemead, San Dimas, San Gabriel, San Marino, Sierra Madre, South El Monte, South Pasadena, Temple City, Walnut
San Joaquin City	City of San Joaquin
San Joaquin County	San Joaquin County
San Joaquin Valley	Cities of Exeter, Farmersville, Hanford, Lindsey, Porterville, Tulare, Visalia, Woodlake, Tulare County
San Joaquin Valley Energy Leader Partnership	County of Tulare, County of Kings, City of Hanford, City of Lindsay, City of Porterville, City of Tulare, City of Visalia, City of Woodlake
San Luis Obispo County	County of San Luis Obispo, City of San Luis Obispo, City of Arroyo Grande, City of Atascadero, City of Grover Beach, City of Paso Robles, City of Pismo Beach, City of Morro Bay
San Mateo County	San Mateo County
Santa Ana	City of Santa Ana
Santa Barbara	Santa Barbara County (Northern)
Sierra Nevada	Counties of Lassen, Plumas, Alpine, Sierra, Butte, Sutter, Placer, Yuba, Nevada, El Dorado, Amador, Calaveras, Toulumne, Mariposa
Silicon Valley	Santa Clara County

Local Government Outreach Conducted for Whole House Performance Workshops	
Simi Valley	City of Simi Valley
Sonoma County	Sonoma County
South Bay	South Bay COG, Energy Innovation Group (EIG), Cities of Carson, El Segundo, Gardena, Hawthorne, Hermosa Beach, Inglewood, Lawndale, Lomita, Manhattan Beach, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, Torrance
South County	Santa Barbara County (South), Cities of Carpentaria, Goleta, Santa Barbara
South Gate	City of South Gate
Ventura County	Ventura County Regional Energy Alliance, Camarillo, Fillmore, Moorpark, Ojai, Oxnard, Port Hueneme, Santa Paula, Thousand Oaks, Ventura, Ventura County
West Hollywood	City of West Hollywood
Yolo County (Proposed New Program)	Yolo County

Additional local governments who participated in workshops:
City of Berkeley
City of Palo Alto
City of Fairfield
City of Azusa
San Joaquin Valley (SJV Unified APCD)
Association of Bay Area Governments (ABAG)

Near-term efforts and external funding mechanisms are outlined in the diagrams below:


Prescriptive Whole House Retrofit Program:
Local Government & IOU Coordination Timeline
As of 12/21/2009
Already Awarded
Dec. 21, 2009
Jan. 29, 2010
Feb. 11, 2010
March 15, 2010
March 29, 2010
April/May, 2010
EECBG Formula Block Grants Awarded
SEP Proposals Due
SEP Proposed Award
EECBG Competitive Block Grant Awards Announced
SEP Contract Start Date
TBD Timelines:
1) HOME STAR
2) Retrofit through Recovery
Statewide PWHRP Advice Letter Filing
IOU coordination with local governments:
1) Introductory conference calls hosted by IOUs to determine coordination needs
2) Webinars to discuss: program details and requirements, marketing and outreach, contractor training and outreach
Anticipated PWHRP statewide launch
Additional coordination TBD
Continuous Engagement


Prescriptive Whole House Retrofit Program:
Stimulus Funding Diagram as of 1/19/2010
American Reinvestment and Recovery Act
Other Federal Jobs Programs
DOE
DOE
DOE
HUD
White House
DOE, EPA, HUD, White House
State Energy Program Funds
Approx. $30MM Statewide (Residential Retrofit Program)
Energy Efficiency and Conservation Block Grants
Approx. $453MM (Includes Retrofit Ramp-Up)
Build America
Approx. $5MM Statewide
Energy Innovation Fund
$50MM
HOMESTAR
(Proposed) $9B
Recovery through Retrofit
Funding amount unknown

vi. Similar IOU and POU programs
To avoid market confusion and make sure that no homes are left out, cooperation between IOUs and POUs will be critical. For example, Sacramento Metropolitan Utility District (SMUD) has been very active in the statewide workshops, so the IOUs will work to leverage the efforts of SMUD and other POUs for consistency statewide, beyond just the IOU programs.

Existing IOU-Verification Service Provider (VSP) programs are similar to PWHRP efforts. The program will be driven by properly trained and licensed contractors in the same way that programs like Duct Test and Seal are currently delivered. The PWHRP will leverage VSP expertise in contractor recruitment and monitoring.

PWHRP was also influenced by SCE's 2006-2008 Comprehensive Home Performance Innovative Design for Energy Efficiency Activities (IDEEA) program which was conducted in collaboration with the City of Anaheim's POU "Home Performance with ENERGY STAR®" campaign. PWHRP will complement local home performance efforts and other portfolio programs offered within respective IOU portfolios. Utility program managers will continue to collaborate with other IOU and POU efforts, as appropriate throughout the 2010-2012 program cycle.

b. Program delivery and coordination
PWHRP will be implemented in alignment with all applicable research, best practices, and policy movements. The program will coordinate, as applicable, with IOU marketing activities and may include website links, bill inserts, press releases, referrals, and information in marketing collateral.

The following activities are part of the program delivery to encourage greater numbers of service providers:

i. Emerging Technologies Program
In the near term, the Emerging Technologies (ET) program will examine tools that can be used in the home by homeowners to enhance post-retrofit feedback. In addition, the ET program will investigate tools that can enhance program delivery for contractors, evaluators and raters. In the long-term, ET will be an important driver to making sure the PWHRP utilizes the most robust and cost-effective technologies.

This program is an ideal early-adopter vehicle for new technologies such as the hot/dry air conditioner, energy use monitors for users, new approaches to hydronic heating, ecological insulation options, cool roof technologies, and even advanced solar hot water and photovoltaic (PV) installations. PWHRP program managers will work with IOU ET programs for inclusion or even field testing of new technologies, as appropriate.

ii. Codes and Standards program
The 2008 Title 24 code revision is the most relevant to this program's work. PWHRP will be coordinated with the Codes & Standards program to ensure that the impacts of any code changes are incorporated into program design and implementation.

iii. Workforce Education and Training (WE&T) efforts
External workforce development in green jobs is a large focus of federal stimulus dollars flowing into the state through ARRA. IOU efforts will coordinate with the CEC, community colleges, HERS providers, local governments and other entities to ensure that proper and consistent training is provided.

Specific workforce development efforts supporting PWHRP include the following:

- CEC/EDD: California Clean Energy Workforce Training Program (once IOU collaboration with the CEC Clean Energy Workforce Funded training programs begins, the IOUs will conduct a gap analysis of statewide training availability for PWHRP and WHPP to determine where additional training may be required in underserved areas);
- Other community college programs;
- Third party programs; and
- IOU training offerings (IOU trainings will serve as backup if required. IOU courses do not duplicate modules available in the marketplace but will serve backup role in the event that a market need is identified and best served by the IOU Energy Training Centers).

PWHRP will be coordinated with the statewide IOU WE&T program, local government residential retrofit and contractor training programs that are tied directly to workforce education and training efforts on a state and federal level. PWHRP will drive customer demand that will broaden a market for contractors to expand new or existing businesses by hiring individuals who receive training through the workforce expansion efforts.

In addition, IOU WE&T programs will continue to offer building-block courses that educate students on the concepts that form the foundation of home retrofit programs. Those concepts include:

- The house-as-a-system;
- Combustion safety training;
- Green building techniques;
- Blower Door Based Air Sealing;
- Codes and standards (Title-24);
- Basic lighting and HVAC technologies; and

- Business training (including the enhancement of sales, marketing, training, and accounting skills).

Contractor training requirements will be based on the measures included in the PWHRP package. The PWHRP package will be defined as the development of work papers (currently underway) indicates the potential to capture cost-effective energy savings throughout California's diverse climate zones. As this additional analysis makes the list of measures clearer, specific contractor requirements will be more concretely defined. PWHRP will provide contractors with an easy on-ramp to WHPP without sacrificing any considerations for applicable safety requirements. Contractor requirements will include:

- Bonding and in good standing;
- CSLB license in the appropriate specialty;
- Insurance to IOU minimums;
- A contractor participation agreement;
- Completion of a program orientation course;
- Training on state or national standards for combustion appliance safety testing; and
- Building permits be pulled on all work that is appropriate per local jurisdiction requirements.

Contractor recruitment efforts will be conducted primarily by third party program implementers – a model that has proven successful in statewide IOU HVAC programs. Program implementers will primarily recruit contractors through:

- The network of contractors already participating in IOU HVAC, insulation and weatherization programs;
- Direct outreach through trade groups with locally active memberships (e.g. Institute of Heating and Air Conditioning Contractors, Air Conditioning Contractors of America, Sheet Metal and Air Conditioning Contractor's National Association, National Association of the Remodeling Industry, Electric and Gas Industries Association, Build It Green, California Building Performance Contractors Association, Efficiency First, State-Certified Third Party Quality Control Program providers, and social networking sites);
- Workforce development departments (to target unemployed general contractors); and
- Direct outreach to HVAC, insulation and other appropriate contractor unions.

IOUs will direct customers to appropriate third party websites for lists of eligible contractors. Contractor criteria will be verified by third party program implementers – a concept that has proven effective in statewide HVAC programs.

iv. Program-specific marketing and outreach efforts
Details on proposed ME&O activities are provided above (Section 6a, iv)

v. Non-energy activities of program
A truly comprehensive home retrofit includes some elements that are chosen by the homeowner primarily for reasons other than energy bill savings, such as indoor air quality, noise abatement, or structural deterioration problems. When building envelope enhancements are made, the homeowner may receive non-energy benefits that include: health benefits, home integrity assurance from moisture problems, HVAC equipment longevity, and a potential home value increase. At the program level, implementers review projects to identify and encourage all project components that contribute to energy savings as well as other benefits. At an individual project level, contractors seek to identify homeowner's desires, solve a full range of home performance deficiencies, and clearly explain how these deficiencies contribute to energy waste.

vi. Non-IOU programs
See Sections 6a.vi. above

vii. CEC work on PIER
PIER funded the development of Home Performance contracting protocols during 2003-2006. That program provided field testing and contractor feedback for the PIER project. In addition, PIER may fund further research into related topics including homeowner motivation, valuation of societal benefits, and comparative demonstration and analysis of methods for energy savings forecasting and verifications.

viii. CEC work on Codes and Standards
The 2008 Title 24 code revision is the most relevant to this program's work. PWHRP will be coordinated with the Codes & Standards program to ensure that the impacts of any code changes are incorporated into program design and implementation.

ix. Non-utility market initiatives
In order to rapidly scale-up the PWHRP program, special efforts will be undertaken to leverage opportunities brought about by interested local governments, communities and collaborators that have received Federal Stimulus dollars through the ARRA or California SEP grants, jurisdictions that offer AB 811 finance districts[20], EEC Block Grants, local DOE efforts, HOME STAR, Federal Tax Credits, or other opportunities available. It is anticipated that stimulus-funded efforts will begin operations in the early part of 2010 with the goal of exhausting funds by the end of 2012. In addition to these external

[20] External financing districts created by AB 811 legislation are beginning to lay the foundation for a market that will make home performance retrofits affordable and attractive to homeowners, cities, and counties.

financial levers, other residential retrofit efforts and legislation is underway both at the federal level (e.g. H.R. 2454 'Waxman-Markey Bill'), state level (e.g. AB 758, AB 1109, S. 1733 'Kerry-Boxer Bill') and at the local level. Some of the larger legislative efforts, however, may not take affect until the next program cycle.

In aggregate, the variety of attention and dollars focused on residential retrofits has created an unprecedented opportunity for market coordination, and the statewide prescriptive program will be designed so that it is compatible with these local government and statewide efforts.

c. Best Practices

The statewide efforts leading to this implementation plan have been informed by a series of public meetings in geographically diverse locations throughout California. A variety of stakeholders, many with direct experience in home performance, have contributed lessons learned and best practices from their work in the industry and existing whole house programs throughout the nation.

In addition, the statewide efforts have built on the work of the California Home Energy Retrofit Coordinating Committee (CAHERCC). That committee convened a number of local governments, external financing experts, home performance contractors, and program implementers to drive consensus to recommendations for these programs. PWHRP owes a great deal to the efforts of the CAHERCC. Additional primary research was conducted to gather best practices from the NYSERDA Energy Smart (HPwES) program.

SCE's experiences from the 2006-2008 IDEEA pilot program will also be incorporated in the 2010-2012 campaign. Lessons learned include: reinforcing the accountability of contractors for the collection of completed reports upon completion of a job, and attracting more customers to participate in comprehensive home retrofits. These lessons, plus other tactics that will better enable contractors to grow their business, will be employed during 2010-2012.

d. Innovation

The innovation in this program design will take the form of coordination with external efforts and ease of participation for customers and contractors. PWHRP will coordinate IOU incentives and marketing outreach with local government efforts in neighborhood outreach and contractor recruitment. This unprecedented effort allows for multiple levels of engagement that, through coordination with local entities, will reach to a neighborhood level that will drive awareness and market adoption.

e. Integrated/coordinated Demand Side Management

The IOUs have identified IDSM as an important priority. As a result, they have proposed the establishment of a Statewide Integration Task Force (Task Force). The IOUs plan to monitor the progress of other IDSM efforts and to work closely with the

Task Force to identify comprehensive integration approaches that feed into the overall statewide strategy and to implement best practices as rapidly as practical.

The statewide PWHRP is a platform for integration of solutions to the residential customer and is intended to provide an easy entry point to WHPP for homeowners and contractors that ultimately integrate other programs for whole house and customer solutions. As awareness of the cost-effective opportunities in whole house retrofits grows through training and education efforts, customers will be presented with the ability to integrate Demand Response and properly-sized onsite generation.

With the inherent synergy that exists between the energy efficiency awareness efforts of CSI and the Whole House programs, PWHRP information will be made available to IOU teams in call-centers with the intent of providing a PWHRP introduction to customers or contractors interested in CSI. Coordination with stakeholders who maintain approved solar contractor lists may also provide an opportunity to deliver the whole house message to parties interested in installing solar systems.

The statewide HEES program will also provide a unique nexus between CSI and PWHRP. CSI customers are required to conduct a HEES survey prior to installing solar, which presents a unique opportunity to educate homeowners on the benefits of improving the efficiency of their home prior to purchasing solar equipment. These efforts are expected to include, but will not be limited to:

- PWHRP and WHPP links and information on IOU CSI sites;
- Links to PWHRP and WHPP landing pages from HEES;
- Targeted messaging during and after each survey;
- Information about PWHRP and WHPP incentives; and
- Educational information that encourages customers to reduce then produce.

In addition, any contractors who work onsite with customers can provide delivery channels for DR programs associated with air conditioning replacements or installation of DR technology on existing HVAC units.

PWHRP will also serve as a platform to integrate technology advancements in DR and Advanced Metering. Statewide leads for IDSM and WE&T coordination have been active in the statewide PWHRP design process to enable integration of DSM programs through training efforts, marketing efforts and multiple delivery channels. IDSM efforts will be part of an ongoing conversation with customers to enhance program offerings and increase their participation in DSM efforts over time.

Ultimately, as traction to integrate programs and efforts is gained through PWHRP, the Task Force will identify opportunities and best practices and work to leverage these and bring them into common practice by contractors and other delivery channels.

f. Integration across resource types (energy, water, air quality, etc)
PWHRP is designed to deliver comprehensive solutions to homeowners while integrating across resource types to maximize customer benefits not only in terms of energy savings, but through improvements to occupant health, safety and comfort. Primarily, there are opportunities for water efficiency and indoor air quality improvements.

One of the major benefits of comprehensive home retrofits is improved indoor air quality. Residents will notice more consistent temperatures throughout their home and in many cases, improved indoor air quality.

The embodied energy in water distribution will become an increasingly important part of utility programs. The consumer education process in the house-as-a-system approach will provide an opportunity for local governments to present homeowners with information on non-energy savings inherent in comprehensive retrofits. Integrated offerings with local water agencies have already demonstrated successful synergies. For example, PG&E's Cooperative High Efficiency Clothes Washer Rebate Program has yielded encouraging energy and water efficiency results that include a rise in utility and water agency program participation.[21] Continued results of such efforts will be shared among the IOUs throughout the program cycle and may influence future program modifications.

g. Pilots
Not Applicable.

h. EM&V
The utilities will complete a comprehensive EM&V Plan for 2010-2012 after the program implementation plans are filed. This comprehensive plan will include process evaluations and other program-specific studies within the context of broader utility and Energy Division studies. The comprehensive plan will be developed until after the final program design is approved by the CPUC because plans need to be based on final program design and implementation issues. All EM&V plans are contingent upon the CPUC's final Decision on a consensus plan for EE EM&V issues (A.08-07-021).

