Appendix C.2:

San Diego Gas & Electric Company

Program Implementation Plan Requirements (CLEAN COPIES)

I O U

Core

Programs

Table of Contents

2013-2014 CalSPREE PIP Addendum

Program Name	CalSPREE	**Date Submitted**	July 2, 2012
Subprogram Name	Energy Advisor, Plug Load & Appliance, Multi-Family Energy Efficiency Rebate, Whole Home Upgrade, Residential HVAC, Residential New Construction	**Utility Name**	San Diego Gas & Electric
Program ID	TBD	**IOU Program Contact**	
		Program Cycle	2013-2014

This form is to be used to document any required changes to the Program Implementation Plans (PIPs). The following are triggers that will require a PIP change:

1. Changes to eligibility rules
2. Changes affecting incentive levels (indicate advice letter approval below if required)
3. Fund shifts (indicate advice letter approval below if required)
4. Portfolio Budget and Other Commission–Directed Changes
5. Changes to Program Theory/Logic Models
6. Addition or elimination of programs and/or sub-programs (indicate advice letter approval below)
7. Changes in program targets
8. Change in sub-program approach - unless the IOUs submit logic models for the sub-programs (to be defined) with IOUs
9. Changes in incented measures
10. Changes in adopted PPMs/MTIs (indicate advice letter approval below if required)

Identify Specific Trigger (above) requiring the PIP change

4. Portfolio Budget and Other Commission-Directed Changes

Driver of Change:

Aim to reduce the complexity in IOUs' portfolios while increasing customer participation.

Description of Change (if advice letter approval required, indicate Commission resolution or approval and provide hyperlink to advice letter):

The current 2010-2012 CalSPREE Program consists of 8 sub-programs:

1. Residential Basic Lighting
2. Advance Consumer Lighting
3. Multifamily Energy Efficiency Rebate
4. Home Energy Efficiency Rebates
5. Home Energy Efficiency Survey

6. Appliance Recycling
7. Business and Consumer Electronics
8. Prescriptive Whole House Retrofit

The new 2013-2014 CalSPREE Program will be simplified and consist of 6 sub-programs:

1. Energy Advisor
2. Plug-Load and Appliances
3. Multifamily Energy Efficiency Rebate
4. Whole Home Upgrade
5. Residential HVAC and
6. Residential New Contraction

PIP Section and/or Wording to be Changed or replaced:

Changes are throughout the 2013-2014 Statewide CalSPREE PIP

Replacement Language or Information

Refer to Description of Program of 2013-2014 CalSPREE PIP for details on changes

Revised Energy Savings (If Any):

Refer to 2013-2014 CalSPREE PIP for details

Other PIP Changes Required:

Refer to 2013-2014 CalSPREE PIP for details of other changes

1. **Program Name:** CalSPREE[1] Program
   Program ID:
   Program Type: Core

2. **Projected Program Budget Table**
   Table 1[2]

Program Code	Program Name	Administrative Amount	Marketing Amount	Direct Install Amount	Incentive Amount	Total Budget Amount
	SW CALSPREE					
3201	SW-CALS-Energy Advisor-HEES, UAT	$95,883	$24,136	$700,092	$0	$820,112
	SW-CALS-Plug Load and Appliances-HEER	$724,400	$512,676	$1,685,138	$3,945,807	$6,868,021
3207	SW-CALS-MFEER	$254,604	$147,884	$487,253	$3,012,826	$3,902,566
	SW-CALS - EUC WHRP - Basic	$555,812	$1,921,620	$4,702,222	$5,668,236	$12,847,890
3293	SW-CALS – Residential HVAC-HVAC Core	$135,831	$22,577	$243,123	$0	$401,531
	SW-CALS - CAHP/ESMH-CA Advanced Homes	$216,707	$202,925	$1,158,284	$1,789,720	$3,367,635
	TOTAL:	$1,983,236	$2,831,818	$8,976,113	$14,416,588	$28,207,755

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

The IOU's funding request for the proposed 2013-2014 CalSPREE Program as detailed in Table 1 above. The IOUs believe this amount is reasonable, results in a cost-effective portfolio that meets the Commission's energy savings targets for 2013-2014, and supports market transformation and the Strategic Plan.

Table 2

Program Code	Program Name	Gross kW Savings	Gross kWh Savings	Gross Therm Savings
	SW CALSPREE			
3201	SW-CALS-Energy Advisor-HEES, UAT	0	0	0
	SW-CALS-Plug Load and Appliances-HEER	1,562	9,565,439	472,341
3207	SW-CALS-MFEER	747	5,450,983	204,634
	SW-CALS - EUC WHRP - Basic	2,007	2,508,188	573,873
3293	SW-CALS – Residential HVAC-HVAC Core	0	0	0
	SW-CALS - CAHP/ESMH-CA Advanced Homes	1,225	774,834	93,642
	TOTAL:	5,540	18,299,442	1,344,491

[1] D.09-09-047, p. 7, refers to the statewide residential energy efficiency subprograms as the California Statewide Subprograms for Residential Energy Efficiency ("CalSPREE")

[2] 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 subprogram 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 subprogram; Total Marketing & Outreach includes all media buy costs and labor associated with marketing production; Integrated Budget Allocated to Other Subprograms includes budget utilized to coordinate with other EE, DR, or DG subprograms; Total Budget is the sum of all other columns presented here; Definition of Subprogram: A "subprogram" of a subprogram has a specific title; targets; budget; uses a unique delivery or marketing approach not used across the entire subprogram; and for resource subprograms, has specific estimated savings and demand impacts

4. Program Description

The 2013-2014 Residential Sector program, part of the overall Energy Upgrade California (EUC) program, is designated as the California Statewide Program for Residential Energy Efficiency (CalSPREE).

CalSPREE will offer and promote both specific and comprehensive energy solutions for residential customers. By encouraging adoption of economically viable energy efficiency technologies, practices, and services, CalSPREE will employ strategies and tactics to overcome market barriers while delivering services that support the CPUC's Long Term Energy Efficiency Strategic Plan.

The ultimate focus of CalSPREE is to:

- Facilitate, sustain, and transform the long-term delivery and adoption of energy-efficient products and services for single and multi-family dwellings;

- Cultivate, promote and sustain lasting energy-efficient behaviors by residential customers through a collaborative statewide education and outreach mechanism; and

- Meet customers' energy efficiency adoption preferences through a range of offerings including single-measure incentives and more comprehensive approaches.

To date, the California IOUs have employed a number of different residential energy efficiency subprograms that are in various stages of maturity and availability across the state. For 2013-2014 and beyond, the IOUs will integrate all of these subprograms to coordinate efforts and increase comprehensiveness of measure delivery.

CalSPREE will conduct a combination of integrated DSM and program specific marketing and outreach to drive ongoing customer participation and behavior change. Both integrated and program-specific marketing activities will work in coordination with the SW ME&O and will serve to complement those efforts.

Integrated marketing and outreach will gather, create, and deliver information to customers in a way that (1) bundles programs, products, and information and (2) customizes delivery for individual or groups of targeted customers based on market intelligence, segmentation analyses, self-selection activities, and event-based knowledge of customer's actions. To drive ongoing customer engagement, marketing and outreach will target customers with the right message, through the right channel, at the right time. Integrated marketing will cross-sell relevant DSM programs and services that emphasize the benefits of participation in multiple programs.

Additionally, program specific marketing and outreach will be conducted in order to increase participation and reach specific program goals. Program specific marketing and outreach will target customers with a high potential to participate in a specific programs or service. For example, through the Plug Load and Appliances program, customers identified as having a pool may receive a targeted direct mailer prior to summer encouraging them to take

advantage of the pool pump and motor rebate. By motivating customers to take an initial action, it will enable the utilities to engage customers in an ongoing conversation about the next steps they can take towards becoming better energy managers. Additionally, program specific marketing and outreach enables the utilities to conduct activities necessary to support the measure, such as developing Point of Sale rebate stickers that are placed on select appliances to drive program participation. These efforts drive enrollments that enable the utilities to meet specific program goals.

A mix of communication channels and languages will be used to reach a diverse audience. Communication channels may include: web, call center, bill messaging, email, social media, direct mail, retail partnerships, community- and faith-based partnerships, outreach, events, local government partnerships, general and ethnic media.

CalSPREE is comprised of the Energy Advisor, Plug Load and Appliances (PLA), Multi-Family Energy Efficiency Rebates (MFEER), Whole Home Upgrade (WHU), Residential Heating, Ventilation, and Air Conditioning (HVAC), and Residential New Construction (RNC) subprograms. These subprograms are described in more detail below.