The EM&V plan will be subject to the following four-part Measurement and Evaluation (M&E) study design. The timing of these studies will depend on ED approval and program implementation milestones.

[21] Results include: 17 participating water agencies/utilities experienced a 30% increase in customer involvement through this collaborative effort; PG&E has experienced a 63% increase in overall clothes washer rebates in 2008; prior to the water community joining the effort, 10% of the models rebated were in the most energy efficient tier and now over 90% are in the most energy efficient tier; and 7000 gallons of water saved annually.

Part One: Early Market Assessment and Evaluability Study

The Early Market Assessment and Evaluability study is designed to assess the detailed program implementation plan or third party contract to make sure the program design is consistent with program theory, and adequately provisioned for all key implementation processes. Included in the assessment is an in-depth review of the tracking system for various processes to make sure they can support later evaluation activities, specifically:

- Market Assessment to confirm program objectives and proposed implementation under current conditions (i.e., decision trigger research and analysis);
- Review of program theory, logic and process design;
- Assessment of contractor qualification process and tracking;
- Assessment of project quality control process and tracking;
- Assessment of project completion verification process and tracking;
- Assessment of customer interface and support process (i.e., customer service tracking);
- Assessment of marketing segmentation and analysis approach, marketing interface and tracking;
- Assessment project interactions with other state programs, ARRA federal entity and other local AB811 funding entities, and associated process tracking including funds flow analysis and tracking requirements; and
- For the performance aspect of the whole house local programs, each IOU should also pay attention to the consistency of methodology used for savings estimate by the program implementer as part of quality control.

The adopted California Energy Efficiency Evaluation Protocols does not make any provision for a multiple-funder program design today. Included in the part one study is an examination of program attribution and intent by various funding sources (i.e., ARRA, AB811, financing, etc.).The goal here is to open a dialogue with the Energy Division and develop recommendations to handle program attribution in a fair and balanced manner.

Part Two: Rapid Feedback Process Evaluation Study

This study is essentially an early process evaluation for the program once it has been operational for a minimum of six to nine months. The goal is to see if program feedback from Part One of the research are implemented fully. In addition, rapid feedback process evaluation will provide program operational recommendations. The results will also be used to fine-tune program design for future program cycles.

This study will include the following researchable questions (please note that this list is not exhaustive):

- Is the program design effective?
- Is the program implementation effective?
- Are the marketing and outreach activities effective?
- Are the program quality assurance, quality control, verification processes and tracking processes adequate (with especially attention to HVAC processes)?

- Is the program implementation consistent in its program theory goals and objectives?
- Have the necessary program enhancements been implemented as a result of the 2006-2008 M&E study findings?

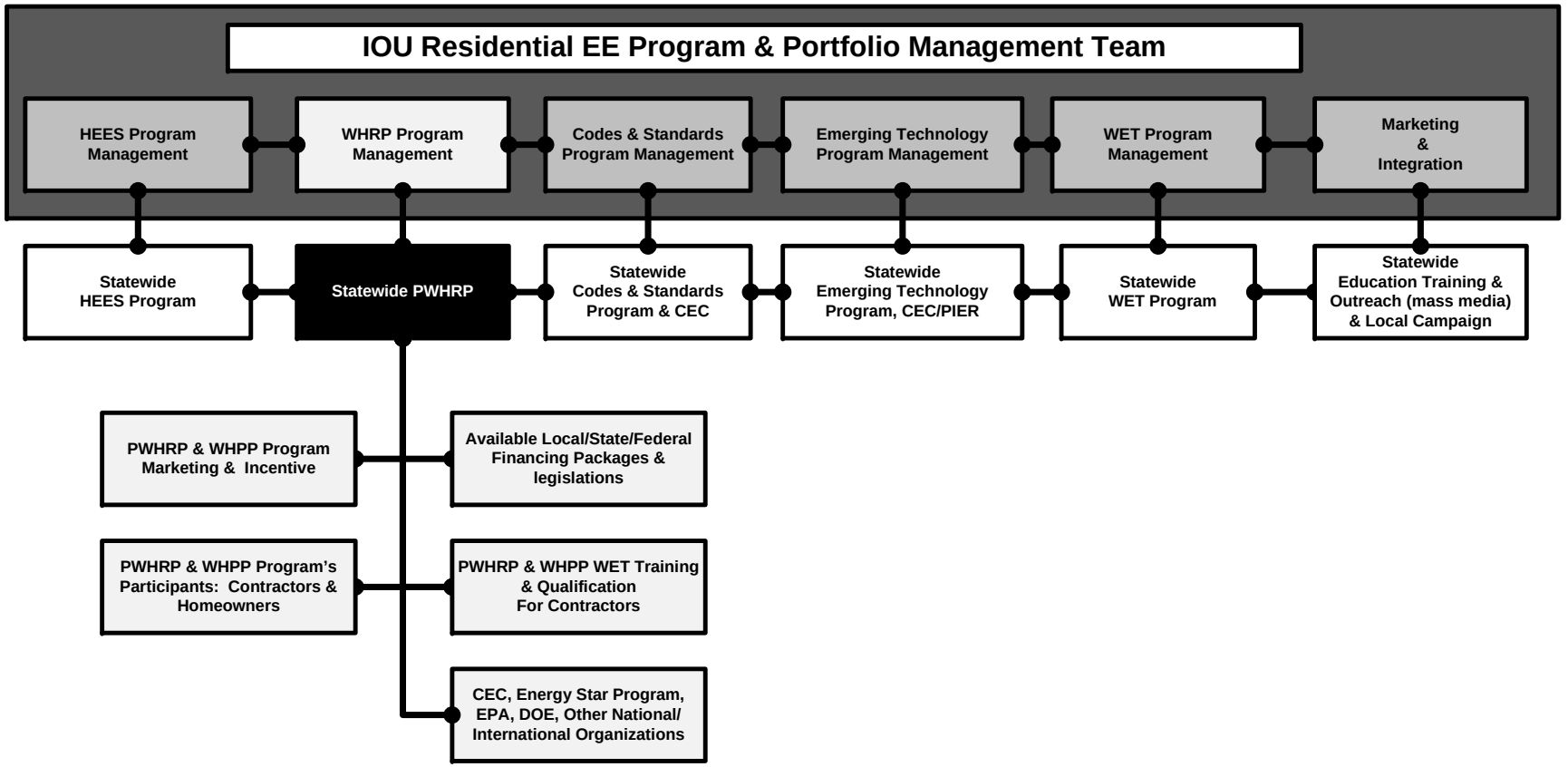
Part two of the research program will include an assessment of whether the whole house energy savings on household consumption basis has met the 20% energy reduction goal. Techniques such as billing analysis, specific metering and other evaluation processes will be part of the project design consideration.

Part Three: 2010-2012 Final Process Evaluation Study
This research is a standard process evaluation for the program. This evaluation should take place before the end of the program the cycle in 2012 so additional feedback can aid program implementation consideration for the following program cycle. In addition to a review of key program processes, the focus of this evaluation study will be on program results and key activities. Program awareness, knowledge, attitude, and customer satisfaction level are part of this evaluation. In addition, the part three study will focus on development of best practices whenever possible.

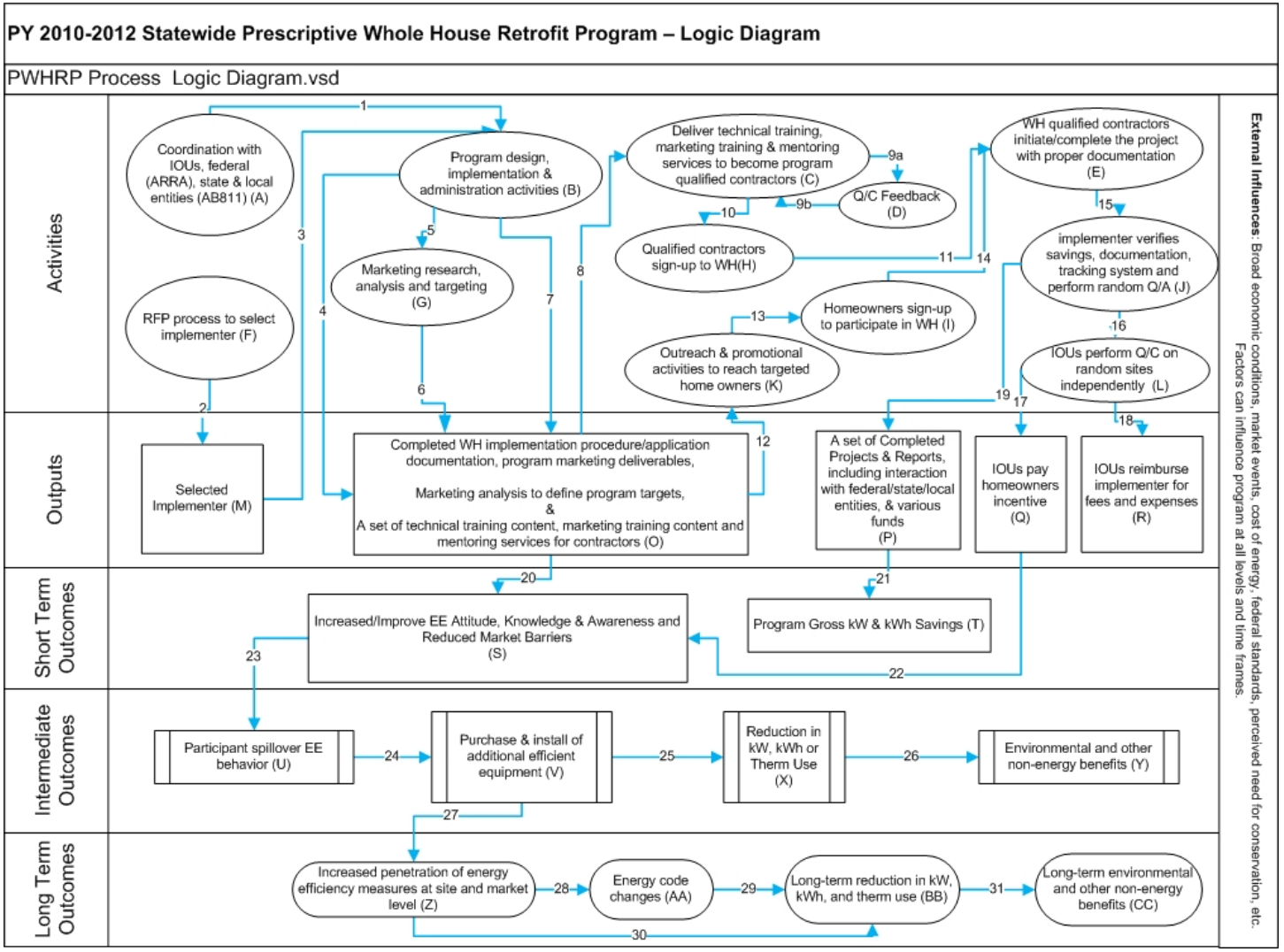
Part Four: 2010-2012 Program Impact Evaluation and Attribution
This study will be conducted by third party consultants selected by the Energy Division. The scope of the impact evaluation will include an independent assessment of installation verification, measure savings verification including an analysis of program free-ridership (i.e., ex-ante versus ex-post analysis).

The detailed EM&V plans will be developed in conjunction with the Energy Division staff per the forthcoming final EM&V decision. EM&V budgets, process and roles will be delineated in these plans as the program requires and the final decision allows.

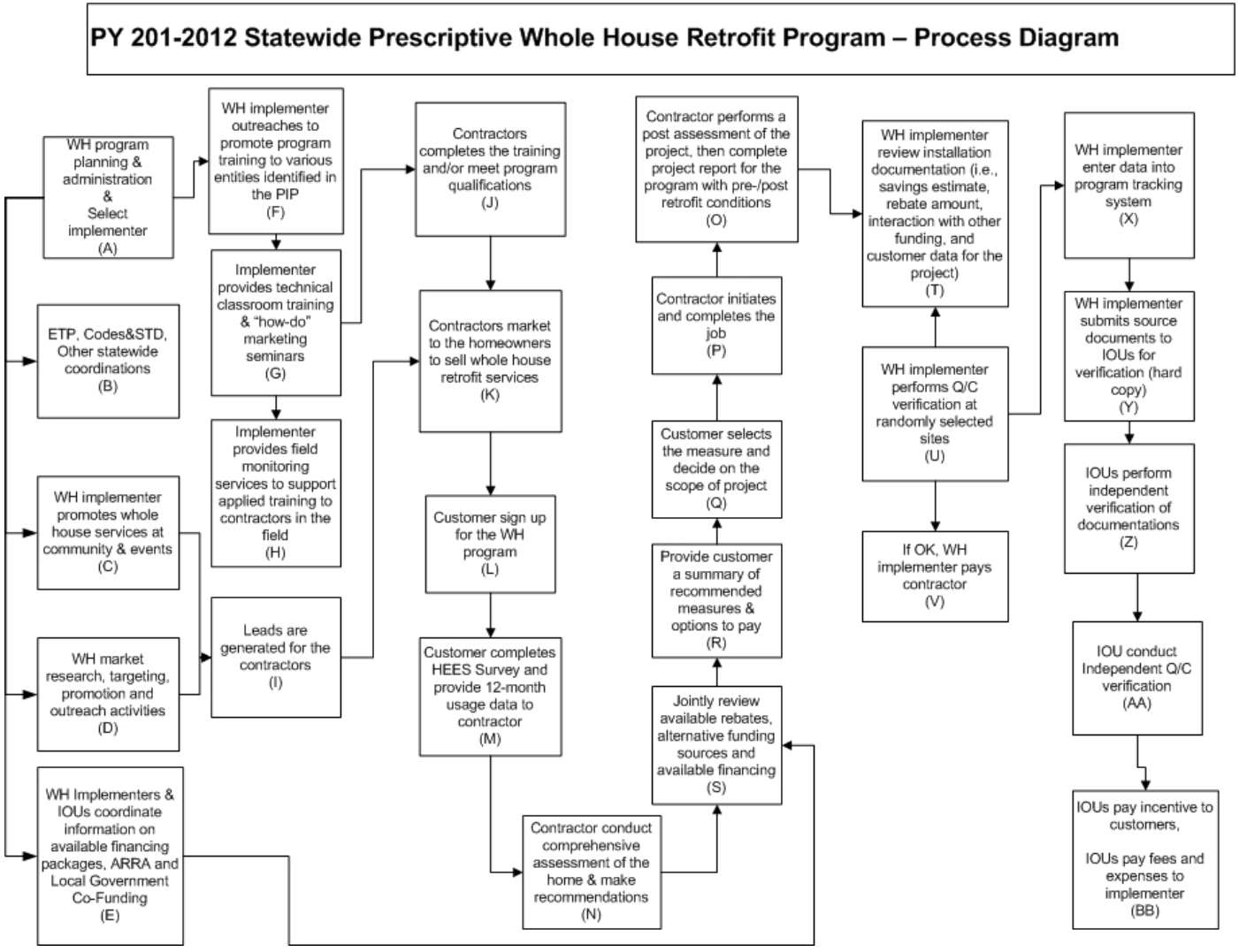
7. Diagram of Program Interaction



8. Logic Model



Appendix A: Program Process Diagram



Appendix B: Category Leads

Table B - Whole House Sub-Category Leads				
Category	**Sempra**	**SCE**	**PG&E**	**Statewide Lead**
Marketing, outreach and communications	Regina Marston and Michelle Cook	Stephanie Yamasaki, Cheryl Wynn	John Kaufman	John Kaufman
Local Government and IOU Coordination	Frank Spasaro	Marjorie Hamilton, Joy Adams	Paul Carp	Paul Carp
Financing	Frank Spasaro	Gary Levingston, John Fasana	Jeff Gleeson	Jeff Gleeson
WE&T	Rodney Davis	Carlos Hernandez, Cedric Benton	Charles Segerstrom	Charles Segerstrom

Attachment 2:

PG&E's Whole House Performance Program (WHPP)

(Excerpt from approved PIP)

1h) Whole House Performance Program (WHPP), PG&E local program

4) Program Description

a) Describe Program

PG&E's Whole House Performance Program (WHPP) is a new addition to PG&E's 2009-2011 residential energy efficiency portfolio programs aimed at delivering comprehensive improvement packages tailored to the needs of each existing home and its owner.. This program builds on PG&E training on green home energy retrofits provided to contractors through our Energy Training Centers. Specifically, WHPP solicits, screens, and trains qualified residential repair and renovation and HVAC contractors to assemble capable contracting teams and perform whole-house diagnostics, propose a comprehensive improvement package, and complete the improvements. The program also includes marketing activities to help educate customers on program services and provide additional customer leads to trained contractors.

The first phase of the program will conduct pilots of some 200 homes to better understand contractor and homeowner ability to implement recommendations and the energy savings possible using a whole home performance approach. As experience with whole house performs grows, PG&E will refine and enhance program design to increase participation and effectiveness.

WHPP includes incentives targeted to both homeowners and contractors. To offset the cost to homeowners for home performance improvements, WHPP plans to offer bundled incentives for measures installed from a variety of EE programs including rebates offered by the Home Energy Efficiency Survey (HEES), Home Energy Efficiency Rebate (HEER), Appliance Recycling Program (ARP), and other residential EE programs. Contractors will receive an incentive for formal home diagnostics, post-retrofit quality assurance testing, and reporting data on all jobs.

Services to contractors include orientation, technical training, business (marketing and sales) training, field mentoring and support, specialty team building and support, as well as website materials, email newsletters, an online peer group Q&A forum, and a broad range of alliance-building tools.

Furthermore, the program will provide consistent standards and a professional identity in association with the national Home Performance with ENERGY STAR® program.

Program features include the following:

Program Integration: WHPP offers bundled incentives available through other EE programs, and incentives and other support to contractors. It is thus is a perfect demonstration of the Energy Division's request for a comprehensive home improvement program.

Support for LIEE and Non-LIEE Qualifying Low Income Family: WHPP will coordinate activities with the Low-Income Energy Efficiency (LIEE) program to ensure all qualifying LIEE participants are specifically targeted by the program. The WHPP will work with local municipalities to support AB811, to serve the needs of low-income families that do not qualify for LIEE.

b) List of measures

- Thermal load reduction via air sealing, insulation, ventilation, windows.
- Right-sizing and proper installation of HVAC systems, including duct testing and sealing.
- Baseload reduction opportunities such as lighting, plug loads, water heating, and appliances.
- Where applicable, solar water heating, photovoltaic (PV) installations, self-generation, and demand response applications.
- Leveraging of rebates and services from HEES, HEER, ARP and other EE program measures to maximize savings.

c) List non-incentive customer services

The Program offers technical training and field mentoring to improve basic contractor skills and introduce energy efficient home repair and renovation practices. The business and marketing seminar/training will educate contractors on the most effective way of selling home performance tools and techniques to customers.

5) Program Rationale and Expected Outcome

WHPP is designed to offer a one-stop approach for whole house energy efficient improvements and motivate maximum energy efficiency actions within the same household. The program leverages all existing residential programs that offer measure-specific applications. To ensure quality of service, the program offers contractors technical, business/marketing, and mentoring services, all packaged under a recognized national brand name of Home Performance with ENERGY STAR® program.

The current WHPP program design does not specifically support the Strategic Plan as indicated in the Energy Division's (ED's) comments. For example, we do not at this time require the WHPP participants to reduce their 2008 purchased energy levels by either 30% or 70%. The program is designed to work in conjunction with participants' ability to pay. That is, implementation plans are modified to focus on the measures the homeowner can afford.

The program team has already learned that the current incentive level is insufficient to induce many necessary EE actions. To accomplish these deep energy reduction goals, the program

exceed the participant's ability to afford. This issue cannot be resolved in the scope of this PIP. The PG&E program team would like to enlist ED's assistance to work on these issues.

a) Quantitative Baseline and Market Transformation Information

See 5. a. above.

b) Market Transformation Information

See 5. b. above.

c) Program Design to Overcome Barriers

PG&E expects this new program to encounter barriers, such as those described below. The program management will work with contractors, homeowners, and other partners to continually enhance program design to overcome these barriers.

Insufficient Incentive Level for Contractors to Submit Report for Program Tracking:
Based on the experience through the contractor training sessions, PG&E received a diminutive amount of complete Home Performance reports from participating contractors without the incentive in place. The Program recognizes that the incentive to the contractors is essential to increase the submissions of completed reports from participating contractors. The program manager and vendor will also brainstorm a way of increasing the accountability/knowledge of participating contractors for turning in complete reports to overcome these barriers.

Insufficient Incentive for End Users:
While it is too early to draw this conclusion, there remains the strong possibility that the homeowner incentive is insufficient to induce investment in the home performance improvements. To achieve the deep energy savings desired by the CPUC, the end users must be willing to take nearly all actions recommended by the audits and contractors, which may present economic feasibility issues. We are currently working with the implementers to come up with alternative ways to address this key issue. One concept may be to provide additional incentives for multiple barriers that together provide increased energy savings (such as energy efficiency measures that, combined, decrease the size of home HVAC systems). In addition, WHPP could create specific rebates related to building envelope improvements.

Possibility of Contractor Withdrawal from Program:
It is too early to tell if this program could be scaled up significantly and quickly. The availability of qualifying contractors and their ability to complete the training classes and projects are also critical issues for the program.

d) Quantitative Program Targets

The program aims to achieve the following targets:

Table 5

See Table 5 above.

e) Advancing Strategic Plan goals and objectives

This program responds to the need for deeper energy savings in existing homes than is possible with conventional checklist audits or single-measure improvement (prescriptive) programs. The WHPP program design meets many of the program elements specified by the Energy Division and it is consist with the requirements of the Strategic Plan.

Goal 2: Existing Homes

Strategy 2-1: Deploy full-scale whole house programs.
WHPP addresses this strategy by influencing homeowner "decision triggers" to improving home energy efficiency and understand advantages to expand participation to maximize energy efficiency goals.

Strategy 2-4: : Develop financial products and programs such as on-bill financing to encourage demand for energy efficiency building products, homes systems, and appliances.

WHPP will support this goal by training contractors on the financing options so that they can make customers aware of the options independently available in the market place.

Strategy 2-5: Increase Title 24 compliance through specific measures leading to aggressive statewide enforcement.

WHPP will explore providing additional incentives to those contractors and customers who go beyond the basic program criteria so that there is a demand for higher efficiency.

6) Program Implementation

a) Statewide IOU Coordination: \\

Whole House Performance Program is one of the core sub-programs in PG&E's territory. In addition to collaborating with other IOUs' Home Performance Programs, this Program will seek integration opportunities with various local and government partnerships programs, wherever applicable. This collaboration will provide an opportunity for a cost-effective program while increasing program comprehensiveness. PG&E has been active in discussions with the other California IOUs and active POUs (SMUD and Anaheim

Public Utilities) in planning Home Performance programs. As program develops, statewide coordination and consistency will be considered as applicable.

California Building Performance Contractors Association (CBPCA) will implement the program pilot in collaboration with other IOUs and with PG&E's residential program team. Implementation will include coordination with ENERGY STAR, California Energy Commission (CEC)/PIER for needed R&D, and a variety of other allies and stakeholder groups. WHPP will be implemented in alignment with all applicable research, best practices, and policy movements. The activities discussed below are part of the program implementation design.

Contractor solicitation and screening

The Program uses contractor lists provided by organizations that are actively involved with the existing training program, such as CBPCA and the existing HVAC programs and such organizations as the Verifying Service Providers (VSP), Air Conditioning Contractors of America (ACCA), National Association of the Remodeling Industry (NARI), California Home Energy Efficiency Rating Services (CHEERS), Build It Green (BIG), Building Performance Institute (BPI) Insulation Contractors of America (ICA), and various solar groups. WHPP will have a presence at key local and statewide conferences, seminars, city and county events and fairs to advertise directly to interested contractors. WHPP includes personal screening interviews to assure active interest and dissemination of the scope and intent of the training.

Technical training and field mentoring

Training and mentoring activities will include the following:

- Training to improve basic contractor skills and introduce the basic concepts of energy-efficient home repair and renovation practices
- Training in building science, home assessment, and proper remediation, including an intensive day of in-home hands-on diagnostic practice
- Advanced training with an additional day in an actual home, and access to Building Performance Institute (BPI) technical certification
- Small-group field mentoring in technical and proposal development activities

Contractor business support

Many contractors are not successful with comprehensive home performance due to business, rather than technical, challenges. Business barriers range from staff training and motivation to team-building, work process scheduling and management, quality control, marketing, job estimation, sales and support from energy efficiency program administrators. At least two annual seminars in these business matters will be offered, as will a broad range of supporting materials, such as data collection and homeowner report templates and regular monitoring of contractor activity. Contractors will be offered business planning guidance as needed, including help in grouping complementary trades and interests into fully job-capable teams.

Incentives
WHPP plans to offer financial incentives to both contractors and customers. Contractors will receive a financial incentive for home diagnostics, post-retrofit quality assurance testing, and reporting of data. Customers will receive financial incentive for installing Home Performance measures performed by an eligible WHPP contractor. As cited in the program barriers section above, we are aware the current incentive levels are not sufficient to bring the desired program results. We are currently working with the implementers to come up with alternative ways to address this key issue.

Data collection, quality assurance and reporting
Energy simulation models will be combined with utility bill data for calibration during a project. To assure contractor reporting, the payment of customer incentives will be tied to the contractor's delivery of full job data, utility bills, and homeowner report. As required by ENERGY STAR, the Program's implementers will randomly select 5 percent of each contractor's reported retrofits for on-site job verification and review 100 percent of the job data inputs from contractors. Verifications will include homeowner interviews, intensive visual checklist inspections, and selective retesting of key items. A subset of these energy savings estimates may later be validated against the first year's after-retrofit utility bills plus climate data and homeowner interviews as needed to identify changes in other factors affecting energy use.

Marketing/ implementation methods employed
Contractors will be instructed in cost-effective marketing methods. Media attention will be gained through free home retrofit contests. PG&E may assist in media outreach and provide customer billing data to help identify and approach priority candidates. Realtors will be engaged as lead generators to identify clients of interest. Other groups will be engaged as appropriate. The program will coordinate, as applicable, with PG&E's marketing activities and may include website links, bill inserts, press releases, referrals, and information in marketing collateral.

Activities to be performed by subcontractors
A subcontractor will be involved in specifying, staffing, scheduling, and general oversight of CBPCA activities. A selected group of trainers and contractors will assist the subcontracted lead trainer with technical training and mentoring activities. Job verifications are assigned to qualified experts, such as HERS raters. Other subcontractors will provide marketing assistance, promotional materials, energy simulation software support

AB811
The Program will look for opportunities, through AB811, to work with local governments in installing energy efficiency improvements to residential properties and making those improvements more affordable.

b) Program delivery and coordination

i. Emerging Technologies program

This comprehensive retrofit program is an ideal early-adopter vehicle for new technologies, such as the hot/dry air conditioners, energy use monitors for users, new approaches to hydronic heating, ecological insulation options, cool roof technologies, and even advanced solar hot water and PV installations.

ii. Codes and Standards program

The 2008 Title 24 code revision is highly relevant to this program's work. New requirements, as well as adequate enforcement and compliance with older 2005 provisions (notably HVAC quality installation), will be required, monitored, and reported in this program. WHPP will be coordinated with the Codes & Standards program to ensure that the impacts of any code changes are incorporated into program design and implementation.

iii. WE&T efforts

This program is coordinated with the WE&T Strategic Plan. WHPP's unique approach towards developing qualified home retrofits technicians will lead to significant progress in the reduction of residential energy consumption over the next decade.

iv. Program-specific marketing and outreach efforts

A marketing campaign will be structured to continuously solicit contractors and market to customers throughout the life of the program. Marketing efforts will be conducted using the following approach:

- Marketing to Contractors: The Program will market to contractors, through local chapters of various trade associations, plus targeted commercial contact databases.
- Marketing to the Customers: WHPP empowers trained contractors to be the primary public educator and marketer. Its consumer marketing and education efforts help contractors develop and manage the customer leads that provide the necessary path to specific home performance jobs. WHPP will participate in select public events such as home shows and work with local media to publicize the program's benefits. WHPP will also market via direct mailing, brochures, and bill inserts to create interests of the Program.

The budget for these activities is included in the overall budget for this program.

v. Non-energy activities of program

A truly comprehensive home retrofit includes some elements chosen by the homeowner primarily for reasons other than energy bill savings, such as indoor air quality improvement, noise abatement, or structural enhancements. When building envelope enhancements are made, the homeowner typically receives not just energy improvements, but also health benefits, home integrity assurance from moisture, HVAC equipment longevity, and potential home value increase. At the program level, implementers review projects to identify and encourage all project components that contribute to energy savings as well as other benefits. At an individual project level, contractors seek to identify homeowner's desires, solve a full range of Home Performance deficiencies, and clearly explain how these deficiencies contribute to energy waste.

- Non-IOU Programs: The program will be open to suggestion from non-IOU Programs in order to achieve the Program's objectives. As noted above, WHPP will coordinate with a number of organizations, such as CBPCA, VSP, ACCA, NARI, BIG, ICA, BPI, CHEERS, and various solar groups. In addition, WHPP rebates could be used to help contractors participating in the 1,000 Home Challenge achieve deep energy savings. The 1000 Home Challenge is sponsored by the non-profit Affordable Comfort Inc. to demonstrate strategies to achieve 75% reduction in the overall consumption of existing homes. WHPP will also have a presence at key local and statewide conferences, seminars, city and county events and fairs to advertise directly to interested contractors.

vi. CEC work on PIER

PIER funded the development of Home Performance contracting protocols during 2003-2006. That program provided field testing and contractor feedback for the PIER project. In addition, PIER may fund further research into related topics, including homeowner motivation, valuation of societal benefits, and comparative demonstration and analysis of methods for energy savings forecasting and verifications.

vii. CEC work on codes and standards

See section 6.b.ii.

viii. Non-utility market initiatives

WHPP coordinates and fulfills Home Performance with ENERGY STAR requirements, and its contractors are allowed to display the ENERGY STAR logo in their home performance marketing. CBPCA is actively allied with Build it Green and the U.S. Green Building Council, and provides energy related training and support to "green remodelers" in those organizations. The Lung Association's "Health House" program is another ally in promotion of whole house solutions. CBPCA is also involved in the Berkeley Solar Plan's efforts to incorporate

substantial energy efficiency improvements and options such as whole house retrofits into solar installations.

c) Best Practices

The Program offers a 9-day intensive Home Performance training for contractors who are interested in adding a Home Performance aspect to their contracting business. Contractors attend classroom training and gain hands-on experience in using many advanced tools to asses a home's condition. Mentoring sessions are also conducted to help the contractor absorb more knowledge from professionals with subject matter experience.

Contractors will be offered the opportunity to attend a business/marketing seminar to successfully add the Home Performance aspect to their business and provide a business planning guide as needed.

Through experience both in PG&E's Green Home Retrofit Training sessions and similar Home Performance with ENERGY STAR efforts elsewhere, a variety of lessons have been drawn that permit some key design refinements.

- Incentives are necessary to overcome the broad lack of market awareness of comprehensive energy retrofit opportunities and benefits.
- Contractors need incentives to create early demand and help the business model transition to Home Performance contracting.
- Incentives need to be tied to job pre/post-testing data to overcome contractor resistance to "paperwork" and the complexity of comprehensive testing.

d) Innovation

This Program is innovative because it takes a whole-house, rather than a prescriptive, approach. It offers the highest possible electric and gas savings per home due to its comprehensiveness. The improvement package is tailored to the needs of each existing home and its owner, which minimizes lost opportunities.

e) Integrated/coordinated Demand Side Management

This Program will create additional energy savings and integration through inter-program referral and data sharing, and bundling of DSM solutions across energy efficiency, demand response, California Solar Initiative, Smart Meter, and other IDSM efforts.

f) Integration across Resource Types

This Program will be able to integrate across resource types, from energy to air quality. Customer who completes a Home Performance retrofit will not only improve their indoor

air quality but also the outdoor air quality by reducing the carbon footprint of their home from making it more energy efficient.

g) Pilots

The first phase of WHPP—focused on 200 homes—will serve as a pilot to guide the design of future program phases. As information from this effort is gathered and analyzed, PG&E plans to prepare a "draft" *Baseline Market and Energy Use Characterization* and *List of Key Performance Indicators*. This draft will provide the data and intelligence needed to help PG&E improve WHPP and will aid in program evaluation.

Specifically, the *Baseline Market and Energy Use Characterization* analysis will help provide population and housing stock demographics including predominant age and style of homes, energy usage, homeowner income and buying habits, and projected cost-effective energy improvements, existing local contractor environment, number of contractors skilled in residential energy assessment, local licensing requirements, and contractor training opportunities. *Key Performance Indicators* will help collect a set of metrics, customers, measures installed and other important information for tracking market changes in PG&E territory that can be attributed to program actions.

h) EM&V

The utilities plan to work together and with the Energy Division to develop a complete plan for 2009-2011 studies and budgets after the program plans are finalized and filed. This plan will be submitted to the CPUC in time for approval along with the Program Implementation Plans.