Short description of each sub-program

The 2013-2014 CalSPREE includes the following six subprograms:

a) Energy Advisor (EA). The Energy Advisor subprogram will utilize interactive tools designed to engage customers and encourage participation in innovative initiatives. These initiatives are designed to help customers understand and empower them to manage their energy use, and will guide them, where appropriate, towards advancing whole-house energy solutions. Although the IOUs share similar Energy Advisor subprogram theory, design, and goals, they may implement subprogram logistics differently because of their different service territories.

b) Plug Load and Appliances (PLA). The Plug Load and Appliances subprogram merges the previous Home Energy Efficiency Rebate (HEER), Business Consumer Electronics (BCE) and Appliance Recycling subprograms. This subprogram will develop and build upon existing retailer relationships and will include recycling strategies and whole house solutions, plug load efficiency, performance standards, and opportunities for integration with local government, water agencies, Publically Owned Utilities (POUs), and the Demand Side Management (DSM) subprogram.

c) Multi-Family Energy Efficiency Rebates (MFEER). The MFEER subprogram is a continuing subprogram. This subprogram will promote energy efficiency by providing equipment rebates to owners and tenants of multifamily properties, including residential apartment buildings, condominium complexes, and mobile home parks. It will be coordinated with the Energy Savings Assistance (ESA) and the WHUP Programs.

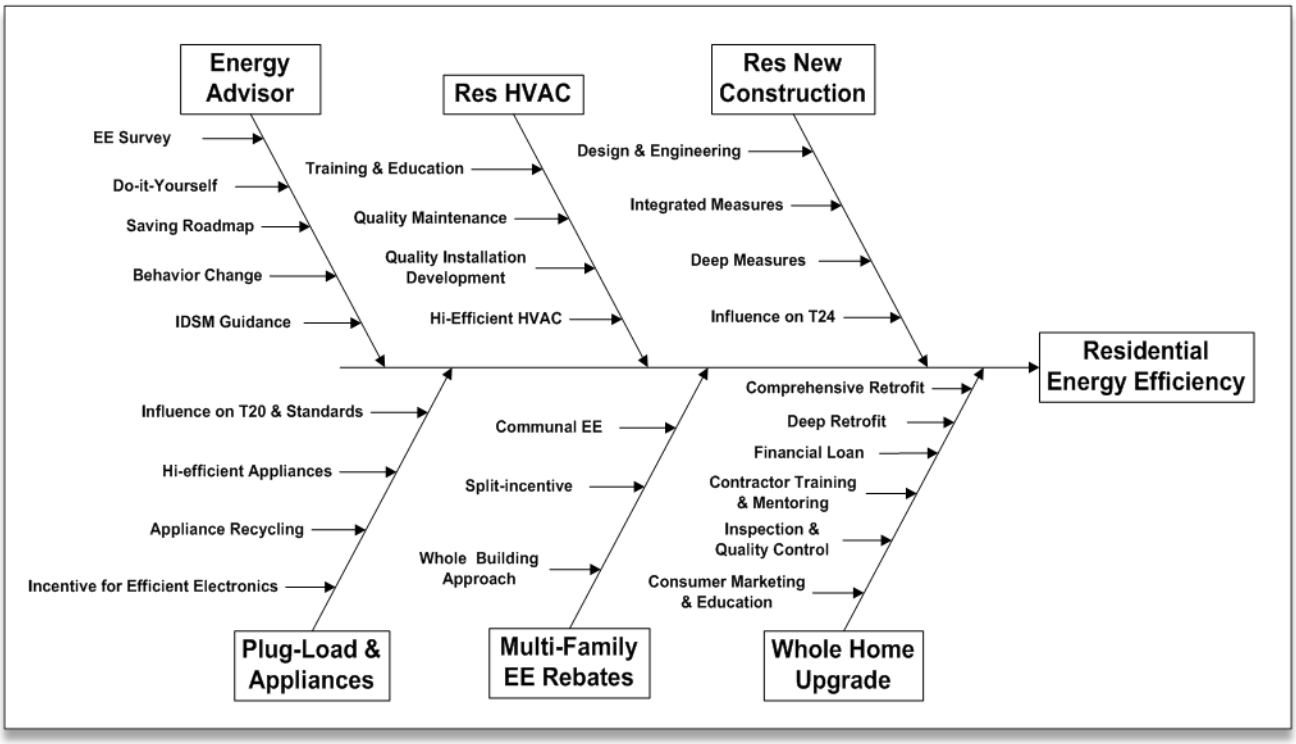
d) Whole Home Upgrade Program (WHUP). For 2013-2014, the WHUP will consolidate the previously separate Prescriptive Whole House Retrofit (PWHRP) and Local Whole House Retrofit (WHRP) and the introduction of a Multi-family component. The WHUP sub-

program is designed to build customer and contractor awareness of the house-as-a-system approach to residential retrofits and the many benefits of improving the comfort, safety, and energy savings potential of the house. The WHUP approach promotes both Basic and Advanced Paths to retrofitting; these complementary paths will be presented to customers as one comprehensive offering.

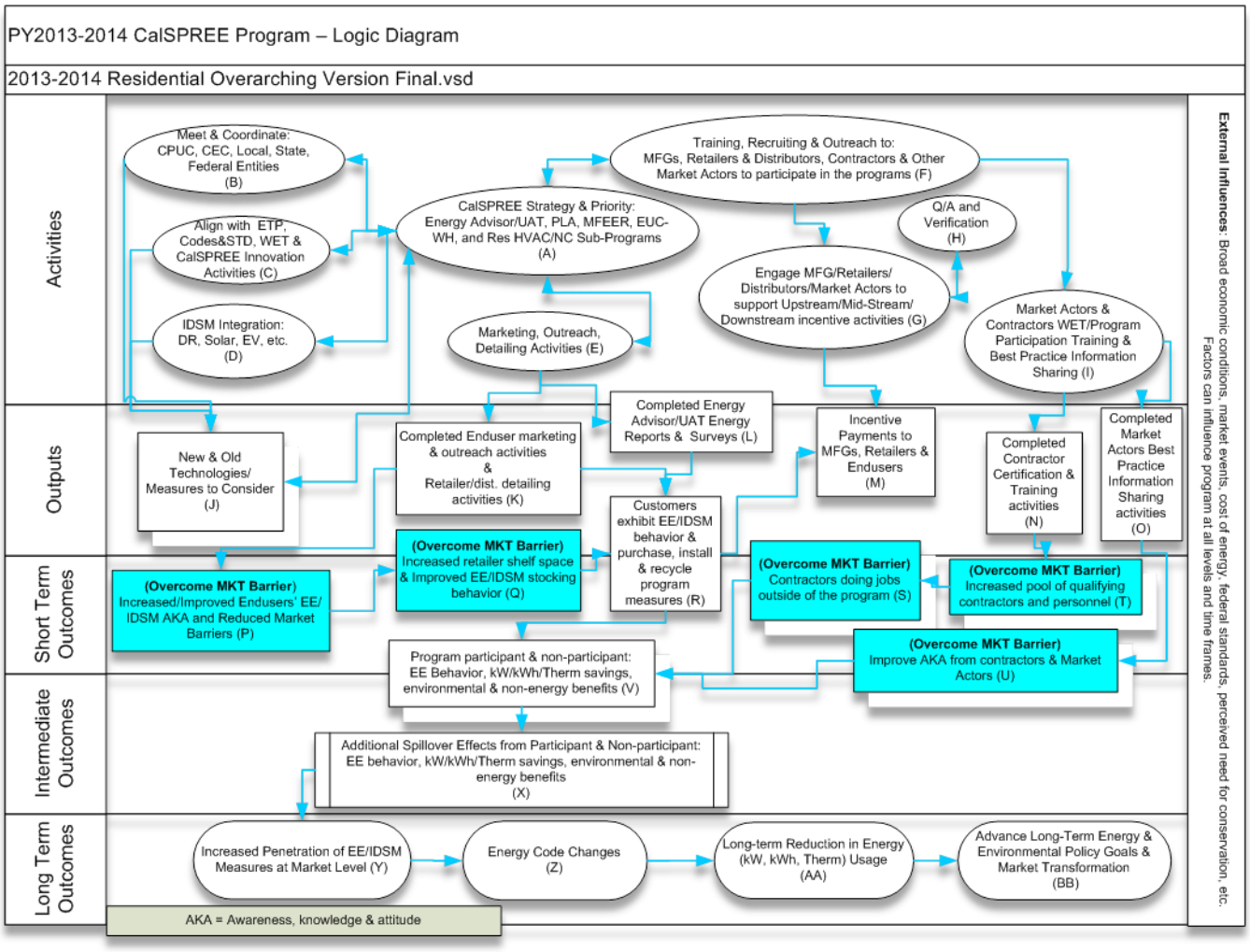
e) Residential Heating, Ventilation, and Air Conditioning (HVAC). The Residential HVAC subprogram is a continuing program with the primary objective of driving high quality levels in California's HVAC market for technology, equipment, installation, and maintenance. An additional objective is to increase customer awareness of the value of HVAC installation and maintenance practices toward driving energy efficiency and peak load reduction. The Residential HVAC subprogram will incorporate revised measures and incentives, policies and procedures, quality assurance, marketing materials, website, and contractor training in performing HVAC installation services for residential customers.

f) Residential New Construction (RNC). The RNC subprogram is a continuing statewide program that consists of the California Advanced Homes Program (CAHP) and, in Southern California, the Energy Star Manufactured Homes (ESMH) Program. The Program is designed to help guide builders to produce the most efficient homes in the most cost-effective manner, and will examine methodologies for supporting the Strategic Plan target of zero net energy (ZNE) by 2020.

5. CalSPREE Program Diagrams



6. Program Logic Model



1. **Program Name:** Energy Advisor Program
   Program Type: Core

2. **Projected Program Budget Table**
   Table 1 - reference the CalSPREE for budget details

3. **Projected Program Gross Impacts Table – by calendar year**
   Table 2 - reference the CalSPREE for projected gross impact details

4. **Program Description**

   a) Describe program

   This program is a continuation of the existing statewide Energy Advisor Program (formerly known as the Home Energy Efficiency Survey-HEES program) within the residential energy efficiency portfolio. Although SDG&E, SCE, PG&E and SCG share similar program theory, design and goals, each IOU may implement its program logistics differently.

   In 2013-2014, the Energy Advisor program will continue to help customers understand and empower them to manage their energy use, and will guide them, where appropriate, towards advancing whole-house energy solutions. The subprogram utilizes behavioral outreach initiatives and interactive tools designed to engage customers and to encourage participation in innovative initiatives to reduce their energy consumption through behavioral solutions, program recommendations and, as warranted, IDSM opportunities.

   b) List Offerings

   Offerings vary by IOU, as outlined below:

Offerings	SCE	SCG	PG&E	SDG&E
On-line Survey	X	X	X	X
Mail-in Survey	X	X	N/A	X
Telephone Survey	X	N/A	X	N/A
Multi-family Survey	X	X	N/A	X
In-Home Survey	X	N/A	TBD	N/A
Home Energy Reports	TBD	TBD	X	X
On-Line Buyer's Guide	X	X	X	X
Energy Kits	N/A	X	N/A	X

c) List Non-incentive Customer Services

The Energy Advisor Program offers customers with interactive engagement and detailed outputs on their actual energy usage, including:

- Rate and usage analysis, and
- Household usage data and comparison.

In addition, the program provides information and literature on energy efficiency and IDSM Programs:

- Residential Energy Efficiency
- California Solar Initiative (CSI)
- Peak Demand Initiatives (DR)

The information provided through the Energy Advisor program will be coordinated on a statewide level. This information provided will include historical usage data for customers. The program options provide a platform to measure sustainable reductions in energy usage for the customer and the IOU's. In addition, data collected from the survey questionnaire will be utilized to provide targeted marketing and strategic planning opportunities for all Residential energy efficiency and demand response programs. The Energy Advisor program will be the primary mechanism to drive customers to save energy by educating the customer on their household usage, while comparing household usage with similar households. Statewide coordination efforts may also afford the program to provide information promoting the whole-house approach with information leading customers to whole-house products and services, including energy efficiency product and service providers, rebate program applications and customer service touch points.

5. Program Rationale and Expected Outcome

a) Quantitative Baseline and Market Transformation Indicators (MTIs)

By its nature, market transformation occurs as a result of numerous factors and programs, not single sub-programs. Therefore, all metrics are proposed at the program level. Please refer to the quantitative baseline and market transformation discussion, presented in the overall program PIP.

Program Performance Metrics (PPMs)

On December 2, 2010, the Commission issued Resolution E-4385, approving Program Performance Metrics (PPMs) for Pacific Gas and Electric Company, Southern California Edison Company, Southern California Gas Company and San Diego Gas and Electric Company for 2010-2012 statewide energy efficiency programs and subprograms. The Commission gave each PPM a metric type which indicated the reporting frequency: Metric type 2a indicates that the IOUs should report on the metric on an annual basis (unless indicated otherwise). Metric type 2b indicates the IOUs should report on the metric at the end of the program cycle.

Below are the approved PPMs and metric types for the Energy Advisor Program (Resolution E-4385, Appendix A, p 34).

Table 3 – Refer to the overarching program for quantitative baseline metrics

SW PROGRAM/ Sub Program	PROGRAM PERFORMANCE METRIC (PPM)	Metric Type
Energy Advisor (EA)	Percentage of Energy Advisor participants that enroll in (a) whole house and (b) other resource programs	2b

b) Market Transformation Indicators (MTI)

Per Resolution E-4385, a subset of market transformation indicators (MTIs) for statewide energy efficiency programs and subprograms were presented at a public workshop on November 7, 2011, to allow for public comments and discussion before being finalized. Per Energy Division Guidance on June 19, 2012, the MTIs to be found in Appendix "H" are approved for this sub-program as applicable.

Table 4 – Refer to the overarching program for market transformation metrics

c) Program Design to Overcome Barriers

Promoting energy and water efficiency to the residential customer provides opportunities to foster market transformation. The main barriers include:

- Lack of current energy performance;
- Lack of energy efficiency information;
- Lack of awareness of specific measures and practices

To overcome these barriers, the Energy Advisor Program will provide accurate and comprehensive information about energy and water saving strategies, customized recommendations and suggestions for energy and water conservation and installation of energy-saving measures, and detailed analysis of energy billing, energy usage, and energy costs, based on actual household consumption. This information encourages permanent changes in customers' attitudes and actions toward energy conservation by helping them understand their usage, as well as providing information on a wide variety of possible measures, practices, and actions. The program will also continue to provide information in multiple languages to overcome language barriers for non-English-speaking customers.

Marketing is a key component in the success of the Energy Advisor Program, first to generate awareness of the program, and second - and more important - to encourage completion of a survey. Marketing plans will be discussed statewide to ensure consistency and sharing of best practices.

Statewide delivery mechanisms continue to include online tools. The individual utilities may also provide other survey and engagement offerings if they feel these types are warranted. Online tools will be coordinated with a statewide emphasis to share best practices. Each IOU will have a delivery method capable of serving customers in multiple languages to bridge language barriers among California's diverse population.
It is necessary to persuade Californians to commit to energy conservation. For many, this will be a gradual process facilitated by readily available, well placed educational

materials that help the customer understand their energy usage and encourage the customer to make the greater commitment to participate in behavior and equipment based IDSM improvements. In accordance with the driving behavior change elements of energy improvement, each utility will seek to reach at least 5% of their customers through a variety of behavior change inclusive offerings.

While the interactive survey and/or reports and action plans should result in changes in customer utilization, it cannot be considered a conclusion of the process. Rather, once customers have been engaged through the Energy Advisor program, utilities may motivate them to achieve even greater conservation savings through additional education on-line, by e-mail, by mail, by telephone, or through any other appropriate mechanism.

d) Quantitative Program Targets

The proposed targets may be modified due to funding restrictions, especially for the 2013-2014 transition period (bridge funding years).

Table 5

IOU	Program Target by 2012	Program Target by 2013	Program Target by 2014
SDG&E	3,000	5,000	5,000
SCE	21,875	26,000	26,000
SCG	10,000	10,000	10,000
PG&E	40,000	40,000	40,000

e) Advancing Strategic Plan goals and objectives

The Energy Advisor program will advance the strategic plan goals and objectives of the Strategic Plan as outlined:

- Goal 2.2: Residential Sector including Low-Income - Tracking Transform home improvement markets to apply whole-house energy solutions to existing homes - The Energy Advisor Program will plan to deliver a new survey which will strive to implement decision triggers and call to action to support advancement of whole-house energy solutions. The surveys and/or reports will also pursue initiatives to reduce the growth of plug load energy consumption through behavioral and technical solutions.

- Goal 8.3: DSM Coordination and Integration - Deliver integrated DSM options that include efficiency, demand response, energy management and self generation measures, through coordinated marketing and regulatory integration - The Energy Advisor Program will seek opportunities to partner with municipalities, governmental and water agencies and other stakeholders if applicable to promote water and energy conservation. Further integration strategies may also include IDSM, ESAP and other energy efficiency programs.

- Goal 9.2 - Workforce, Education and Training - Ensure that minority, low-income and disadvantaged communities fully participate in training and education programs at all levels of the DSM and energy efficiency industry - This strategy falls in line with a goal of the WE&T Strategic Plan intended to ensure that minority, low-income and disadvantaged individuals fully participate in training and education programs at all levels of demand-side management and energy efficiency.