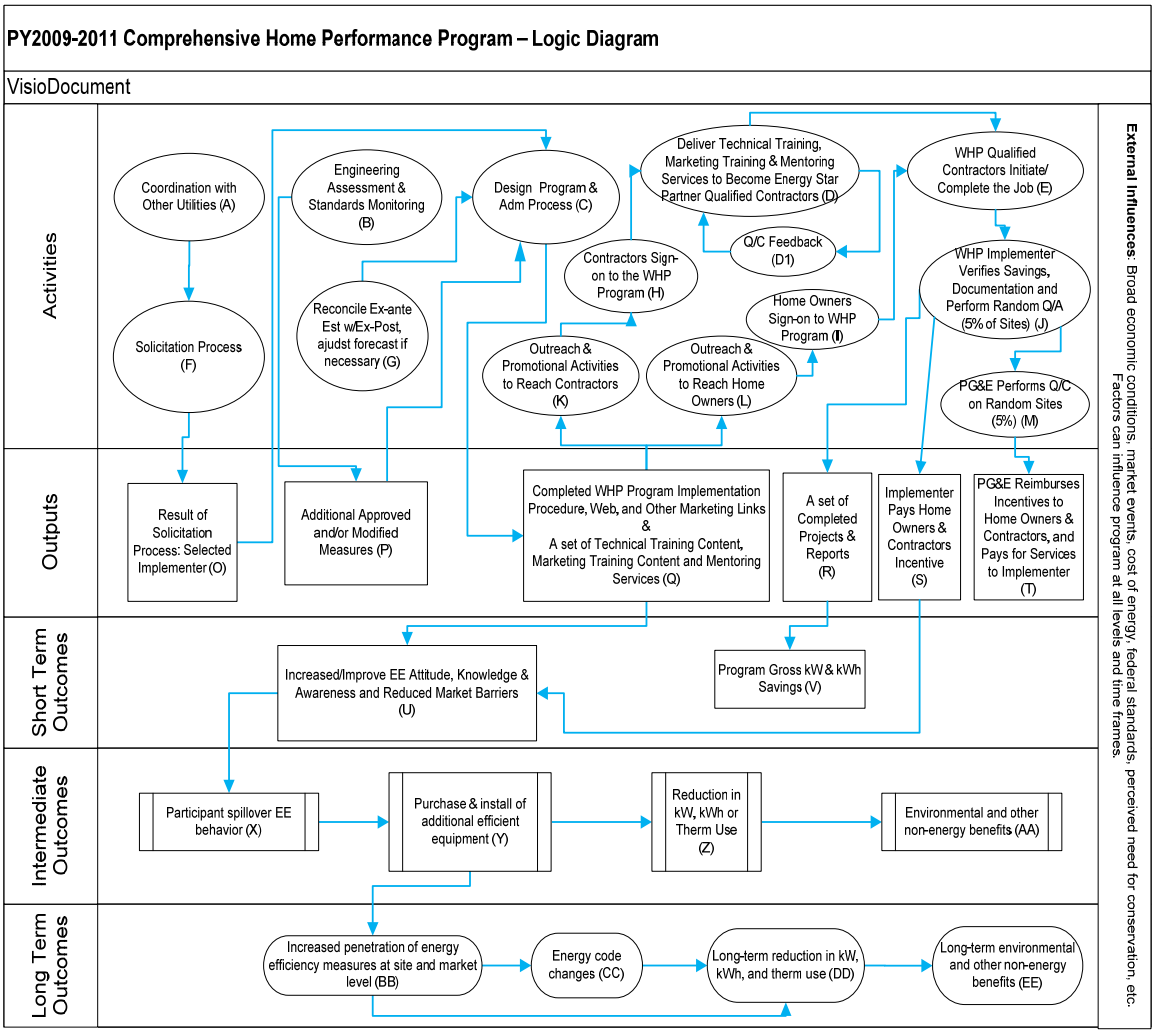
Detailed plans for process evaluations and other evaluation efforts specific to this program will be developed after the final program design is approved by the CPUC and program implementation has begun, since final plans will be based on identified program design and implementation issues and questions. However, a brief description of the current, preliminary plans is provided below:

- Work with ED to develop market transformation baseline and metrics,
- Conduct process evaluation to track the all proposed key metrics,
- Conduct SCE specific process evaluation to improve program design, implementation and market effectiveness.

7) Diagram of Program

Whole House Performance Program						
Residential Customers		**Services for Contractors**		**All Residential Programs**		**Outside Programs/Actors**
• Menu of EE Home Options • Access to Rebates	<	• Technical Training • Business/ Marketing Training • Mentoring Services	<	• Home EE Surveys • Appliance Recycling • Home EE Rebates • Multifamily EE Rebates • Basic Consumer Lighting Program • Advanced Consumer Lighting Program • Business and Consumer Electronics	<	• WE&T Programs • Emerging Technologies and PIER • Codes and Standards • CEC and Other CA Organizations • DOE/National Organizations • Legislation • Other IDSM Programs

8) Program Logic Model



Attachment 3:

SCE's Comprehensive Home Performance Program (CHP)

(Excerpt from approved PIP)

Residential: Comprehensive Home Performance

1. **Program Name:** Comprehensive Home Performance
   Program ID: SCE-TP-003
   Program Type: Third party

2. **Projected Program Budget Table**

Table 1[1]

SCE-TP-003	Main Program Name / Sub-Program	Total Administrative Cost (Actual)	Total Marketing & Outreach (Actual)	Total Direct Implementation (Actual)	Integration Budget Allocated to other Programs (If Applicable)	Total Budget By Program (Actual)
RESIDENTIAL						
	Comprehensive Home Performance	$ 662,716	$ 9,000	$ 2,694,284		$ 3,366,000
	TOTAL:	$ 662,716	$ 9,000	$ 2,694,284	$ -	$ 3,366,000

3. **Projected Program Gross Impacts Table – by calendar year**

Table 2

SCE-TP-003	Comprehensive Home Performance	2009-11 EE Program Gross kWh Savings	2009-11 EE Program Gross kW Savings	2009-11 EE Program Gross Therm Savings
	Comprehensive Home Performance	1,176,146	1,304	-
	TOTAL	**1,176,146**	**1,304**	-

4. **Program Description**

   a) **Describe program**

SCE's Comprehensive Home Performance program (CHP) is a new addition to the 2009-2011 residential energy efficiency portfolio and is based on the successful 2006-2008 IDEEA pilot Comprehensive Home Performance delivery program. The CHP delivers comprehensive improvement packages tailored to the needs of each existing home and its owner.

The CHP solicits, screens, and trains qualified residential repair, renovation and HVAC contractors so it can assemble a capable contracting team to perform whole-house diagnostics, develop a comprehensive improvement package, complete the recommended improvements, and verify and report overall results. The program also

[1] Definition of Table 1 Column Headings:
Total Administrative Cost includes all Managerial and Clerical Labor, Human Resource Support and Development, Travel and Conference Fees, and General and Administrative Overhead (labor and materials).
Total Direct Implementation – includes all financial incentives used to promote participation in a program and the cost of all direct labor, installation and service labor, hardware and materials, and rebate processing and inspection used to promote participation in a program.
Total Marketing & Outreach includes all media buy costs and labor associated with marketing production.
Integrated Budget Allocated to Other Programs includes budget utilized to coordinate with other EE, DR, or DG programs.
Total Budget is the sum of all other columns presented here
Sub-Program: A "sub-program" of a program has a specific title; targets; budget; uses a unique delivery or marketing approach not used across the entire program; and for resource programs, has specific estimated savings and demand impacts.

includes marketing activities to help educate customers on other DSM programs and services to motivate homeowners toward deeper energy savings.

Incentives will be available to offset the homeowners cost for home performance improvements. The CHP offers rebates for various measures installed through CHP-specific rebates and rebates offered by other DSM programs; e.g., Home Energy Efficiency Rebate (HEER), Appliance Recycling Program (ARP), Comprehensive HVAC, California Solar Initiative (CSI) and Summer Discount Plan (SDP). Contractors will also receive an incentive for completing formal home diagnostics, post-retrofit quality assurance testing, and reporting data on all jobs. Furthermore, the program will provide consistent standards of professional branding associated with the DOE/EPA's Home Performance with ENERGY STAR® programs.

CHP provides the participating contractors a full range of services including technical training, business (marketing and sales) training, field mentoring, specialty team building and support. The extensive program support includes website materials, email newsletters, an online peer group Q&A forum, and a broad range of alliance-building tools.

b) List measures

SCE and SCG are working to develop the most appropriate level of incentives for CHP.

Customer Incentive Table A

SCE Measures
Thermal load reduction via air sealing, insulation, ventilation, windows, etc.
Right-sizing and proper installation of HVAC systems, including duct sealing.
Baseload reduction opportunities such as lighting, plug loads, water heating, and appliances.
Where applicable - solar water heating, photovoltaic (PV) installations, self generation, demand response applications.

Customer Incentive Table B

SCG Measures
Faucet aerators,
Low-flow showerheads, water heater pipe wrap,
Filter tone insulated siding

Contractor Incentive Table C

Incentives to Contractors
Upon completion of project and acceptance of final project reporting
Additional contractor incentive upon the 5th site completed

c) List non-incentive customer services

The program offers technical, business/marketing training sessions and field mentoring services. The technical training and field mentoring are used to improve basic contractor skills and to introduce the basic concept of energy-efficient home repair and renovation practices. Business/marketing seminars will be offered to help contractors learn the most effective way of selling home performance to customers. The program will also implement an extensive marketing and outreach campaign to recruit contractors and also educate home owners about the benefits of home performance.

5. Program Rationale and Expected Outcome

The program is designed to reinforce a customer's willingness to participate in comprehensive home improvements by providing a one-stop resource for whole-house energy-efficient improvements. In addition to enhancing the supply of building science professionals who are qualified to provide and document deep energy savings during extensive retrofits, this program also leverages all existing residential programs that offer measure-specific applications. The program is designed to influence the maximum energy efficiency improvements of a household through a series of incentives to help offset participant costs.

To ensure a quality level of service, the program offers contractor technical, business/marketing, and mentoring services, all packaged under a recognized national brand name of Home Performance with ENERGY STAR®.

Participants are also able to receive rebates through SCE's other programs, such as HEER, ARP, CSI, and other DSM programs, to induce maximum energy efficiency actions within the same household. Program controls are in place to ensure that benefits claimed by CHP are not claimed elsewhere within the portfolio.

a) Quantitative Baseline and Market Transformation Information

The Market Transformation (MT) metrics discussion has been fully developed, cited, and presented within Sections 5a and 5b of SCE's statewide and local Exhibits 3A, 3B and 4, and will not be repeated here. Refer to the corresponding discussion within SCE's Exhibits for details.

In summary, considerable research supports the notion that MT metrics should neither be used for short-term analyses nor for specific program analyses; rather, should focus on broad market segments. By its nature, market transformation occurs as a result of numerous factors, and can not be directly attributed to all program efforts. Market transformation metrics cannot be readily offered for this program at present.

Table 3 – Quantitative baseline metrics cannot be readily offered for this program

b) Market Transformation Information

Market transformation draws heavily upon diffusion of innovation theory, with the state of a market characterized by adoption rate plotted against time on the well-

known S-shaped diffusion curve. In practice, however, the diffusion curve of products may span decades. Market share tracking studies conducted 3, 5 or even 10 years after the start of an MT program may reveal only small market transformation effects. Therefore it is problematic, if not impractical, to offer internal annual milestones towards market transformation sectors and specific program activities.

By its nature, market transformation occurs as a result of numerous factors, and can not be directly attributed to all program efforts. Market transformation metrics cannot be readily offered for this program at present.

Table 4 – Market transformation metrics cannot be readily offered for this program

c) Program Design to Overcome Barriers

The CHP program is designed to offer a one-stop approach for whole-house energy-efficient improvements. CHP addresses several barriers in the existing home retrofit marketplace, identified as important to move California toward deep energy reductions in the residential housing stock, as identified in the Strategic Plan. First, there is a need for contractors qualified in the building sciences to thoroughly assess the energy savings potential within dwellings and present comprehensive recommendations to homeowners to improve not only their energy intensity, but their overall comfort as well. Second, there is a need for contractors who are qualified to deliver comprehensive retrofits to understand basic business and marketing practices that will enable them to grow their enterprise in ways that can reach more consumers. Third, there is a need to build the demand for comprehensive home retrofits such that greater numbers of contractors enter into the field to continually drive greater energy savings.

To address the first and second barrier, CHP recruits, trains and supports contractors as they develop their comprehensive home retrofit businesses. To ensure quality of service, the program offers contractor technical, business/marketing, and mentoring services, all packaged under a recognized national brand name of the Home Performance with ENERGY STAR® program.

To improve the demand for comprehensive home retrofits, CHP offers a range of incentives to participating customers. In addition, CHP and home performance providers highlight many of the non-energy benefits to customer participants such as improvements that can influence their health, safety and overall comfort.

d) Quantitative Program Targets

The program will work toward achieving the following targets over the three-year program cycle. The proposed targets may be modified due to funding restrictions, especially for the 2009 bridge funding year.

Table 5

	Program Target by 2009	Program Target by 2010	Program Target by 2011
Target 1: Enrolled and Completed Homes Retrofit Projects	300	495	705
Target 2: Completed Home Performance Technical Training Classes	2	3	2
Target 3: Completed Business/Marketing Seminars	2	2	2

e) Advancing Strategic Plan goals and objectives

This program responds to the need for more progressive approaches to energy savings in existing homes than is possible with conventional checklist audits or single measure improvement (prescriptive) programs. The CHP program design is consistent with the requirements of the Strategic Plan. It addresses a key "whole-house" strategy of the Strategic Plan by influencing homeowner "decision triggers" to increased participation in comprehensive energy efficiency measures.

The program will help to achieve the following near-term strategic goals identified in Section 2 of the Strategic Plan:

- *2-1: Deploy full-scale Whole-House programs*: The program will target the existing housing market segment and deliver comprehensive DSM options.
- *2-2: Promote effective decision-making to create widespread demand for energy efficiency measures*: The program plans to conduct process evaluations and other evaluation efforts to better identify customer decision triggers for choosing highly energy-efficient devices.
- *2-3: Manage research into new/advanced cost-effective innovations to reduce energy use in existing homes*: The program will work with IOU emerging technology programs for inclusion of, or even field testing of, new technologies, as appropriate.
- *3-2: In coordination with Strategy 2-2, develop public awareness of and demand for highly efficient products*: The program will roll out marketing campaigns to promote the benefits of home performance and promote participation in the program.

6. Program Implementation

a. Statewide IOU Coordination

CHP is a local program in SCE's service territory that will be implemented jointly with SCG. This collaboration will increase the comprehensiveness of the program, while providing an opportunity for a more cost-effective offering. SCE has been in active discussions with the other California IOUs and active California municipalities

(SMUD and Anaheim Public Utilities) in planning Home Performance programs. As the program develops, statewide coordination and consistency will be delivered, as appropriate.

i. **Program name**: Comprehensive Home Performance Program.

ii. **Program delivery mechanism**

The CHP delivers comprehensive improvement packages tailored to the needs of each existing home and its owner. The CHP solicits, screens, and trains qualified residential repair, renovation, and HVAC contractors so it can assemble a capable contracting team to deliver program services, such as performing whole-house diagnostics by proposing a comprehensive improvement package and then completing the recommended improvements. The program also includes marketing activities to help educate customers on program services and provide additional customer leads to trained contractors. Participating contractors will receive an incentive for completing formal home diagnostics, conducting post-retrofit quality assurance testing, and reporting data on all jobs. The CHP will provide consistent standards and professional branding identified in association with the national Home Performance with ENERGY STAR® program.

In addition, CHP provides the participating contractors a full range of services including technical training, business (marketing and sales) training, field mentoring, specialty team building and support. The extensive program support includes website materials, email newsletters, an online peer group Q&A forum, and a broad range of alliance-building tools.

iii. **Incentive levels**

Please refer to section 4(b), above, for incentive levels.

iv. **Marketing and outreach plans**

CHP is planning an extensive and consistent marketing and outreach campaign that will be delivered at exhibits, trade shows, and other appropriate workshops. Contractors and home owners will be educated on the benefits of Home Performance through these trade shows.

v. **IOU program interactions**

The program will coordinate with SCE's Energy Leader Partnerships, California Energy Commission (CEC)/ Public Interest Energy Research (PIER), ARB, AQMD, and others to track new developments at local, state and federal level to make sure the implementer is aware.

vi. **Similar IOU and POU programs**

CHP is based on the 2006-2008 IDEEA program, which was conducted in collaboration with the City of Anaheim's municipal utilities "Home Performance with ENERGY STAR®" campaign. CHP program managers will continue to

collaborate with the City of Anaheim's effort, and other IOU and POU efforts, as appropriate throughout the program delivery.

b. Program delivery and coordination

SCE will implement the program in collaboration with a third-party implementer. Implementation will include coordination with ENERGY STAR®, CEC/PIER for needed research and design, and a variety of other allies. The CHP will be implemented in alignment with all applicable research, best practices, and policy movements. The following activities are part of the program implementation design:

Contractor solicitation and screening:

The program uses contractor lists provided by allied organizations such as the Institute for Heating and Air Conditioning Industries, Air Conditioning Contractors of America, National Association of the Remodeling Industry, Build It Green, Insulation Contractors of America, and solar groups to recruit contractors. It will have a presence at key local conferences such as the Journal of Light Construction's Remodelers Exhibition to advertise the program directly to interested contractors. The CHP includes personal screening interviews to assure active interest and dissemination of the scope and intent of the training.

Training and mentoring activities will include the following:

- Training to improve basic contractor skills and introduce the basic concepts of energy-efficient home repair and renovation practices;
- Training in building science, home assessment, and proper remediation including an intensive day of in-home hands-on diagnostic practice;
- Advanced training with an additional day in an actual home, and access to Building Performance Institute technical certification; and
- Small-group field mentoring in technical and proposal development activities.

Many contractors are not successful with comprehensive home performance due to business, rather than technical, challenges. Business barriers include contractor staff training, team-building, work process management, quality control, marketing, job estimation, and sales. At least two annual seminars in these business matters will be offered, as well as a broad range of supporting materials, such as data collection and homeowner report templates and regular monitoring of contractor activity. Contractors will be offered business planning guidance as needed, including help in grouping complementary trades and interests into fully job-capable teams.

CHP will offer financial incentives to both contractors and customers. Contractors will receive financial incentives for home diagnostics, post-retrofit verification, and reporting of data. Customers will receive financial incentives for installing Home Performance measures performed by an eligible CHP contractor.

Energy simulation models will be combined with utility billing data for calibration for each project. To assure contractor reporting the payment of customer incentives will be tied to the contractor's delivery of full job data, utility bills and homeowner report.

As required by ENERGY STAR®, the program's implementers will randomly select 5 percent of each contractor's reported retrofits for on-site job verification and review 100 percent of the job data inputs from contractors. Verifications will include homeowner interviews, intensive visual checklist inspections, and selective retesting of key items. A subset of these energy savings estimates may later be validated against the first year's after-retrofit utility bills, plus climate data and homeowner interviews, as needed, to identify changes in other factors affecting energy use.

Contractors will be instructed in cost-effective marketing methods. Media attention will be gained through free home retrofit contests. SCE may assist in media outreach and provide customer billing data to help identify and approach priority candidates. Realtors will be engaged as lead generators to identify clients of interest. Other groups will be engaged as appropriate. The program will coordinate, as applicable, with SCE's marketing activities and may include website links, bill inserts, press releases, referrals, and information in marketing collateral.

A subcontractor will be involved in specifying, staffing, scheduling, and general oversight of the program's activities. A selected group of trainers and contractors will assist the subcontracted lead trainer with technical training and mentoring activities. Job verifications are assigned to qualified experts such as C-HERS raters. Other subcontractors will provide marketing assistance, promotional materials, energy simulation software support, etc.

i. Emerging Technologies program

This comprehensive retrofit program is an ideal early-adopter vehicle for new technologies such as the hot/dry air conditioner, energy use monitors for users, new approaches to hydronic heating, ecological insulation options, cool roof technologies, and even advanced solar hot water and PV installations. CHP program managers will work with IOU emerging technology programs for inclusion of, or even field testing of, new technologies, as appropriate.

ii. Codes and Standards program

The 2008 Title 24 code revision is the most relevant to this program's work. CHP will be coordinated with the Codes & Standards program to ensure that the impacts of any code changes are incorporated into program design and implementation.

iii. WE&T efforts

Through its program delivery, CHP offers a unique approach toward the professional training and development of contractors for the delivery of comprehensive home retrofits; it is not directly related to WE&T efforts.

iv. Program-specific marketing and outreach efforts

Marketing campaign will be structured to continuously solicit contractors and market to customers throughout the life of the program. Marketing efforts will be conducted using the following approach:

- Marketing to Contractors: The program will market to contractors, through local chapters of various trade associations, plus targeted commercial contact databases.
- Marketing to Customers: The program marketing strategy involves empowering the trained contractors to be the primary public educators and marketers. These consumer marketing and education efforts will help contractors develop and manage the customer leads that provide the necessary path to specific home performance jobs. This program will also target customers who have participated in utility audit programs to further increase the opportunity for a more comprehensive approach in meeting the customer's energy efficiency needs. The program will participate in select public events, such as home shows, and work with local media to publicize the program's benefits. CHP will also market via direct mailing, brochures, and bill inserts to create interests of the program.

v. Non-energy activities of program

A truly comprehensive home retrofit includes some elements that are chosen by the homeowner primarily for reasons other than energy bill savings, such as indoor air quality, noise abatement, or structural deterioration problems. When building envelope enhancements are made, the homeowner typically also receives health benefits, home integrity assurance from moisture problems, HVAC equipment longevity, and potential home value increase. At the program level, implementers review projects to identify and encourage all project components that contribute to energy savings as well as other benefits. At an individual project level, contractors seek to identify homeowners' desires, solve a full range of Home Performance deficiencies, and clearly explain how these deficiencies contribute to energy waste.

vi. Non-IOU programs

CHP is marketed and implemented under the umbrella of the "Home Performance with ENERGY STAR®" campaign. CHP staff will communicate with ENERGY STAR® program sponsors throughout the program cycle to continue to adopt and refine best practices in program delivery.

vii. CEC work on PIER

PIER funded the development of Home Performance contracting protocols during 2003-2006. That program provided field testing and contractor feedback for the PIER project. In addition, PIER may fund further research into related topics including homeowner motivation, valuation of societal benefits, and comparative demonstration and analysis of methods for energy savings forecasting and verifications.

viii. CEC work on Codes and Standards

The 2008 Title 24 code revision is the most relevant to this program's work. CHP will be coordinated with the Codes & Standards program to ensure that the

impacts of any code changes are incorporated into program design and implementation.

ix. Non-utility market initiatives

CHP coordinates and fulfills Home Performance with ENERGY STAR® requirements, and its contractors are allowed to display the ENERGY STAR® logo in their home performance marketing. The program is actively allied with Build It Green and the U.S. Green Building Council, and provides energy-related training and support to "green remodelers" in those organizations. The Lung Association's "Health House" program is another ally in promotion of whole-house solutions. The program implementer is also involved in the Berkeley Solar Plan's efforts to incorporate substantial energy efficiency improvements and options such as whole house retrofits into solar installations.

c. Best Practices

Much was learned during the 2006-2008 IDEEA pilot program cycle that will be incorporated in the 2009-2011 campaign. Lessons learned include: reinforcing the accountability of contractors for the collection of completed reports upon completion of a job, and attracting more customers to participate in comprehensive home retrofits. These lessons, plus other tactics that will better enable contractors to grow their businesses, will be employed during 2009-2011.

Through experience both in SCE's CHP and in similar Home Performance with ENERGY STAR® efforts elsewhere, a variety of lessons have been drawn that permit some key design refinements. These include:

- Customer incentives are necessary to overcome the broad lack of market awareness of comprehensive energy retrofit opportunities and benefits;
- Contractor incentives are needed to assist transitioning home improvement businesses towards more comprehensive Home Performance contracting; and
- Incentives need to be tied to pre- and post-testing data to motivate contractors to complete the reporting process.

In addition, the program's approach to training contractor participants has been refined during the 2006-2008 program cycle. These refinements have led to the enhancement of training sessions to best suit the needs of participants in properly assessing sites and recommending solutions to address deficiencies of an existing home, while reinforcing a higher quality standard of installation. Contractors attend classroom training and also learn "hands on" approaches to use of many of the advanced tools necessary to assess a home's condition. Mentoring sessions are also conducted in order for the contractors to absorb more knowledge from professionals who have experience in the subject matter.

Contractor participants are also offered a business/marketing seminar to assist them in developing the business skills necessary to grow their Home Performance business. A business planning guide will be provided, as needed.

d. Innovation

This program is innovative because it addresses both supply and demand side deficiencies of the existing home retrofit marketplace to motivate activities necessary toward achieving deep energy reductions in the area of existing housing stock. CHP takes a whole-house approach instead of a "prescriptive" approach to offering bundled solutions to homeowners, and due to its comprehensiveness offers the highest possible electric, gas, and water savings per home. The improvement package is tailored to the needs of each existing home and its owner which minimizes lost opportunities.

e. Integrated/coordinated Demand Side Management

The IOUs have identified IDSM as an important priority. As a result, they have proposed the establishment of a Statewide Integration Task Force (Task Force). The utility plans to monitor the progress of the other IDSM efforts and to work closely with the Task Force to identify comprehensive integration approaches that feed into the overall statewide strategy and to implement best practices as rapidly as practical.

f. Integration across resource types (energy, water, air quality, etc)

As this program delivers comprehensive solutions to home owners, it has been specifically designed to integrate across resource types to maximize customer benefits not only in terms of deep energy savings, but also as a means to improve occupant health, safety and comfort. These extra-energy efforts include opportunities for water reductions, indoor air quality improvements, and the like. At present the CHP only provides incentives for electricity and gas savings, but will work with local water agencies, as appropriate, to improve customer benefits and improve participation.

g. Pilots

For the 2009-2011 program years, the program team will assess program growth and development to streamline implementation and explore new avenues to tap the existing home retrofit market.

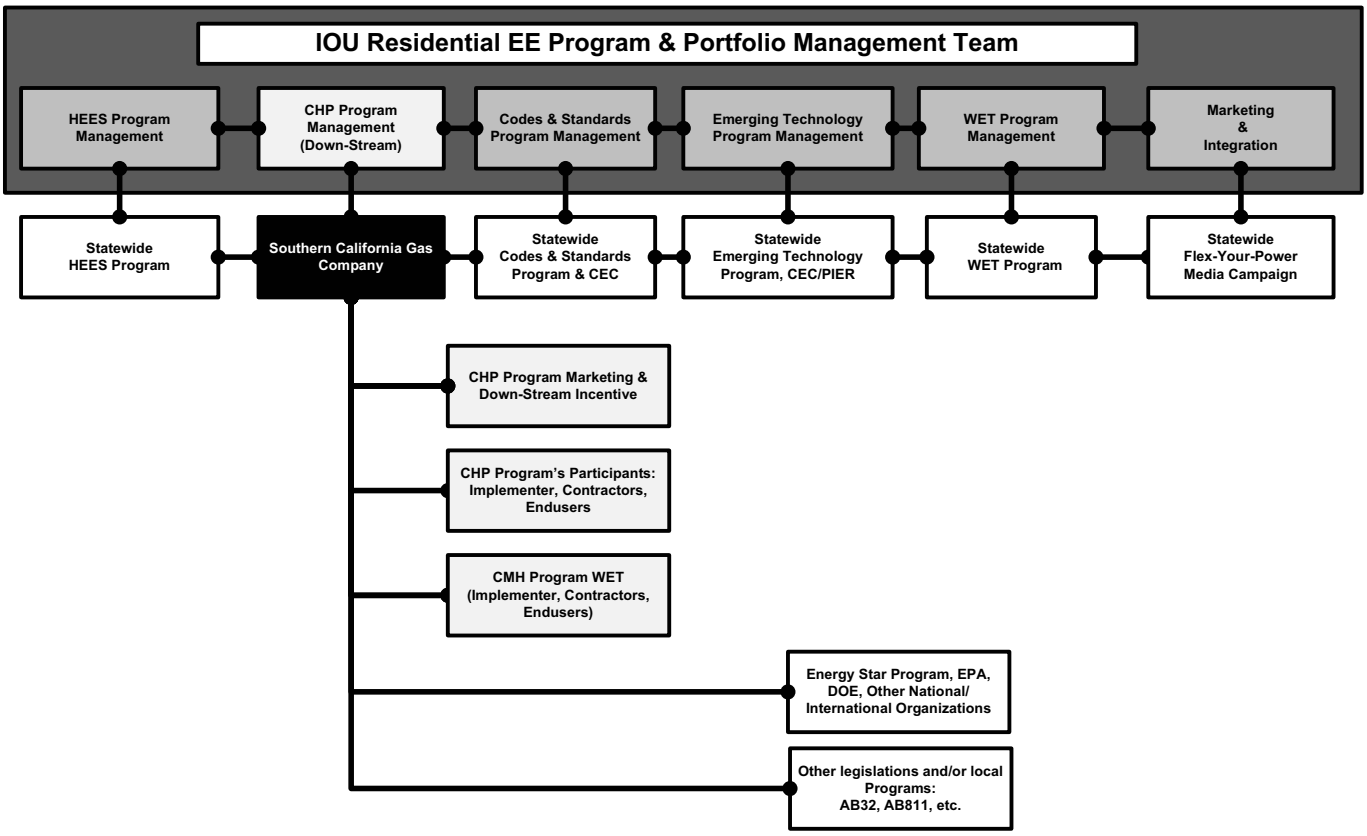
The program will also explore the concept of addressing the large number of homes in foreclosure brought about by the present economic crisis. The concept of revitalizing distressed homes may be a unique way to reduce lost opportunities in reaching large numbers of unoccupied homes. With participation from financial institutions and coordination from IOU Energy Leader Partnerships, this program could provide a new market to attract contractor participants to the program. Furthermore, with the support of local governments, the costs of these retrofits may be largely financed through a combination of federal of state programs through actors such as the Department of Housing and Urban Development (HUD) plus local community support enabled by AB 811[2]. As such, a Distressed Home Revitalization Pilot (DHRP) is under development between EE program staff, local government partners, implementers and other stakeholders.

[2] http://info.sen.ca.gov/pub/07-08/bill/asm/ab_0801-0850/ab_811_bill_20080721_chaptered.pdf.

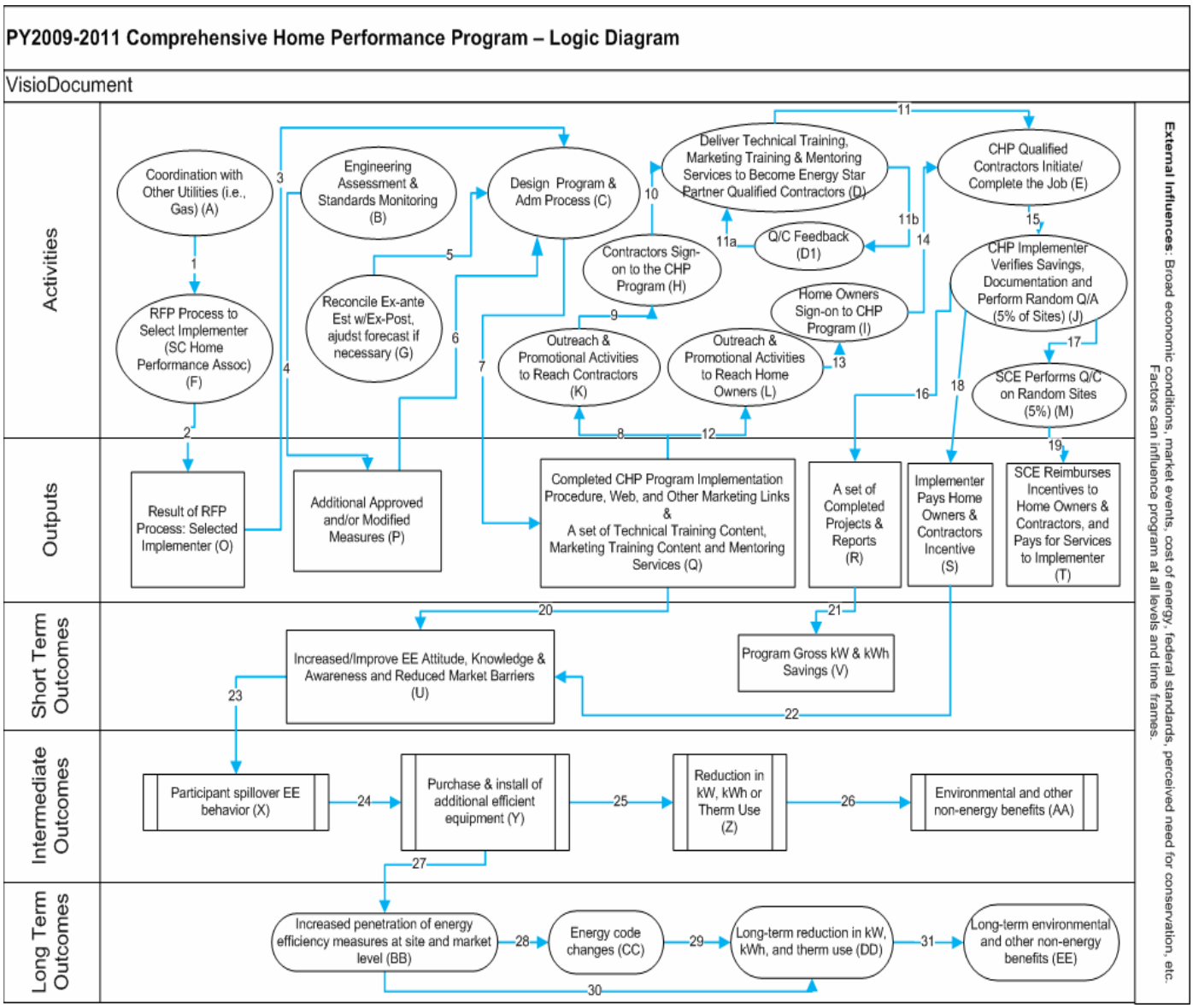
h. EM&V

The utilities are proposing to work with the Energy Division to develop and submit a comprehensive EM&V Plan for 2009-2011 after the program implementation plans are filed. This will include process evaluations and other program-specific studies within the context of broader utility and Energy Division studies. More detailed plans for process evaluation and other program-specific evaluation efforts cannot be developed until after the final program design is approved by the CPUC and in many cases after program implementation has begun, since plans need to be based on identified program design and implementation issues.