6. Program Implementation

a) Statewide IOU coordination

i. Program name: Energy Advisor Program

ii. Program delivery mechanisms

The Energy Advisor Program is delivered to customers through multiple offerings. See section 4) b) above for program offerings by utility.

iii. Incentive levels

This program does not offer monetary incentives.

iv. Marketing and outreach plans, e.g. research, target audience, collateral, delivery mechanisms

Marketing efforts will be coordinated statewide to develop a portfolio of communication methods. The utilities can use these methods, including but not necessarily limited to, blast e-mails, flyers, on-line marketing, direct mail, trigger marketing, and/or lifestyle packages as suits the target audience, the message, and the resources.

v. IOU program interactions with CEC, ARB, Air Quality Management Districts, local government programs, other government programs as applicable

The Energy Advisor program does not interact, as such, with other programs or organizations. However, the program will maintain the flexibility to coordinate program services to support initiatives generated by agencies.

vi. Similar IOU and POU programs

The Energy Advisor program provides a consistent and recognizable presence throughout the state and offers a menu of similar services and processes implemented statewide by PG&E, SDG&E, SCE and SCG. The program will work with municipalities, when applicable to offer this service and/or partner in the information provided. Efforts will be made to provide consistent reporting of program results across the state where applicable.

The program also will be implemented in close association with other residential energy efficiency programs. The Energy Advisor program will be the starting point for residential customers to tap into the IOU's residential energy efficiency services. Through marketing, education and outreach, each program will encourage end-users to adopt multiple measures to gain the benefits associated with an integrated whole-house approach to energy efficiency.

The Energy Advisor program will leverage its survey information to provide information and referrals to other energy efficiency programs. Aggregated data from on-line surveys and other program efforts will be examined to provide direct marketing opportunities as applicable.

The Energy Advisor program collaborates with the Energy Savings Assistance Program (ESAP) by making the service available to them and by providing customers with residential program information. Energy Advisor will coordinate with local and other outreach efforts, as appropriate.

b) Program delivery and coordination

i. Emerging Technologies (ET) Program

The Energy Advisor program will collaborate statewide with emerging technologies initiatives and incorporate other measures into the customer energy report, as warranted, to support the Strategic Plan.

ii. Codes & Standards program

Continuous improvements and enhancements will be coordinated statewide to ensure the Energy Advisor Program maintains consistency with updates to codes and standards. Additionally, whenever analysis of the Energy Advisor program related data suggests an area that may be of interest to codes and standards, the program will proactively provide appropriate direction.

iii. WE&T efforts

The Energy Advisor program will collaborate with WE&T efforts where appropriate to share information and best practices.

iv. Program-specific marketing and outreach efforts

In addition to the statewide marketing efforts outlined above in Section 6.a.iv, the program may be utilized as an outreach mechanism in conjunction with CBOs, faith-based organizations, local community events, fairs, etc.

v. Non-energy activities of program

The Energy Advisor program is a successful effort to reach consumers through self, and in some cases direct, contact in ways that consumers prefer. The Energy Advisor Program will serve customers in multiple languages and through different delivery channels. Utilities will improve the Energy Advisor program prominence through creative initiates such as: analyzing websites to insure high visibility of the Energy Advisor offerings; utilizing telephone representatives to explain and suggest Energy Advisor offerings to callers; describing Energy Advisor offerings in conservation literature; promoting Energy Advisor offerings in conjunction with community outreach efforts, etc., when applicable.

vi. Non-IOU programs

The program will promote non-utility programs (e.g. financing options, tax credits, and recycling) to further encourage customers to adopt energy efficiency measures when applicable.

vii. CEC work on EPIC

The Energy Advisor program will work with the statewide Emerging Technology Program, CEC and EPIC to take advantage of all new emerging technologies activities. The information may be shared in the customer energy report.

viii. CEC work on C&S

The Energy Advisor program will work with the statewide codes and standards to take advantage of new emerging technologies activities. The information may be shared in the customer energy report.

ix. Non-utility market initiatives

The Energy Advisor program will coordinate with non-utility energy resources (i.e. DOE's ENERGY STAR®, CEE, etc., if applicable) to provide customers with information on energy efficient lighting, appliances, and equipment.

c) Best Practices

Statewide best practices are outlined below:

- Customer Usage History: Because the program includes comprehensive usage and billing information, the Energy Advisor Program will continue to promote the survey program as a way to educate customers on their potential energy savings opportunities;

- Targeted marketing: On a statewide level, the Energy Advisor program will continue to focus its marketing campaigns toward residential and multifamily households with higher usage. As mentioned, the program may also be utilized as an outreach mechanism in a variety of community organizations. This approach reduces overall marketing costs by maximizing the response rates generated from marketing efforts.

d) Innovation

The Energy Advisor program will integrate the on-line survey with "My Account" on-line customers to streamline the customer experience, making it more efficient and convenient. Software updates will take into account updates to climate zones, weather regions, demographics, and improved household comparison analysis. This information will also allow for the integration of gas- and water-related measures and information. The IOUs will integrate the on-line survey with customer historic data to streamline the customer experience, making it more efficient and convenient.

The current survey will be replaced by standardized Universal Audit Tools (UAT) developed by each IOU and coordinated at a statewide level to share best practices. The tools will incorporate electricity/gas, energy efficiency, water conservation, demand response and self-generation analysis and will provide tailored set of recommendations

for each type of survey, as appropriate. The UAT incorporates applicable rate and bill analysis functionality, similar home comparison as well as IOUs' adopted and recommended emerging technologies, as appropriate.

The utilities projected schedules for implementation of their Residential Universal Audit Tools are as follows:

Residential Universal Audit Tool Deployment Schedule	
PG&E	March 2012
SCE	March 2012
SCG	October 2012
SDG&E	May 2012

The utilities will continue to meet to share best practices for future UAT developments and enhancements where appropriate.

e) <u>Integrated/coordinated Demand Side Management</u>

The analysis portions of the residential survey programs will be expanded to include demand response and distributed generation. This would be accomplished by adding on to the current survey formats. Customers will be provided recommendations for demand response and distributed generation opportunities for their residence in addition to Energy Efficiency and Behavior change opportunities. Customers will also be referred to information for these programs, when appropriate. Reports will be shared with demand response and distributed generation programs for additional action if needed.

f) <u>Integration Across Resource Types</u> (energy, water, air quality, etc)

The Energy Advisor Program will continue to include recommendations across resource types, as applicable.

g) <u>Pilots / Initiatives:</u>

Statewide Pilot – Energy Savings Assistance Program (ESAP) Initiative: Statewide, the Energy Advisor Program will begin to encourage eligible customers to participate in the ESAP programs and other programs that will help them lower their energy consumption.

Statewide Initiative – Online Buyers Guide: The Online Buyer's Guide (released in 2012) web capability will assist consumers and program participants in making the best energy efficiency purchase decisions. The statewide utilities will continue to collaborate and share best practices on the online buyers guide in 2013-2014.

PG&E/SDG&E Initiative – Home Energy Reports: PG&E and SDG&E will continue to evaluate (SCE and SCG may explore) the benefits of a behavior-based energy efficiency outreach utilizing a neighbor comparison approach as authorized by the CPUC in Decision D.09-09-047 (p. 304) for the 2013-2014 transition period. Known as the "home energy reports" initiative, it involves mailing selected residential customers customized reports at scheduled intervals that compare the energy use of a specific report recipient household to a similar set of households. The home energy report concept is aligned with the IOU's energy efficiency education and outreach goals under the Energy Advisor (EA)

program. The program is designed to increase customer awareness and understanding of their energy usage, and to provide beneficial information on how customers can reduce their energy usage. The demonstrated benefits associated with this behavioral paradigm may serve as an appropriate resource to influence customers to reduce their energy consumption and to increase participation in existing and future energy efficiency programs.

SCE/SCG/SDG&E Pilot - Multi-Family Program: SCE, SCG, and SDG&E intend to offer the Energy Advisor Program to the multi-family sector as a pilot program in 2012-2014. This will involve surveys targeted at the facility owners. The resulting recommendations for the owner will focus closely and specifically on overall property efficiency.

SCE/SCG Pilot: SCE and SCG will provide a quarterly, post-survey feedback mechanism (opt-in) for customers. The pilot initiative will provide customers with a comprehensive energy usage report and will contain historical usage data to reinforce positive trends towards sustainable energy conservation. The mechanism should also increase customer actions in response to the survey, so that the Energy Advisor program continues to monitor its effectiveness in creating energy savings by behavioral change, as well as rebate program participation.

SCE / SCG Pilot – Smart Meter / Web analytics – SCE and SCG will track the customer's My Account energy savings benefits from behavior based energy efficiency content through the Energy Advisor Program.

h) EM&V

The program is meant to encourage action - to inform participants of opportunities to save money and provide resources to execute the recommendations. It will be important to know if the design of the survey is successfully imparting useful knowledge, referring participants to helpful resources, and if this coordinated effort is motivating participants to adopt more energy- and water-efficient behaviors.