7. Diagram of Program Interaction



8. Logic Model



Attachment 4:

SDG&E's Comprehensive Home Performance Program (CHPP)

(Excerpt from approved PIP)

2010-2012 Energy Efficiency Programs
Comprehensive Home Performance
Program Implementation Plan

1) Program Name and Program ID number

Program Name: Comprehensive Home Performance Program (CHPP)
Program ID number: TBD

2) Projected Program Budget Table

Table 1[1]

Program #		Total Administrative Cost (Actual)	Total Marketing & Outreach (Actual)	TOTAL Direct Implementation	Integration Budget Allocated to Other Programs (if Applicable)	Total Budget By Program (Actual)
Market Sector Programs - Residential						
	Local Programs					
	Local01 - Local Whole House Perfomance	221,476	112,613	1,677,544	0	2,011,633

These budget numbers are presented in the Energy Division Tables, Graphs Pie Charts: Table 7.1

3) Projected Program Gross Impacts Table

Table 2

Program #	SDG&E	2010-2012 Three-Year EE Program Gross kWh Savings	2010-2012 Three-Year EE Program Gross kW Savings	2010-2012 Three-Year EE Program Gross Therm Savings
Market Sector Program - Residential				
	Local01 - Local Whole House Perfomance	**640,947**	**468**	**72,532**
	TOTAL:	**640,947**	**468**	**72,532**

These savings values are presented in the Energy Division Tables, Graphs & Pie Charts: Table 7.2

4) Program Description

a) Describe Program

[1] Definition of Table 1 Column Headings: Total Budget is the sum of all other columns presented here
Total Administrative Cost includes all Managerial and Clerical Labor, Human Resource Support and Development, Travel and Conference Fees, and General and Administrative Overhead (labor and materials).
Total Direct Implementation – includes all financial incentives used to promote participation in a program and the cost of all direct labor, installation and service labor, hardware and materials, and rebate processing and inspection used to promote participation in a program.
Total Marketing & Outreach includes all media buy costs and labor associated with marketing production.
Integrated Budget Allocated to Other Programs includes budget utilized to coordinate with other EE, DR, or DG programs.
Total Budget is the sum of all other columns presented here
Definition of Sub-Program: A "sub-program" of a program has a specific title; targets; budget; uses a unique delivery or marketing approach not used across the entire program; and for resource programs, has specific estimated savings and demand impacts.

2010-2012 Energy Efficiency Programs
Comprehensive Home Performance
Program Implementation Plan

SDG&E's Comprehensive Home Performance Program (CHPP) is a new addition to SDG&E's 2009-11 Residential Energy Efficiency Portfolio. The Comprehensive Home Performance Program (CHPP) delivers comprehensive energy efficiency improvement packages tailored for both the home resale and home modeling markets. The CHPP solicits, screens, and trains qualified residential repair and renovation contractors to assemble capable contracting teams and perform whole-house diagnostics, propose a comprehensive energy efficiency improvement package, and complete the improvements. The program also includes marketing activities to help educate customers on CHPP program services as well as providing additional customer leads to trained and experienced contractors. Incentives and available financing options will be provided to help offset the initial homeowners cost for the energy efficiency Home Performance improvements. Contractors will receive an incentive for formal home diagnostics, post retrofit quality assurance testing and reporting data on all jobs. Furthermore, the program will provide consistent standards and professional identity in association with the national Home Performance with ENERGY STAR® program.

The CHPP services for participating contractors includes; orientation, training in both technical and business/marketing/sales topics, field mentoring and support, specialty teambuilding, website materials, email newsletters, an online peer group Q&A forum, and a broad range of alliance-building, education and marketing services.

b) List measures:

- Thermal load reduction via air sealing, insulation, ventilation, windows, etc.
- Right-sizing and proper installation of HVAC systems including duct sealing.
- Baseload reduction opportunities such as lighting, plug loads, water heating, pool-pump, and energy efficient appliances and equipment.
- Where applicable - solar water heating, photovoltaic (PV) installations, self generation, demand response applications.
- Low flow shower heads, faucet aerators, and shower start devices.

c) List non-incentive customer services:

The Program offers technical training, field mentoring, and business/marketing seminars. The technical training and field mentoring are used to improve basic contractor skills and introduce the basic concept of energy efficient home repair and renovation best practices. The business/marketing seminar will be offered to help home improvement contractors identify the most effective way of selling home efficiency performance to customers.

2010-2012 Energy Efficiency Programs
Comprehensive Home Performance
Program Implementation Plan

5) Program Rationale and Expected Outcome

a) Quantitative Baseline and Market Transformation Information

Table 3

	Baseline Metric		
	Metric A	Metric B	Metric C
Overall Program			
Sub Program #1			
Sub Program #2			
Sub Program #3			

Market Transformation has not been a major focus of the California energy efficiency programs since the energy crisis. Consequently, relatively little attention has been given in recent years to identifying and gathering data on indicators of change towards market transformation. For some programs or sub-programs that promote a single end use or measure, there may be some data available for this purpose, probably from industry sources, that we have not yet identified. For many of the programs, however, this kind of long-term, consistent, and expensive data collection has not been done in California.

The utility program planners have worked closely with their respective EM&V staffs and with each other to identify available information and propose potential metrics. Each utility and each program has some data available, but attempts to distill the limited available information into a common set of agreed-upon metrics have proved far more difficult to accomplish. Offering metrics in which there is not strong confidence would not be productive. Therefore, the utilities respectfully exclude "draft" metrics at this time and instead suggest a means of developing meaningful indicators.

The utilities will develop meaningful baseline and market transformation concepts and metrics for programs that do not currently have them, and then propose to design and administer studies to gather and track consistent, reliable and valid baseline and market effects data. We would propose to use the program logic models and The California Evaluation Framework (2004) as guides, and to begin this work after approval of the Application using funding provided for Evaluation, Measurement & Verification.

We expect that the baseline studies (1) adequately describe the operation of markets that are targeted by a program, (2) confirm our tentative identification of measurable parameters that would indicate changes towards greater efficiency in the market(s) and that are likely to be affected by the program, and (3) gather the current values of those parameters, to serve as baselines against which future market movement can be tracked.

b) Market Transformation Information

Table 4

	Internal Market Transformation Planning Estimates		
Market Sector and	2009	2010	2011

Segment			
Metric A			
Metric B			
Metric C			

As explained immediately above, the utilities propose to provide these draft metrics when available.

c) Program Design to Overcome Barriers:

SDG&E is collaborating with the other IOU's to complete this design.

d) Quantitative Program Targets:

Table 5

Program Name	Program Target by 2009	Program Target by 2010	Program Target by 2011
Homes retrofitted	50*	150	250
Home performance training sessions	included in 2011 target	included in 2011 target	7
Orientation seminars	included in 2011 target	included in 2011 target	6
Business/marketing seminars	included in 2011 target	included in 2011 target	6

Note: Values provided represent yearly targets
** Actual target will depend upon start date*

e) Advancing Strategic Plan goals and objectives:

This program responds to the need for much larger energy savings in existing homes than is possible with conventional checklist audits or single measure improvement (prescriptive) programs. It addresses the key "whole house" strategy of the CLTEESP by influencing homeowner "decision triggers" to improving home energy efficiency and understand advantages to expand participation to reach savings goals. This program is also a vehicle to increase penetration of cost effective, high efficiency appliances and shell upgrades.

6) Program Implementation

a. Statewide IOU Coordination

The Comprehensive Home Performance Program is a local utility program that will be administered by SDG&E. However, SDG&E will work closely with the other IOU's on an established basis to develop, where possible statewide consistency in terms of program design, implementation, incentive levels, marketing and outreach activities. This on-

going communication between the IOU's will provide an opportunity to share program experiences, and lessons learned, and facilitate the development of a more statewide comprehensive program in future years.

b. Program delivery and coordination:

CBPCA will implement the program in collaboration with SDG&E's program manager. Implementation will include coordination with Energy Star, California Energy Commission (CEC)/PIER for needed R&D, and a variety of other allies. The CHPP will be implemented in alignment with all applicable research, best practices, and policy movements.

Contractor solicitation and screening

The Program uses contractor lists provided by allied organizations such as the Institute for Heating and Air Conditioning Industries (IHACI), Air Conditioning Contractors of America (ACCA), National Association of the Remodeling Industry (NARI), Build It Green (BIG), Insulation Contractors of America (ICA), and solar groups. It will have a presence at key local conferences such as the Journal of Light Construction's (JLC) Remodelers Exhibition to advertise the Program directly to interested contractors. The CHPP includes personal screening interviews to assure active interest and dissemination of the scope and intent of the training.

Technical training and field mentoring

Training will include the following:

- Training to improve basic contractor skills and introduce the basic concepts of energy-efficient home repair and renovation practices
- Training in building science, home assessment, and proper remediation including an intensive day of in-home hands-on diagnostic practice
- Advanced training with an additional day in an actual home, and access to Building Performance Institute (BPI) technical certification
- Small-group field mentoring in technical and proposal development activities

Contractor business support

Many contractors are not successful with comprehensive home performance due to business rather than technical challenges. Business barriers range from staff training and motivation to team-building, work process scheduling and management, quality control, marketing, job estimation, and sales. At least two annual seminars in these business matters will be offered as well as a broad range of supporting materials such as data collection and homeowner report templates and regular monitoring of contractor activity. Contractors will be offered business planning guidance as needed, including help in grouping complementary trades and interests into fully job-capable teams.

Incentives

CHPP will offer financial incentives to both contractors and customers. Contractors will receive a financial incentive for home diagnostics, post retrofit quality assurance testing,

and reporting of data. Customers will receive financial incentive for installing Home Performance measures performed by an eligible CHPP contractor.

Data collection, quality assurance and reporting

Energy simulation models will be combined with utility bill data for calibration during a project. To assure contractor reporting the payment of customer incentives will be tied to the contractor's delivery of full job data, utility bills and homeowner report. As required by ENERGY STAR, the Program's implementers will randomly select 5 percent of each contractor's reported retrofits for onsite job verification and review 100 percent of the job data inputs from contractors. Verifications will include homeowner interviews, intensive visual checklist inspections, and selective retesting of key items. A subset of these energy savings estimates may later be validated against the first year's after-retrofit utility bills plus climate data and homeowner interviews as needed to identify changes in other factors affecting energy use.

Marketing/ implementation methods employed

Contractors will be instructed in cost-effective marketing methods. Media attention will be gained through free home retrofit contests. SCE may assist in media outreach and provide customer billing data to help identify and approach priority candidates. Realtors will be engaged as lead generators to identify clients of interest. Other groups will be engaged as appropriate. The program will coordinate, as applicable, with SDG&E's marketing activities and may include website links, bill inserts, press releases, referrals, and information in marketing collateral.

Activities to be performed by subcontractors

A subcontractor will be involved in specifying, staffing, scheduling, and general oversight of CBPCA activities. A selected group of trainers and contractors will assist the subcontracted lead trainer with technical training and mentoring activities. Job verifications are assigned to qualified experts such as HERS raters. Other subcontractors will provide marketing assistance, promotional materials, energy simulation software support, etc.

AB811

The Program will look for opportunities, through AB811, to work with local governments in installing energy efficiency improvements to residential properties and making those improvements more affordable.

i. Emerging Technologies program

This comprehensive retrofit program is an ideal early-adopter vehicle for new technologies such as the hot/dry air conditioner, energy use monitors for users, new approaches to hydronic heating, ecological insulation options, cool roof technologies, and even advanced solar hot water and PV installations.

ii. Codes and Standards program:

The 2008 Title 24 code revision is the most relevant to this program's work. New requirements as well as adequate enforcement and compliance with older 2005 provisions (notably HVAC quality installation) will be required, monitored, and reported in this Program. CHPP will be coordinated with the Codes & Standards program to ensure that the impacts of any code changes are incorporated into program design and implementation.

iii. WE&T efforts

The CLTEESP is supported through coordination with the WE&T Strategic Plan, whereby CHPP's unique approach towards development of qualified home retrofit technicians will lead to significant progress in the reduction of residential energy consumption over the next decade.

iv. Program-specific marketing and outreach efforts

Marketing campaign will be structured to continuously solicit contractors and market to customers throughout the life of the Program. Marketing efforts will be conducted using the following approach:

i. **Marketing to Contractors**: The Program will market to contractors, through local chapters of various trade associations, plus targeted commercial contact databases.

ii. **Marketing to the Customers**: The Program marketing strategy involves empowering the trained contractors to be the primary public educator and marketer. Those consumer marketing and education efforts help contractors develop and manage the customer leads that provide the necessary path to specific home performance jobs. The Program will participate in select public events such as home shows and work with local media to publicize the Program's benefits. CHPP will also market via direct mailing, brochures, and bill inserts to create interests of the Program.

Budget for these activities are included in the overall budget for this program.

v. Non-energy activities of program

A truly comprehensive home retrofit includes some elements that are chosen by the homeowner primarily for reasons other than energy bill savings such as indoor air quality, noise abatement or structural deterioration problems. When building envelope enhancements are made, the homeowner typically receives along with these improvements health benefits, home integrity assurance from moisture problems, HVAC equipment longevity, and potential home value increase. At the program level, implementers review projects to identify and encourage all project components that

contribute to energy savings as well as other benefits. At an individual project level, contractors seek to identify homeowner's desires, solve a full range of Home Performance deficiencies, and clearly explain how these deficiencies contribute to energy waste.

vi. Non-IOU Programs

The Program will be open to suggestion from Non-IOU Programs in order to achieve the Program's objectives.

vii. CEC work on PIER

Public Interest Energy Research (PIER) funded the development of Home Performance contracting protocols during 2003-2006. That program provided field testing and contractor feedback for the PIER project. In addition, PIER may fund further research into related topics including homeowner motivation, valuation of societal benefits, and comparative demonstration and analysis of methods for energy savings forecasting and verifications.

viii. CEC work on codes and standards

The 2008 Title 24 code revision is the most relevant to this program's work. CHPP will be coordinated with the Codes & Standards program to ensure that the impacts of any code changes are incorporated into program design and implementation.

ix. Non-utility market initiatives

CHPP coordinates and fulfills Home Performance with Energy Star requirements, and its contractors are allowed to display the Energy Star logo in their home performance marketing. CBPCA is actively allied with Build it Green and the U.S. Green Building Council, and provides energy related training and support to "green remodelers" in those organizations. The Lung Association's "Health House" program is another ally in promotion of whole house solutions. CBPCA is also involved in the Berkeley Solar Plan's efforts to incorporate substantial energy efficiency improvements and options such as whole house retrofits into solar installations.

c. Best Practices

The Program offers a 9 day intensive Home Performance training for contractors who are interested in adding a Home Performance aspect to their contracting business. Contractors attend classroom training as well as learning hands on how to use many of the advance tools to asses a home's condition. Mentoring sessions are also conducted in order for the contractors to absorb more knowledge from professionals that have experience in the subject matter.

Contractors will be offered to attend a business/marketing seminar to successfully add the Home Performance aspect to their business and provide a business planning guide as needed.