The utilities plan to work together and with the Energy Division to develop a complete plan for 2013-2014 studies and budgets after the program plans are finalized and filed. This plan will be submitted to the CPUC in time for approval, together with the PIPs.

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 here.

The Statewide Energy Advisor program has been continued from past program cycles but has a few new program elements. The Energy Advisor program has planned a preliminary process evaluation near the end of the first program year to address specifically how well the new program elements are operating, and to obtain recommendations on how to improve program operations. After the beginning of the last

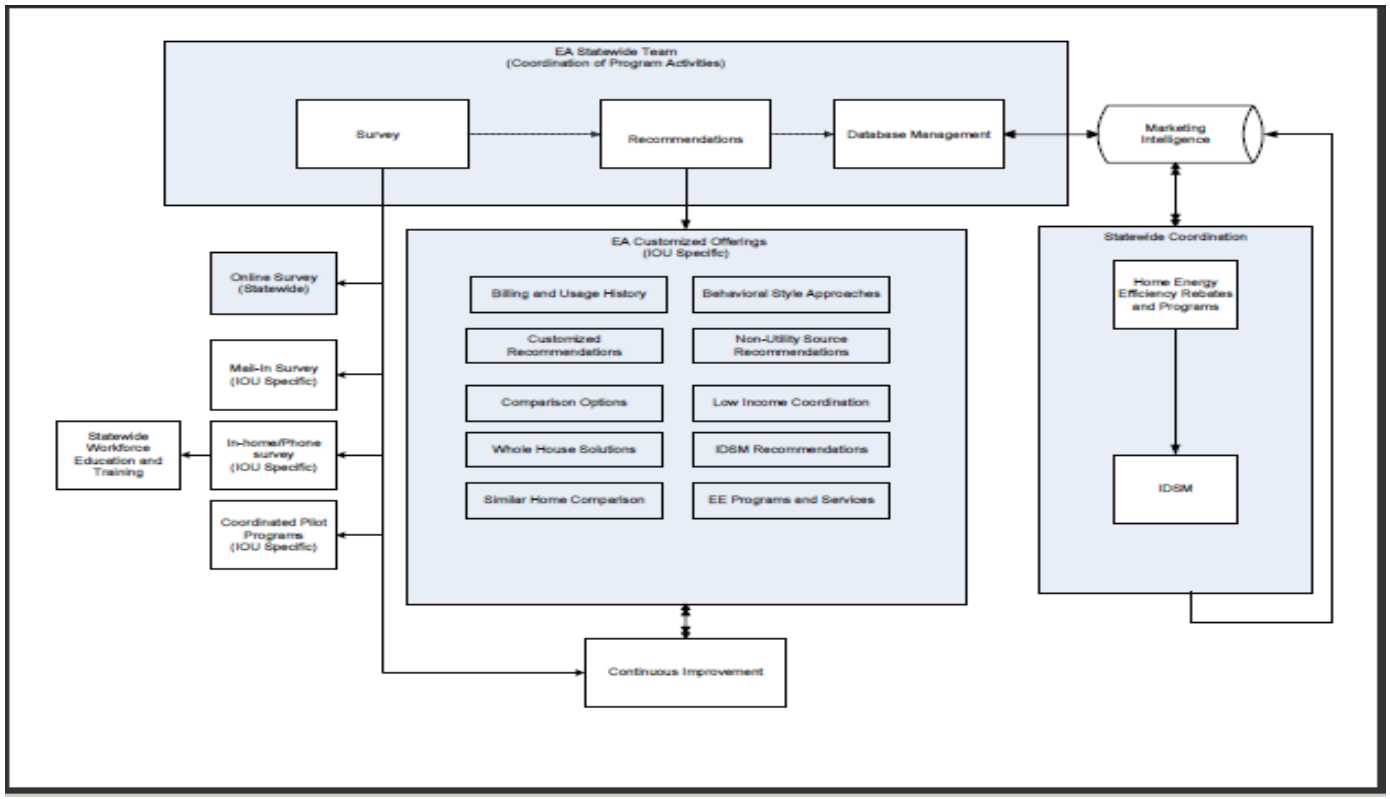
program year, a full process evaluation will address researchable issues based on the program theory and logic model. These issues will include the following as appropriate:

- How well the Energy Advisor program participants learned about advancing whole-house energy solutions;
- How well the Energy Advisor program participants learned behavioral solutions to plug-load energy consumption;
  Whether integration of water-related measures and information was useful to the customer; and
- Whether the individual IOU pilot programs were successful.

To address these issues, the following major evaluation tasks will be completed:

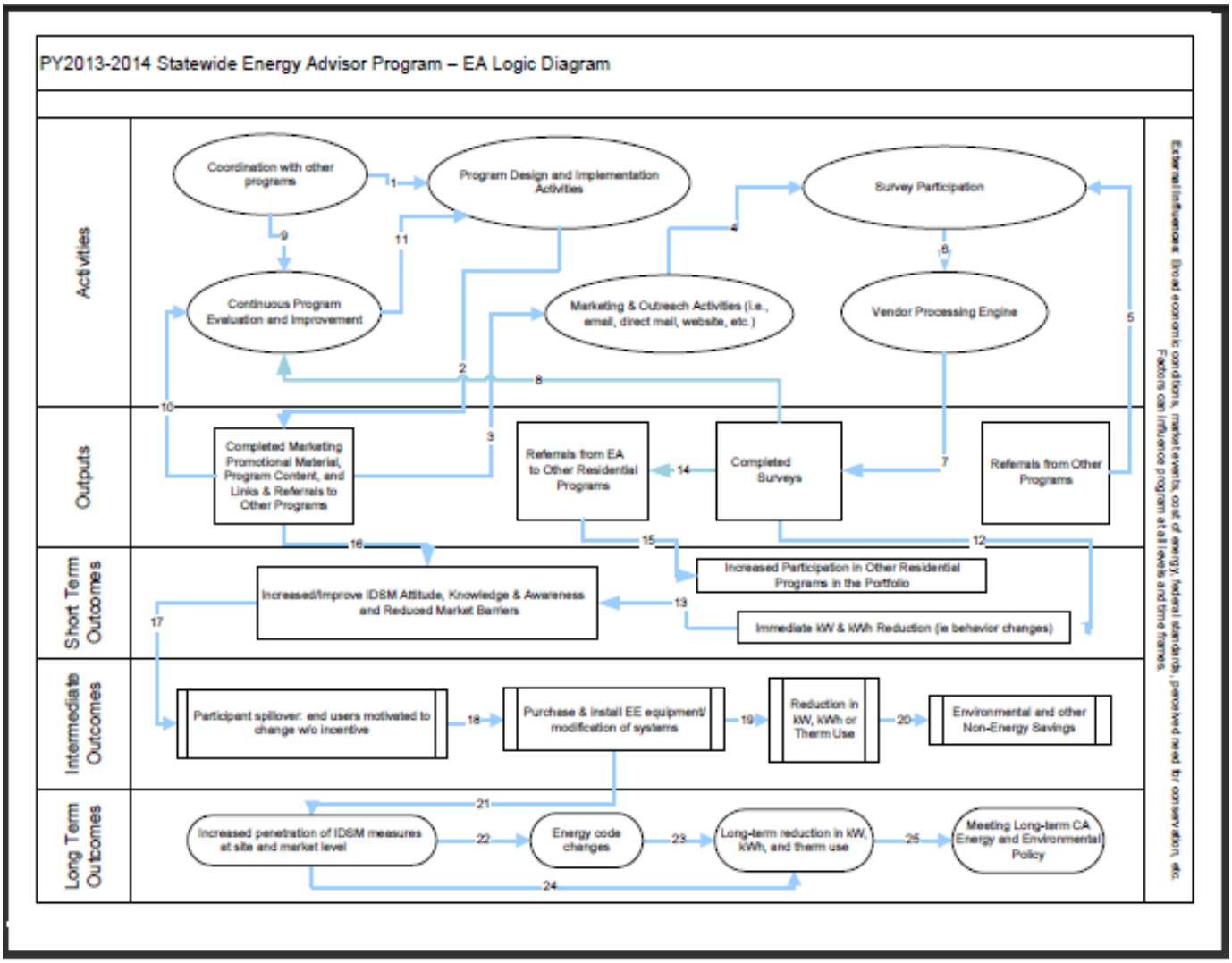
- *Logic model and program theory.* The logic model and program theory will establish a starting point for all evaluation activities. The structure of the logic model, which links program activities and expected outcomes, will be a useful instrument for identifying specific program assumptions that can be tested using a survey or other primary data collection activities;
- *In-depth interviews.* In-depth interviews will be conducted with program managers and other key staff members. Program staff members will clarify program goals and gauge program progress, provide valuable insight into daily operations, and propose research topics to be addressed during the evaluation;
- *Participant survey.* The primary data collection instrument will be a customer post-participation survey, fielded over the phone and via mail. The survey will explore the participant's experience with the program's services and address the research issues identified by the logic model. When appropriate, results will be examined by offering to investigate how the various offerings compare with regard to the most effective marketing strategies, recommendation implementation rates, and measures of satisfaction; and
- *Program-specific data collection and review.* Another key evaluation activity will involve a comprehensive review of all program documents. In particular, this evaluation will identify which specific recommendations have been implemented.

7. Diagram of Program



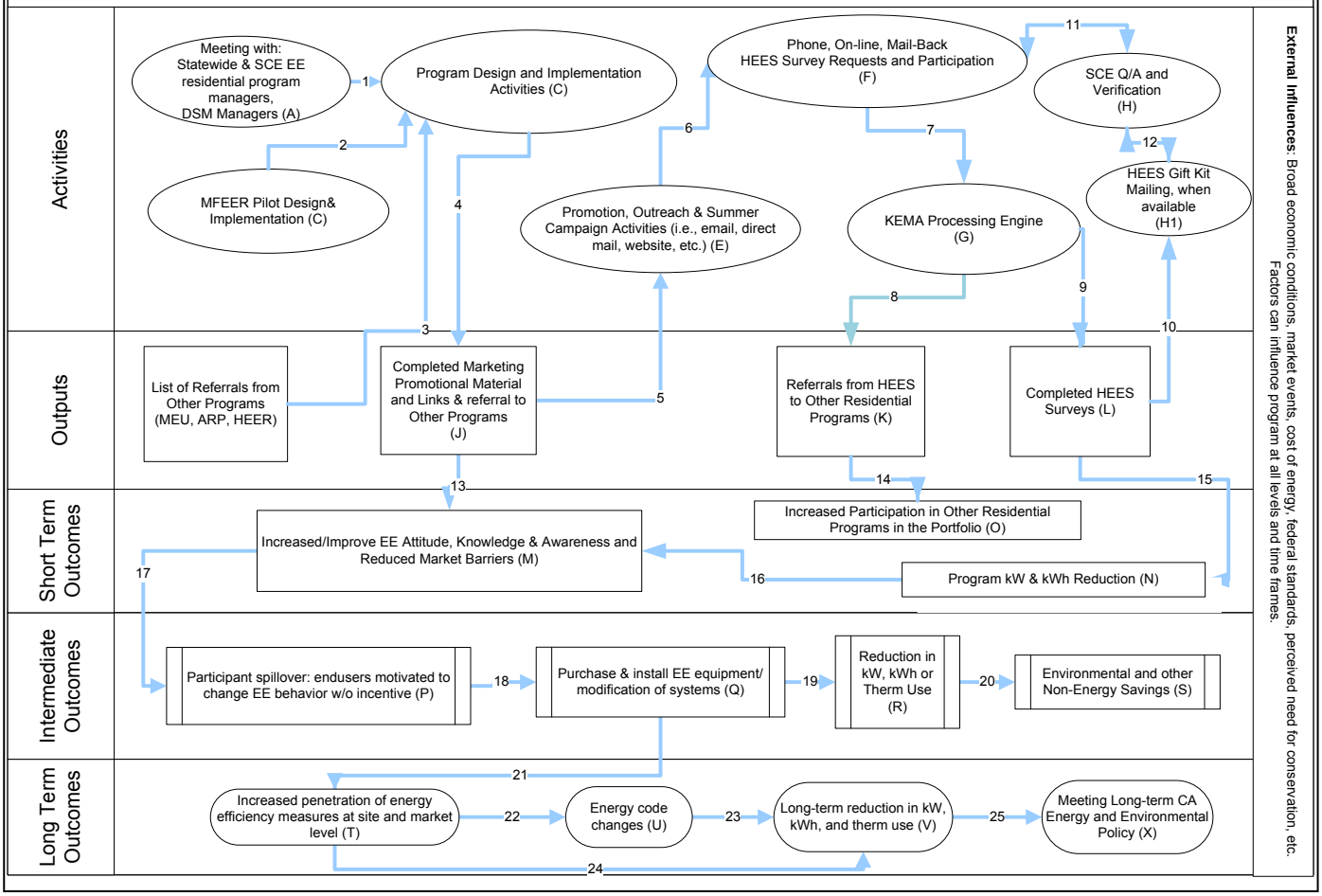
8. Program Logic Model

Note: On December 2, 2010, the Commission issued Resolution E-4385, approving Program Performance Metrics (PPMs) for Pacific Gas & Electric Company, Southern California Edison Company, Southern California Gas Company, and San Diego Gas and Electric Company for 2010-2012 statewide energy efficiency programs and subprograms. In addition, this Resolution approved updated logic models for the statewide programs. Below is the approved logic model for Energy Advisor (EA) Program.



PY2010-2012 SCE Home Energy Efficiency Survey Program (HEES) – Logic Diagram

VisioDocument



1) **Program Name:** CalSPREE Program

2) **Program Description:** Refer to CalSPREE for description details

3) **Total Projected Program Budget and Savings**
   a) **Table 1:** Refer to CalSPREE for budget details
   b) **Table 2:** Refer to CalSPREE for projected gross impacts details

4) **Description of subprogram:** Statewide Plug-Loads & Appliances (SW PLA)
In response to market trends, energy consumption data, customer needs and behaviors, and per the Final Decision's guidance, the California IOUs jointly file this Statewide Plug-Load Appliance (PLA) Program Implementation Plan (PIP). With the aim of serving customers where they shop and reducing the complexity in IOUs' portfolios while increasing customer participation, this PIP combines the 2010-12 Home Energy Efficiency Rebates (HEER), Business and Consumer Electronics (BCE) and Appliance Recycling (ARP) Program under a single program umbrella. This sub-program builds the foundation for a sustainable resource acquisition and market transformation that engages critical market actors: manufacturers, retailers, contractors, service providers and others. Additionally, the PLA sub-program will work with the Whole Home Upgrade Program (WHUP), Energy Saving Assistance Program (ESAP) and other programs to maximize its reach and effectiveness. This will be accomplished through coordinated cross-program initiatives to deliver a comprehensive package of cost-effective and energy efficiency measures to all customers. This PIP addresses appliances, plug loads, and appliance recycling for the residential and business sectors.

Home appliances, consumer electronics, and other miscellaneous plug loads, hereafter called "Plug-Load & Appliance" or "PLA", consume about 66% of current California home electricity usage, with plug loads (televisions, personal computers and office equipment) accounting for about 20% of home electricity usage alone[3]. These PLA products comprise one of the largest and fastest growing end-uses of the residential sectors, significantly contributing to the growth in greenhouse gas emission. Clearly, the PLA markets cannot be left alone. The Big Bold Energy Efficiency Strategy (BBEES) efforts to achieve Zero Net Energy (ZNE) in new residential construction and the State's Integrated Demand Side Management's (IDSM) goal of 40% energy purchase reduction from 2008 levels by 2020 will only be possible if the markets are influenced to increase the availability, awareness and adoption high efficient PLA products through strategic energy efficient program interventions.

[3] Final Decision for the 2013-2014 Transition Period at page 202

1) **Sub-Program Name:** Statewide Plug-Load & Appliance (SW PLA)

2) **Sub-Program ID number:**

3) **Type of Sub-Program: _x_Core __Third Party __Partnership**

4) **Market sector or segment that this sub-program is designed to serve[4]:**
   a. ☑ Residential
      i. Including Low Income? ☑ Yes __ No;
      ii. Including Moderate Income? ☑ Yes __ No.
      iii. Including or specifically Multifamily buildings ☑ Yes __ No.
      iv. Including or specifically Rental units? ☑ Yes __ No.
   b. ☑ Commercial (List applicable NAIC codes: _____)
   c. __ Industrial (List applicable NAIC codes: _____)
   d. __ Agricultural (List applicable NAIC codes: _____)

5) **Is this sub-program primarily a:**
   a. Non-resource program ___ Yes__ No
   b. Resource acquisition program ___ Yes ___ No
   c. Market Transformation Program ☑ Yes ___ No

6) **Indicate the primary intervention strategies:**
   a. Upstream ☑ Yes ___ No
   b. Midstream ☑ Yes ___ No
   c. Downstream ☑ Yes ___ No
   d. Direct Install __ Yes ☑ No
   e. Non Resource ☑ Yes __ No

7) **Projected Sub-program Total Resource Cost (TRC) and Program Administrator Cost (PAC)** TRC ___ PAC ___

8) **Projected Sub-Program Budget**

   Table-3: Projected Sub-Program Budget, by Calendar Year[5]
   [Table-3 to be provided as an Excel Attachment to this PIP]

9) **Sub-Program Description, Objectives and Theory**

   a) Sub-Program Description and Theory: Clearly describe the goals of the sub-program and the sub-program theory. As part of this, describe the market barriers, specific areas of concern and/or gaps that the sub-program is designed to address.