Lessons Learned: Through experience both in SDG&E's CHPP and similar Home Performance with Energy Star efforts elsewhere, a variety of lessons have been drawn that permit some key design refinements.

a) Incentives are necessary to overcome the broad lack of market awareness of comprehensive energy retrofit opportunities and benefits.
b) Contractors need incentives to create early demand and help the business model transition to Home Performance contracting.
c) Incentives need to be tied to job pre/post-testing data to overcome contractor resistance to "paperwork" and the complexity of comprehensive testing.

d. Innovation

This Program is innovative because it takes a "whole-house" approach instead of "prescriptive" approach. It offers the highest possible electric & gas savings per home due to its comprehensiveness. The improvement package is tailored to the needs of each existing home and its owner which minimizes lost opportunities.

e. Integrated/coordinated Demand Side Management

This Program will create additional energy savings and integration through inter-program referral and data sharing, and bundling of DSM solutions across energy efficiency, demand response, California Solar Initiative, Smart Meter, and other IDSM efforts.

f. Integration across resource types (energy, water, air quality, etc)

This Program will be able to integrate across resource types from energy to air quality. Customer who completes a Home Performance retrofit will not only improve their indoor air quality but also the outdoor air quality by reducing the carbon footprint of their home from making it more energy efficient.

g. EM&V

The utilities are proposing to work with the Energy Division to develop and submit a comprehensive EM&V Plan for 2009-2011 after the program implementation plans are filed. This will include process evaluations and other program-specific studies within the context of broader utility and Energy Division studies. More detailed plans for process evaluation and other program-specific evaluation efforts cannot be developed until after the final program design is approved by the CPUC and in many cases after program implementation has begun, since plans need to be based on identified program design and implementation issues.

7) Diagram of Program

SDG&E is working with the other IOU's to complete this diagram.

8) Program Logic Model

SDG&E is working with the other IOU's to complete this diagram.

Attachment 5:

SoCalGas' Comprehensive Home Performance Program (CHPP)

(Excerpt from approved PIP)

2010-2012 Energy Efficiency Programs
Comprehensive Home Performance
Program Implementation Plan

1) Program Name and Program ID number

Program Name: Comprehensive Home Performance Program (CHPP)
Program ID number: TBD

2) Projected Program Budget Table

Table 1[1]

Program #		Total Administrative Cost (Actual)	Total Marketing & Outreach (Actual)	TOTAL Direct Implementation	Integration Budget Allocated to Other Programs (if Applicable)	Total Budget By Program (Actual)
Market Sector Programs - Residential						
	Local Programs					
	#Local02 - Local Whole Home Performance	**407,745**	**369,000**	**4,879,606**	**0**	**5,656,350**

These budget numbers are presented in the Energy Division Tables, Graphs Pie Charts: Table 7.1

3) Projected Program Gross Impacts Table

Table 2

Program #	SCG	2010-2012 Three-Year EE Program Gross kWh Savings	2010-2012 Three-Year EE Program Gross kW Savings	2010-2012 Three-Year EE Program Gross Therm Savings
Market Sector Program - Residential				
	#Local02 - Local Whole Home Performance	650,535	469	947,032
	TOTAL:	**650,535**	**469**	**947,032**

These savings values are presented in the Energy Division Tables, Graphs & Pie Charts: Table 7.2

4) Program Description

[1] Definition of Table 1 Column Headings: Total Budget is the sum of all other columns presented here
Total Administrative Cost includes all Managerial and Clerical Labor, Human Resource Support and Development, Travel and Conference Fees, and General and Administrative Overhead (labor and materials).
Total Direct Implementation – includes all financial incentives used to promote participation in a program and the cost of all direct labor, installation and service labor, hardware and materials, and rebate processing and inspection used to promote participation in a program.
Total Marketing & Outreach includes all media buy costs and labor associated with marketing production.
Integrated Budget Allocated to Other Programs includes budget utilized to coordinate with other EE, DR, or DG programs.
Total Budget is the sum of all other columns presented here
Definition of Sub-Program: A "sub-program" of a program has a specific title; targets; budget; uses a unique delivery or marketing approach not used across the entire program; and for resource programs, has specific estimated savings and demand impacts.

2010-2012 Energy Efficiency Programs
Comprehensive Home Performance
Program Implementation Plan

a) Describe Program

SCG's Whole House Performance Pilot Program will be implemented as a joint utility program with SCE's Comprehensive Home Performance Program. The program will be a new to SCG's 2009-11 residential energy efficiency portfolio, based on the SCE's successful 2006-08 IDEEA Comprehensive Home Performance Delivery Program. In accordance with the California Energy Efficiency Strategic Plan (CEESP), this program advances comprehensive energy efficiency measures, including: whole house solutions, visual monitoring and displays, performance standards, local government opportunities, and DSM integration. The Whole House Performance Program (WHP) delivers comprehensive improvement packages tailored to the needs of each existing home and its owner. The WHP solicits, screens, and trains qualified residential repair and renovation and HVAC contractors to deliver program services such as performing whole-house diagnostics by proposing a comprehensive improvement package, and then completing the recommended improvements. The program also includes marketing activities to help educate customers on program services and provide additional customer leads to trained contractors. Furthermore, the program will provide consistent standards and professional identity in association with the national Home Performance with ENERGY STAR® program.

Incentive will be available to offset the homeowners cost for home performance improvements. The WHP offers rebates for various measures installed through WHP specific rebates and rebates offered by the Home Energy Efficient Survey (HEES), Home Energy Efficiency Rebates (HEER), and other residential EE programs. Contractors will receive an incentive for completing formal home diagnostics, post retrofit quality assurance testing, and reporting data on all jobs. Furthermore, the program will provide consistent standards and professional branding identified in association with the national Home Performance with ENERGY STAR® program (HPwES).

WHP provides a full range of services for participating contractors including orientation, training in both technical and business/marketing/sales topics, field mentoring and support, specialty teambuilding, website materials, email newsletters, an online peer group Q&A forum, and a broad range of alliance-building, education and marketing services.

SCG will work collaboratively with the California Building Performance Contractors Association (CBPCA) to implement this program in 2009-11 program cycle.

Program Integration: WHP leverages measure specific rebates offer from other residential programs such as HEES and HEER, then bundles them into a whole house performance improvement package for delivery. The program provides technical and marketing training to contractors, and mentoring support. It offers incentives to the residents and the contractors. CHPP is an perfect demonstration of ED's request for Comprehensive Home Improve Program.

Support for LIEE and Non-LIEE Qualifying Low Income Family: The WHP will coordinate activities with LIEE to make sure all qualifying LIEE participants are specifically targeted by the program. The WHP will work with local/municipalities to support AB811, so the Non-LIEE qualifying Low Income Families needs can be best served.

b.) List measures

- Thermal load reduction via air sealing, insulation, ventilation, windows, etc.
- Right-sizing and proper installation of HVAC systems, including ducts, to reduce connected HVAC loads per Title 24 and ACCA guidelines.
- Baseload reduction opportunities such as water heating and appliances.
- Where applicable - solar water heating, photovoltaic (PV) installations, and self generation.
- **Gas Measures to be considered**:*
- Faucet Aerators
- Low-Flow Showerheads
- Thermostatic Low Flow Restrictive Valve
- Water Heater Pipe Wrap
- Filter Tone

**Incentives for some of these measures are still under discussion. They will be finalized at a later date.*

c) List non-incentive customer services

The Program offers technical training, field mentoring, and business/marketing seminars. The technical training and field mentoring are used to improve basic contractor skills and introduce the basic concept of energy efficient home repair and renovation practices. The business/marketing seminar will be offered to help contractors on the most effective way of selling home performance to customers.

5) Program Rationale and Expected Outcome

The WHP local program is designed to offer a one-stop approach for whole house energy efficient improvements. This program leverages all existing residential programs that offer measure specific application, plus WHP specific building/housing envelope related measure. The program design is to induce maximum energy efficiency actions within the same household. To ensure quality of service, the program offers contractor technical, business/marketing, and mentoring services, all packaged under a recognized national brand name of Home Performance with ENERGY STAR® program.

The current SCE CHPP program design does not specifically support CLTSEE Plan as indicated in the Energy Division's comments. For example, SCE does not at this time require the WHP participants to achieve either 30% or 70% purchased energy reduction from their 2008 levels. The program is designed to work in conjunction with participants' ability to pay. If the participant is unable to afford to implement part of the recommendations, then the implementation plan is modified to focus only the affordable measures. Even with this design today, the program team has already learned that the current incentive level is in sufficient to enduce many necessary EE actions. To accomplish these deep energy reduction goals, the program would need to go beyond the participant's ability to afford. This issue cannot be resolved in the scope of this PIP. The SCG and SCE program team would like to enlist ED's assistance to work on these issues.

a) Quantitative Baseline and Market Transformation Information

Market transformation (MT) metrics proposed in Tables 3 and 4 are preliminary. The proposed metrics are meant to initiate a collaborative effort to elaborate meaningful metrics that will provide overall indicators of how markets as a whole are evolving. MT metrics should neither be used for short-term analyses nor for specific program analyses. Rather, should focus on broad market segments.

Market transformation is embraced as an ideal end state resulting from the collective efforts of the energy efficiency field, but differing understandings of both the MT process and the successful end state have not yet converged. The CPUC defines the end state of MT as "Long-lasting sustainable changes in the structure or functioning of a market achieved by reducing barriers to the adoption of energy efficiency measures to the point where further publicly-funded intervention is no longer appropriate in that specific market."[2] The Strategic Plan recognizes that process of transformation is harder to define than its end state, and that new programs are needed to support the continuous transformation of markets around successive generations of new technologies[3].

[2] California Public Utilities Commission Decision, D.98-04-063, Appendix A.
[3] California Public Utilities Commission (2008) *California Long Term Energy Efficiency Strategic Plan*, p. 5. Available at http://www.californiaenergyefficiency.com/docs/EEStrategicPlan.pdf

Market transformation programs differ from resource acquisition programs on 1) objectives, 2) geographical and 3) temporal dimensions, 4) baselines, 5) performance metrics, 6) program delivery mechanisms, 7) target populations, 8) attribution of causal relationships, and 9) market structures[4]. Markets are social institutions[5], and transformation requires the coordinated effort of many stakeholders at the national level, directed to not immediate energy savings but rather to intermediary steps such as changing behavior, attitudes, and market supply chains[6] as well as changes to codes and standards. Resource acquisition programs rely upon the use of financial incentives, but concerns have been raised that these incentives distort true market price signals and may directly counter market transformation progress[7]. According to York[8], "Market transformation is not likely to be achieved without significant, permanent increases in energy prices. From an economic perspective, there are 3 ways to achieve market transformation: (1) fundamental changes in behavior, (2) provide proper price signals, and (3) permanent subsidy."

The question of what constitutes successful transformation is controversial because of a Catch-22: Market transformation is deemed successful when the changed market is self-sustaining, but that determination cannot be made until after program interventions are ended. Often, however, the need for immediate energy and demand savings or immediate carbon-emissions reductions will mean that program interventions may need to continue, which would interfere with the evaluation of whether MT is self-sustaining. Market transformation success has also been defined in terms of higher sales of efficient measures than would have otherwise occurred against a baseline absent of program interventions. The real world, however, provides no such control condition. Evaluators must estimate these baselines from quantitative factors such as past market sales that may be sparse and/or inaccurate - particularly for new products. Evaluations must also defer to expert judgments on what these baselines may have been as well as on the degree of successful market transformation[9]. Due to the subjective nature of these judgments, it is imperative that baselines as well as milestone MT targets be determined and agreed upon through collaborative discussion by all stakeholders, and these targets may need periodic revision as deemed necessary by changing context.

Market transformation draws heavily upon diffusion of innovation theory[10], with the state of a market usually characterized by adoption rate plotted against time on the well-known S-shaped

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[4] Peloza, J., and York, D. (1999). "Market Transformation: A Guide for Program Developers." Energy Center of Wisconsin. Available at: http://www.ecw.org/ecwresults/189-1.pdf

[5] Blumstein, C., Goldstone, S., & Lutzenhiser, L. (2001) "From technology transfer to market transformation". Proceedings of the European Council for an Energy Efficient Economy Summer Study. Available at http://www.eceee.org/conference_proceedings/eceee/2001/Panel_2/p2_7/Paper/

[6] Sebold, F. D., Fields, A., Skumatz, L., Feldman, S., Goldberg, M., Keating, K., Peters, J. (2001) *A Framework for Planning and Assessing Publicly Funded Energy Efficiency.* p. 6-4. Available at www.calmac.org.

[7] Gibbs, M., and Townsend, J. (2000). The Role of Rebates in Market Transformation: Friend or Foe. In *Proceedings from 2000 Summer Study on Energy Efficiency in Buildings.*

[8] York, D., (1999). "A Discussion and Critique of Market Transformation", Energy Center of Wisconsin. Available at http://www.ecw.org/ecwresults/186-1.pdf.

[9] Nadel, S., Thorne, J., Sachs, H., Prindle, B., and Elliot, R.N. (2003). "Market Transformation: Substantial Progress from a Decade of Work." American Council for an Energy-Efficient Economy, Report Number A036. Available at: http://www.aceee.org/pubs/a036full.pdf

[10] Rogers (1995) Diffusion of Innovations, 5th Ed.

diffusion curve. In practice, however, the diffusion curve of products may span decades[11]. Market share tracking studies conducted 3, 5 or even 10 years after the start of an MT program may reveal only small market transformation effects[12]. The ability to make causal connections between these market transformation effects and any particular program's activities fades with time, as markets continually change and other influences come into play.

These challenges mentioned above are in reference to programs that were specifically designed to achieve market transformation; and these challenges are only compounded for programs that were primarily designed to achieve energy and demand savings. However, since the inception of market transformation programs almost two decades ago, many lessons have been learned about what the characteristics of successful MT programs are. First and foremost, they need to be designed specifically to address market transformation. "The main reason that (most) programs do not accomplish lasting market effects is because they are not designed specifically to address this goal (often because of regulatory policy directions given to program designers.)[13]" The Strategic Plan recognizes that regulatory policies are not yet in place to support the success of market transformation efforts[14], but also reflects the CPUC's directive to design energy efficiency programs that can lay the groundwork for either market transformation success or for codes and standards changes.

Above all else, the hallmark of a successful market transformation program is in the coordination of efforts across many stakeholders. The most successful MT programs have involved multiple organizations, providing overlapping market interventions[15]. The Strategic Plan calls for coordination and collaboration throughout, and in that spirit the utilities look forward to working with the CPUC and all stakeholders to help achieve market transformation while meeting all the immediate energy, demand, and environmental needs. Drawing upon lessons learned from past MT efforts, the Energy Center of Wisconsin's guide for MT program developers[16] suggests that the first step is not to set end-point definitions, progress metrics or goals. Rather, the first steps include forming a collaborative of key participants. As the Strategic Plan suggests, these may include municipal utilities, local governments, industry and business leaders, and consumers. Then, with the collective expertise of the collaborative, we can define markets, characterize markets, measure baselines with better access to historical data, and define objectives, design strategies and tactics, implement and then evaluate programs. The collaborative will also provide insights that will set our collective expectations for the size of market effects we can expect, relative to the amount of resources we can devote to MT. No one organization in the collaborative will have all the requisite information and expertise for this huge effort. This truly needs to be a collaborative approach from the start.

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[11] Example in bottom chart of this graphic from NYTimes:
http://www.nytimes.com/imagepages/2008/02/10/opinion/10op.graphic.ready.html
[12] Sebold et al (2001) p. 6-5,
[13] Peters, J.S., Mast,B., Ignelzi, P., Megdal, L.M. (1998). *Market Effects Summary Study Final Report: Volume 1."* Available at http://calmac.org/publications/19981215CAD0001ME.PDF.
[14] CPUC (2008) Strategic Plan, p. 5.
[15] Nadel, Thorne, Saches, Prindle & Elliot (2003).
[16] Peloza & York, (1999).

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The metrics and baselines described below in Tables 3 and 4 are presented for the purposes of starting the much-needed discussion between all key participants. These are suggestions, intended to allow key participants to pilot-test processes for establishing baseline metrics, tracking market transformation progress, and for refining evaluation tools. Early trial of these evaluation metrics will reveal any gaps in data tracking so that we may refine our processes before full-scale market transformation evaluations take place.

The set of metrics we selected is intentionally a small set, for several reasons. First, as mentioned, the full set of metrics and baselines need to be selected by key participants. Second, we anticipate that market share data for many mid- and low-impact measures will be too sparse to show MT effects and not cost-effective to analyze. Third, we selected core measures and metrics that would both be indicative of overall portfolio efforts. These measures are also likely to be offered on a broad level by other utilities, providing a greater base of sales and customer data that could be analyzed for far-reaching MT effects.