[4] Check all that apply
[5] Individual utility specific information to be provided in this table

Then describe the way the sub-program will seek to address each barrier, area of concern or gap[6].

i. Sub-program Goals

The PLA sub-program aims to transform the market to achieve sustainable adoption of energy efficient PLA products where ongoing intervention would no longer be required. For the short to mid-term time frame where energy efficiency PLA products are still not the market's default choices, the program uses incentive mechanisms, Marketing Education & Outreach (ME&O), Worker Education & Training (WE&T), and strategic industry collaboration to increase availability, awareness, and adoption of energy efficient products. For the longer-term time frame, the PLA sub-program leverages Integrated Demand Side Management (IDSM) programs to influence the development of codes and standards in order to ensure the minimum required energy efficiency levels, promote "Energy Efficiency" as the preferred choice in life-style and new product purchases. The program's long-term strategy seeks to create ongoing demands for "Energy Efficiency" products and thus motivate the industry to produce and sell high efficient PLA products as the market standard offering.

ii. Sub-program Theory

Key Program Drivers

Some of the key market drivers that exert significant impacts to the PLA sub-program in the 2013-2014 Transition Period:

1. PLA products comprise one of the largest and fastest growing end-uses, dwarfing electrical loads from traditional categories such as lighting and HVAC[7] – See Figure-1.

2. Customers tend to rank PLA's energy efficiency as low priority and some perceive that energy efficiency design compromises product performance and convenience.

3. National market trends are the dominant drivers influencing manufacturers and retailers' offering of PLA products. Regional utility programs face

[6] Through marketing, delivery mechanisms, information, incentives, etc. If barriers vary by market sub-sector, provide this information. As part of this, succinctly describe the role of any market actors upstream from the customer such as installers, venders, architects, etc.; indicate if and why the program approach constitutes "best practice," is "innovative" or reflects "lessons learned" in market strategies, program design and/or implementation techniques.

[7] PIER's report "Tapping Into Plug-Load Savings Report", July 20, 2009, page 1

challenges in attracting manufacturer and retailer participation due to the national scope of products[8].

4. Online has a growing importance in the customer's product purchasing process. The customer toggles back and forth between the traditional brick-and-mortar retailers and e-commerce sites for product research, price shopping, purchases, and post-sales support.

5. The incremental energy savings from miscellaneous electronics are too small to motivate customer's behavior changes, and too costly for IOUs' current product-base program framework[9].

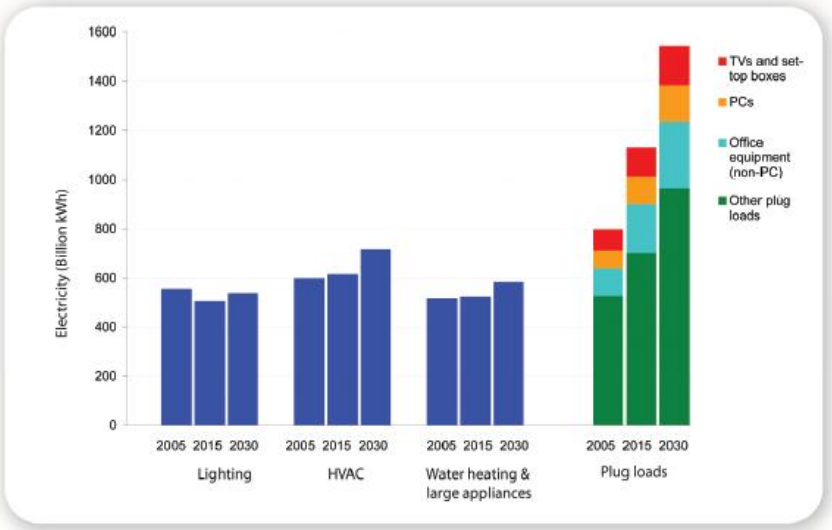
6. The rapid product life cycle for consumer electronics of 6-12 months poses significant challenges in establishing saving baselines and work-paper development for individual measures[10].

7. Growing trends of networking home electronics cause energy saving for products to be highly dependent on consumer behavior or usage settings. This isolation of energy savings and consumption on a product-by-product basis becomes challenging.

8. Codes and standards exert powerful pulls on the PLA markets toward higher energy efficiency baselines.

[8] PG&E and SCE's Report "Program & Technology Review of Two Residential Product Programs: Home Energy Efficiency Rebate (HEER) / Business & Consumer Electronics (BCE)", Study # SCE0306, April 30, 2012, pages 12, 206.
[9] PG&E and SCE's Report "Program & Technology Review of Two Residential Product Programs: Home Energy Efficiency Rebate (HEER) / Business & Consumer Electronics (BCE)", Study # SCE0306, April 30, 2012, page 230.
[10] PG&E and SCE's Report "Program & Technology Review of Two Residential Product Programs: Home Energy Efficiency Rebate (HEER) / Business & Consumer Electronics (BCE)", Study # SCE0306, April 30, 2012, page 205.

Figure 1: US Commercial & Residential Electricity Growth[11]



Energy Information Administration's 2008 Annual Energy Outlook forecasts plug loads to grow 94% from 2005 to 2030, dwarfing the contribution and growth of traditional categories, such as lighting and HVAC.

Key regulatory drivers that impact the 2013-2014 Transition Period are requirements found in the Final Decision[12]. These requirements and IOUs' responses are summarized in Table-E and Table-F of this PIP.

PLA Sub-program Framework

The PLA sub-program is designed to support BBEES in advancing market transformation (MT) toward Title 20 codes and standards changes for realizing ZNE's vision and IDSM goals of reducing the energy purchase by 40% from 2008 levels for the residential sector by 2020. This will be achieved by working with manufacturers, sales channel partners, contractors, service providers, and other market actors in pushing the market toward the 2020 vision through accelerating market adoption of successive waves of advanced PLA technologies. In parallel, the utilities will work concurrently with Code & Standard bodies, ENERGY STAR®, local and federal government agencies, and other market actors to influence the development of codes and standards to support the 2020 goals.

This PIP concurs with the Final Decision that the PLA sub-program should institute a framework that provides a pathway of support for market transformation. Viewing the Final Decision's guidance for the Statewide Lighting Program as a fresh approach to program implementation for greater market transformation and deeper energy savings, the PLA sub-program

[11] PIER's report "Tapping Into Plug-Load Savings Report", July 20, 2009, page 1
[12] Final Decision for the 2013-14 Transition Period, pages 206-207, 357-358 and 411-412

adopts the Final Decision's approach for the Statewide Lighting Program as the template for the PLA sub-program design in the 2013-2014 transition period. The following paragraphs discuss the incorporation of the Final Decision's program framework with the industry's Product Life Cycle concept to develop maximum synergies between the manufacturers, sales channel partners and the PLA sub-program.

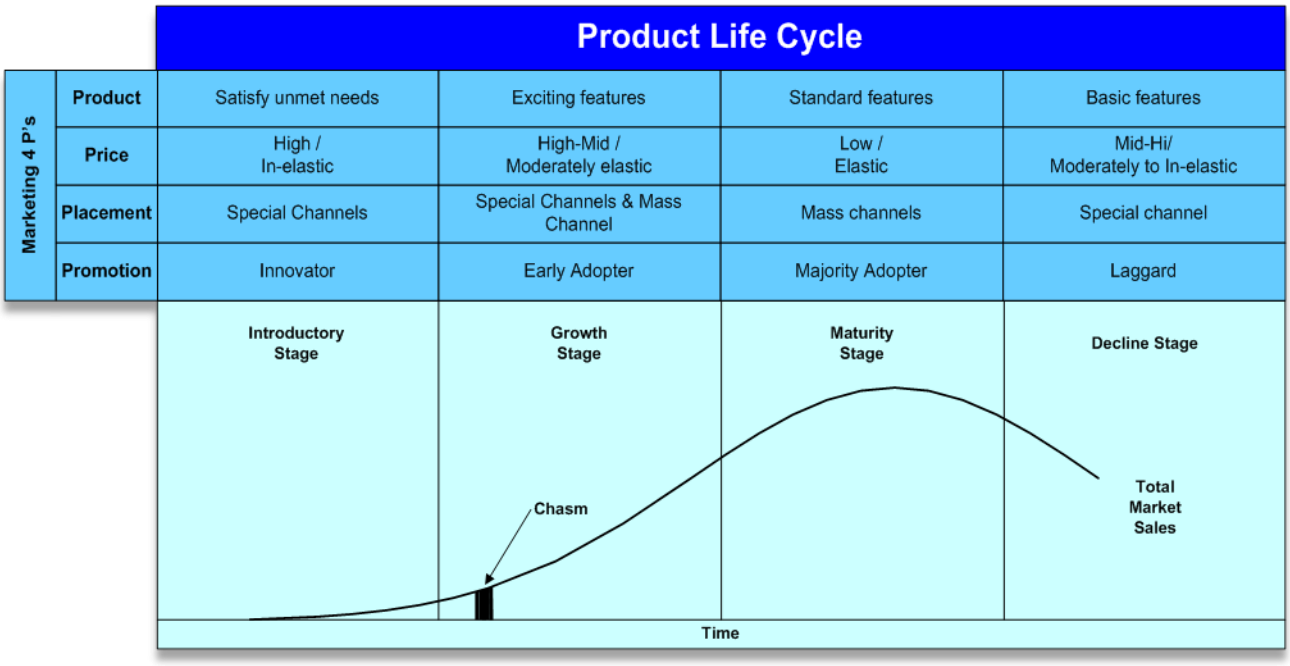
Figure-2 shows the combined "Bass Diffusion Theory"[13], "Technology Adoption Life-Cycle model"[14] and "Concept of Marketing Mixes"[15] as a conceptual model, the Product Life Cycle (PLC) for commercializing new technologies and products. This model provides a high-level macro view of how the industry maximizes the sales of new technology through deploying appropriate marketing mix 4Ps (pricing, promotion, placement and product features) based on user's needs/wants as the new technology progresses through various market adoption stages (introductory, growth, majority, and sun-setting stages). The PLC model proposes that a certain type of customer tends to cluster within a certain PLC phase, and tends to purchase certain type of products from a certain type of retailers. The industry recognizes this market characteristic and responses by formulating appropriate marketing mixes (product features, pricing, placement and promotion) to maximize sales to different customer groups. Figure-2 provides insights on how the PLC conceptual model might be adapted to guide the IOUs' collaborations with manufacturers and sales channel efforts to deliver energy efficiency products to the markets.