The IOUs are proposing a metric that is believed to reliably detect market transformation for energy efficiency solutions in the residential sector. While all metrics fall short of a perfect measure, the ideal metric would have a baseline that is already established that includes a reasonable and easy method of duplication and comparison. Market transformation cannot be measured on a year to year basis but will take several years and measurements to reliably discern trends. With this in mind, the IOUs propose the following metric:

Over the past several years a good baseline of market saturation has been established in the California Lighting and Appliance Saturation Study (CLASS). The original study was completed in 2000 and then updated in 2005. The overarching goal for these studies is to provide efficiency levels of appliances in order to understand future energy savings potential and past accomplishments in the residential sector. The IOUs propose that the values in these studies and the data made available in the on-line "California Residential Efficiency Saturation Tool" be used as the basis for the metric for EE in the residential sector. Specifically it is proposed that a new California Lighting and Appliance Saturation study be conducted in 2010 to estimate again the efficiency levels for key measures. A comparison could then be made to the previous baseline studies of 2000 and 2005 and a determination made if a trend is taking place that indicates that more energy efficient solutions are being installed in residential households.

As market transformation is more than just market share of measures, the suggested metrics also include attitudinal and behavioral metrics.

Attitudinal change is an important part of any market transformation effort. This change may be tracked with a battery of questions that probes customer attitudes, knowledge and awareness (AKA) of energy efficiency. In order to gauge an attitudinal based metric for this sector a battery of questions probing AKA among customers would have to be created and used to scale AKA. Examples of AKA would include knowledge of energy efficiency lighting and other specific measures. Evaluators could also draw from customer surveys used in past program evaluation studies to determine whether any response patterns would be a useful indicator of market transformation, moving forward. The dimensions of any scale need to be selected by the MT collaborative. The baseline response pattern to the AKA scale would need to be established early

during the program cycle. Customers could be surveyed on an annual basis and changes in their AKA tracked along the scale. Responses of customers for a particular sub-program could be pulled out for separate analysis, as needed.

In addition, behavioral change is an important part of any market transformation effort. This change may be tracked with a battery of questions that probes customer past behavior and intentions about energy efficiency. In order to gauge a behavorial based metric for this sector a battery of questions about energy efficient behaviors could be used to create a scale of Energy Behavior. Evaluators could also draw questions about specific behaviors from customer surveys used in past program evaluation studies to determine whether any response patterns would be a useful indicator of market transformation, moving forward. The dimensions of any scale need to be selected by the MT collaborative. The behaviors that could be probed include maintenance behaviors to keep EE measures operating correctly, and behaviors that maximize energy efficiency of existing equipment. Customers could be surveyed early in the program cycle and their responses on the scale could serve as the baseline for subsequent behavioral change. Customers could be probed annually and their Energy Behavior change measured along the scale. Responses of customers for a particular sub-program could be pulled out for separate analysis, as needed.

Therefore, for the Residential sector, the approach to quantitative baseline and market transformation information is as follows:

Table 3

Metric A	Metric B	Metric C
Energy efficiency saturation of the following appliances as measured by the CLASS on-site survey.	Ratio of survey participants that seek/consider EE when making purchase decisions.	Behaviors of Residential sector as gauged based on a scale developed to measure (EE/green) behaviors.

Appliance	2000	2005	Change	% Change
Freezer UEC	728.00	626.50	101.50	13.9%
Heating AFUE	77.91	79.32	1.41	1.8%
Refrigerator UEC	931.55	721.18	210.37	22.6%
Dishwasher EF	0.48	0.50	0.01	2.5%
Washing Machine EF	1.32	1.77	0.45	34.5%
Water Heating EF	0.58	0.59	0.01	1.4%
Cooling SEER	9.50	10.31	0.81	8.5%
CFLs per Home*	0.32	3.51	3.19	996.9%

*In the 2005 CLASS report, Page 51 Table 30 shows that CFLs per home jumped from 0.32 lamps/home in 2000 to 3.51 lamps/home in 2005

b) Market Transformation Information

As stated above, market transformation draws heavily upon diffusion of innovation theory, with the state of a market characterized by adoption rate plotted against time on the well-known S-shaped diffusion curve. In practice, however, the diffusion curve of products may span decades. Market share tracking studies conducted 3, 5 or even 10 years after the start of an MT program may reveal only small market transformation effects. Therefore it is problematic, if not impractical, to offer internal annual milestones towards market transformation sectors and specific program activities.

As a consequence, it is not appropriate to offer more than broad and general projections. Any targets provided in the following table are nothing more than best guesstimates, and are subject to the effects of many factors and market forces outside the control of program implementers.

Table 4

	Residential Sector Internal Market Transformation Planning Estimates		
	2009	**2010**	**2011**
Metric A	NA	Upward moving efficiency over time measured by CLASS	NA
Metric B	Upward moving average over time	Upward moving average over time	Upward moving average over time
Metric C	Upward moving average over time	Upward moving average over time	Upward moving average over time

c) Program Design to Overcome Barriers

From the previous Program cycle, SCE's WHP received a diminutive amount of complete Home Performance reports from participating contractors with the incentive in place. The Program recognizes that the incentive amount may not be enough and it is essential to increase the incentive amount for each submission of completed reports from participating contractors. Program manager and CBPCA will also brainstorm a way of increasing the accountability/knowledge of participating contractors for turning in complete reports to overcome these barriers.

d) Quantitative Program Targets

The Program aims to retrofit 300 homes in 2009, 495 homes in 2010, and 705 homes in 2011. By 2011, the Program also aims to complete a minimum of 7 Home Performance training sessions, 6 orientation seminars, and 6 business/marketing seminars.

Table 5

Program Name	Program Target by 2009	Program Target by 2010	Program Target by 2011

Enrolled and Completed Homes Retrofit Projects	300	495	705
Completed Home Performance Technical Training Classes	2	3	2
: Completed Business/Marketing Seminars	2	2	2

e) Advancing Strategic Plan goals and objectives:

This program responds to the need for much larger energy savings in existing homes than is possible with conventional checklist audits or single measure improvement (prescriptive) programs. The WHP program design meets many of the program elements specified by the Energy Division and it is consist with the requirements of CLTEESP.

It addresses the key “whole house" strategy of the CLTEESP by influencing homeowner “decision triggers” to improving home energy efficiency and understand advantages to expand participation to reach savings goals. This program is also a vehicle to increase penetration of cost effective, high efficiency appliances and shell upgrades.

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6) Program Implementation

a. Statewide IOU Coordination

Comprehensive Home Performance Program is a third party program in SCG's territory. This Program will be implemented jointly with SCE. This collaboration will provide an opportunity for a cost effective program while increasing the comprehensiveness of the Program. SCG has been in active discussion with the other California IOU's and active California municipalities (SMUD and Anaheim Public Utilities) in planning Home Performance programs. As program develops, statewide coordination and consistency will be considered as applicable.

b. Program delivery and coordination

CBPCA will implement the program in collaboration with SCE and SCG's program manager and residential team. Implementation will include coordination with Energy Star, California Energy Commission (CEC)/PIER for needed R&D, and a variety of other allies. The WHP will be implemented in alignment with all applicable research, best practices, and policy movements. The following activities are part of the program implementation design:

Contractor solicitation and screening

The Program uses contractor lists provided by allied organizations such as the Institute for Heating and Air Conditioning Industries (IHACI), Air Conditioning Contractors of America (ACCA), National Association of the Remodeling Industry (NARI), Build It Green (BIG), Insulation Contractors of America (ICA), and solar groups. It will have a presence at key local conferences such as the Journal of Light Construction's (JLC) Remodelers Exhibition to advertise the Program directly to interested contractors. The WHP includes personal screening interviews to assure active interest and dissemination of the scope and intent of the training.

Technical training and field mentoring

Training and mentoring activities will include the following:

- Training to improve basic contractor skills and introduce the basic concepts of energy-efficient home repair and renovation practices.
- Training in building science, home assessment, and proper remediation including an intensive day of in-home hands-on diagnostic practice.
- Advanced training with an additional day in an actual home, and access to Building Performance Institute (BPI) technical certification.
- Small-group field mentoring in technical and proposal development activities.

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Contractor business support

Many contractors are not successful with comprehensive home performance due to business rather than technical challenges. Business barriers range from staff training and motivation to team-building, work process scheduling and management, quality control, marketing, job estimation, and sales. At least two annual seminars in these business matters will be offered as well as a broad range of supporting materials such as data collection and homeowner report templates and regular monitoring of contractor activity. Contractors will be offered business planning guidance as needed, including help in grouping complementary trades and interests into fully job-capable teams.

Incentives

WHP will offer financial incentives to both contractors and customers. Contractors will receive a financial incentive for home diagnostics, post retrofit quality assurance testing, and reporting of data. Customers will receive financial incentive for installing Home Performance measures performed by an eligible WHP contractor. As pointed in the program barriers section above, we are aware the current incentive levels are not sufficient to bring the desired program results. We are currently working with the implementers to come up with alternative ways to address this key issue

Data collection, quality assurance and reporting

Energy simulation models will be combined with utility billing data for calibration for each project. To assure contractor reporting the payment of customer incentives will be tied to the contractor's delivery of full job data, utility bills and homeowner report. As required by ENERGY STAR, the Program's implementers will randomly select 5 percent of each contractor's reported retrofits for onsite job verification and review 100 percent of the job data inputs from contractors. Verifications will include homeowner interviews, intensive visual checklist inspections, and selective retesting of key items. A subset of these energy savings estimates may later be validated against the first year's after-retrofit utility bills plus climate data and homeowner interviews as needed to identify changes in other factors affecting energy use.

Marketing/ implementation methods employed

Contractors will be instructed in cost-effective marketing methods. Media attention will be gained through free home retrofit contests. SCG may assist in media outreach and provide customer billing data to help identify and approach priority candidates. Realtors will be engaged as lead generators to identify clients of interest. Other groups will be engaged as appropriate. The program will coordinate, as applicable, with SCG's marketing activities and may include website links, bill inserts, press releases, referrals, and information in marketing collateral.

Activities to be performed by subcontractors

A subcontractor will be involved in specifying, staffing, scheduling, and general oversight of CBPCA activities. A selected group of trainers and contractors will assist the subcontracted lead trainer with technical training and mentoring activities. Job verifications are assigned to qualified experts such as HERS raters. Other subcontractors

will provide marketing assistance, promotional materials, energy simulation software support, etc.

AB811
The Program will look for opportunities, through AB811, to work with local governments in installing energy efficiency improvements to residential properties and making those improvements more affordable.

i. Emerging Technologies program

This comprehensive retrofit program is an ideal early-adopter vehicle for new technologies such as the hot/dry air conditioner, energy use monitors for users, new approaches to hydronic heating, ecological insulation options, cool roof technologies, and even advanced solar hot water and PV installations.

ii. Codes and Standards program

The 2008 Title 24 code revision is the most relevant to this program's work. New requirements as well as adequate enforcement and compliance with older 2005 provisions (notably HVAC quality installation) will be required, monitored, and reported in this Program. WHP will be coordinated with the Codes & Standards program to ensure that the impacts of any code changes are incorporated into program design and implementation.

iii. WE&T efforts

The CLTEESP is supported through coordination with the WE&T Strategic Plan, whereby the third party implementer's unique approach towards development of qualified home retrofit technicians will lead to significant progress in the reduction of residential energy consumption over the next decade.

iv. Program-specific marketing and outreach efforts

Marketing campaign will be structured to continuously solicit contractors and market to customers throughout the life of the Program. Marketing efforts will be conducted using the following approach:

i. **Marketing to Contractors**: The Program will market to contractors, through local chapters of various trade associations, plus targeted commercial contact databases.

ii. **Marketing to the Customers**: The Program marketing strategy involves empowering the trained contractors to be the primary public educator and

marketer. Those consumer marketing and education efforts help contractors develop and manage the customer leads that provide the necessary path to specific home performance jobs. This program will also target customers who have participated in utility audit programs to further increase the opportunity for a more comprehensive approach in meeting the customers EE needs. The Program will participate in select public events such as home shows and work with local media to publicize the Program's benefits. WHP will also market via direct mailing, brochures, and bill inserts to create interests of the Program.

Budget for these activities are included in the overall budget for this program.

SCE's marketing budget is $175,438 and SCG's marketing budget is $175,438 for this Program. The combined marketing budget for both IOU is $350,876. It is approximately 10% of the third party implementer's total budget.

v. Non-energy activities of program

A truly comprehensive home retrofit includes some elements that are chosen by the homeowner primarily for reasons other than energy bill savings such as indoor air quality, noise abatement or structural deterioration problems. When building envelope enhancements are made, the homeowner typically receives along with these improvements health benefits, home integrity assurance from moisture problems, HVAC equipment longevity, and potential home value increase. At the program level, implementers review projects to identify and encourage all project components that contribute to energy savings as well as other benefits. At an individual project level, contractors seek to identify homeowner's desires, solve a full range of Home Performance deficiencies, and clearly explain how these deficiencies contribute to energy waste.

vi. Non-IOU Programs

The Program will be open to suggestion from Non-IOU Programs in order to achieve the Program's objectives.

vii. CEC work on PIER

Public Interest Energy Research (PIER) funded the development of Home Performance contracting protocols during 2003-2006. That program provided field testing and contractor feedback for the PIER project. In addition, PIER may fund further research into related topics including homeowner motivation, valuation of societal benefits, and

comparative demonstration and analysis of methods for energy savings forecasting and verifications.

viii. CEC work on codes and standards

The 2008 Title 24 code revision is the most relevant to this program's work. WHP will be coordinated with the Codes & Standards program to ensure that the impacts of any code changes are incorporated into program design and implementation.

ix. Non-utility market initiatives

WHP coordinates and fulfills Home Performance with Energy Star requirements, and its contractors are allowed to display the Energy Star logo in their home performance marketing. CBPCA is actively allied with Build it Green and the U.S. Green Building Council, and provides energy related training and support to "green remodelers" in those organizations. The Lung Association's "Health House" program is another ally in promotion of whole house solutions. CBPCA is also involved in the Berkeley Solar Plan's efforts to incorporate substantial energy efficiency improvements and options such as whole house retrofits into solar installations.

c. Best Practices:

The Program offers a 9 day intensive Home Performance training for contractors who are interested in adding a Home Performance aspect to their contracting business. Contractors attend classroom training as well as learning hands on how to use many of the advance tools to asses a home's condition. Mentoring sessions are also conducted in order for the contractors to absorb more knowledge from professionals that have experience in the subject matter.

Contractors will be offered to attend a business/marketing seminar to successfully add the Home Performance aspect to their business and provide a business planning guide as needed.

Lessons Learned: Through experience both in SCG's WHP and similar Home Performance with Energy Star efforts elsewhere, a variety of lessons have been drawn that permit some key design refinements.

- Incentives are necessary to overcome the broad lack of market awareness of comprehensive energy retrofit opportunities and benefits.
- Contractors need incentives to create early demand and help the business model transition to Home Performance contracting.
- Incentives need to be tied to job pre/post-testing data to overcome contractor resistance to "paperwork" and the complexity of comprehensive testing.

d. Innovation

This Program is innovative because it takes a "whole-house" approach instead of "prescriptive" approach. It offers the highest possible electric & gas savings per home due to its comprehensiveness. The improvement package is tailored to the needs of each existing home and its owner which minimizes lost opportunities.

e. Integrated/coordinated Demand Side Management

With collaboration of the third party implementer, this program will create additional energy savings and integration through inter-program referral and data sharing, and bundling of DSM solutions across energy efficiency, demand response, California Solar Initiative, Smart Meter, and other IDSM efforts.

f. Integration across resource types (energy, water, air quality, etc)

This Program will be able to integrate across resource types from energy to air quality. Customer who completes a Home Performance retrofit will not only improve their indoor air quality but also the outdoor air quality by reducing the carbon footprint of their home from making it more energy efficient.

g. Pilots

This pilot program is new to the SCG portfolio for the 2009-2011 program cycle. We are currently running a pilot study program on approximately 35 to 80 homes in different climate zones with certain criteria on existing homes. The program team will be shaking down the program to scale-up and to smooth out implementation issues outlined earlier.

h. EM&V:

The utilities are proposing to work with the Energy Division to develop and submit a comprehensive EM&V Plan for 2009-2011 after the program implementation plans are filed. This will include process evaluations and other program-specific studies within the context of broader utility and Energy Division studies. More detailed plans for process evaluation and other program-specific evaluation efforts cannot be developed until after the final program design is approved by the CPUC and in many cases after program implementation has begun, since plans need to be based on identified program design and implementation issues.

7) Diagram of Program

SDG&E is working with the other IOU's to complete this diagram.

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8) Program Logic Model

SDG&E is working with the other IOU's to complete this diagram.

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