[13] Bass, Frank. "A New Product Growth Model for Consumer Durables", 1969, Management Science 15(5): pages 215-227

[14] Bohlen, Joe M.; Beal, George M. (May 1957), "The Diffusion Process", Special Report No. 18 (Agriculture Extension Service, Iowa State College) 1:56-77

[15] Borden Neil H. "The Concept of the Marketing Mix". 1964, Science in Marketing (Harvard Business School), pages 8-9.

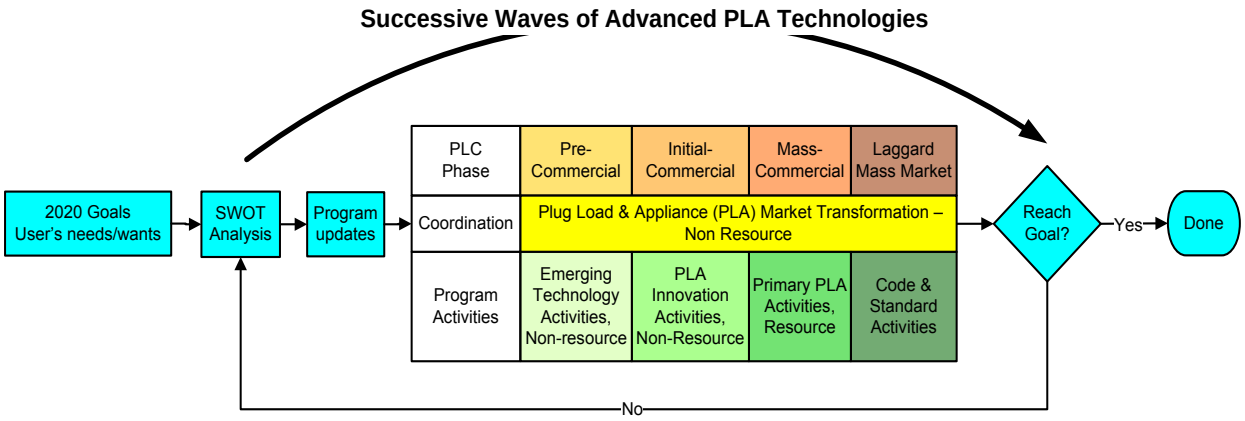
Figure 2: Industry's Product Life Cycle Concept



The IOUs could leverage the industry's commercialization efforts to maximize the adoption of high energy efficient technologies by combining appropriate intervention mechanisms (incentive channels, ME&O, WE&T and Codes & Standards) to influence the industry's marketing mix 4Ps. The diagram in Figure-3 shows the adaptation of the PLC conceptual model into the program framework for supporting the IOUs' efforts in transforming California's PLA markets.

The PLA sub-program framework envisions activities dedicated to support the PLA measures at various commercialization stages, including market transformation activities to provide the overall market transformation strategy and coordination of measures flowing through the PLA sub-program.

Figure 3: PLA sub-program Framework



In embracing the Final Decision's guidance for the Statewide Lighting Program[16], the PLA sub-program supports technology assessments of pre-commercialized PLA measures through Emerging Technology activities. The proposed PLA Innovation activities support advanced PLA technologies aimed at early adopters. The PLA Innovation activities should be heavily weighted and influenced by the user's needs/wants and should focus on helping the innovative PLA technologies bridge the "chasm" between the early adopters and the early majority markets. From the early stages of product development, promising measures that exit the Emerging Technologies activities should transition to the PLA Innovation activities for further market development in accordance to the overall IDSM strategy and goals. The PLA Innovation activities would support demonstration and pilot projects of measures in the very early stages of commercialization, not pre-commercialization. Moreover, the scale of the demonstration and pilot projects in the PLA Innovation activities should be of a greater scale than those in the Emerging Technologies activities. This will help determine which measures should be eventually supported on a larger scale within the Primary PLA activities. Finally, the IOUs propose the Primary PLA activities in the Statewide PLA sub-program for the purpose of supporting PLA measures that have reached a greater level of commercialization. These activities should receive a majority of the PLA incentive funds and would facilitate rapid market adoption through cost-effective incentive delivery channels. The goal is to complete the pathway for market transformation, as measures transfer from the Emerging Technology activities to the PLA Innovation activities to the Primary PLA activities and then eventually exit from the program.

The PLA sub-program framework proposes Market Transformation activities within the Statewide PLA sub-program for developing and testing market transformation strategies. The objectives of the Market Transformation

[16] Final Decision for the 2013-14 Transition Period at pages 227-243

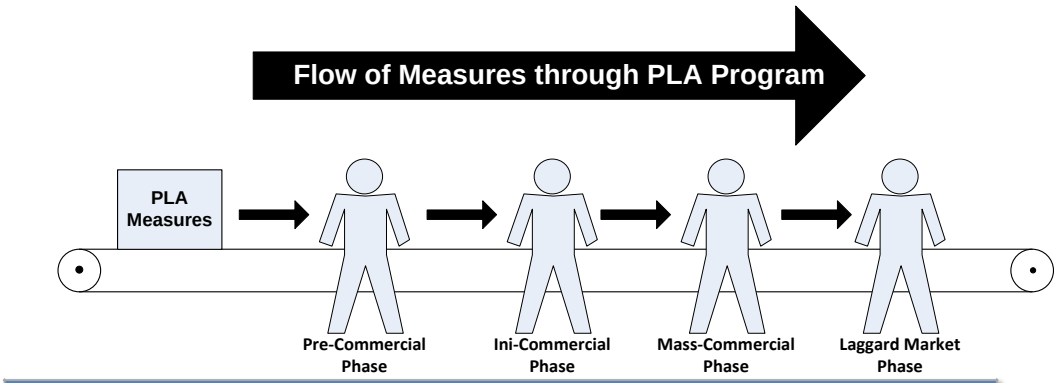
activities are to develop market transformation strategies and to oversee the progression of PLA measures from the Emerging Technology activities to PLA Innovation activities to Primary PLA activities and to the eventual transition to Codes & Standards. Additionally, the Market Transformation activities are to focus on ensuring PLA has adequate representation in the Emerging Technology activities to ensure technologies are being evaluated for potential inclusion in the PLA Innovation activities.

Process for Managing Flow of Measures through Program

Decision 09-09-047 updated the definition of market transformation to include "*promoting one set of efficient technologies, processes or building design approaches until they are adopted into codes and standards (or otherwise substantially adopted by the market), while also moving forward to bring the next generation of even more efficient technologies, processes or design solutions to the market.*"[17] This definition depicts the flow of new measures through the energy efficiency programs as IOUs collaborate with the industry to launch successive waves of advanced and high efficiency technology into the markets. The PLA sub-program framework in Figure-3 supports the Commission's position by continually assessing the overall landscape analysis and adjusting the intervention strategy to push new technologies through the program. Figure-4 conceptualizes how the flow of new PLA measures through the program would be influenced by program activities and intervention mechanisms.

[17] Decision 09-09-047 at pages 88-89

Figure 4: Flow of Measures through PLA sub-program



Phase Activities				
Phase Activities	Emerging Technology	PLA Innovation	Primary PLA	Codes & Standards

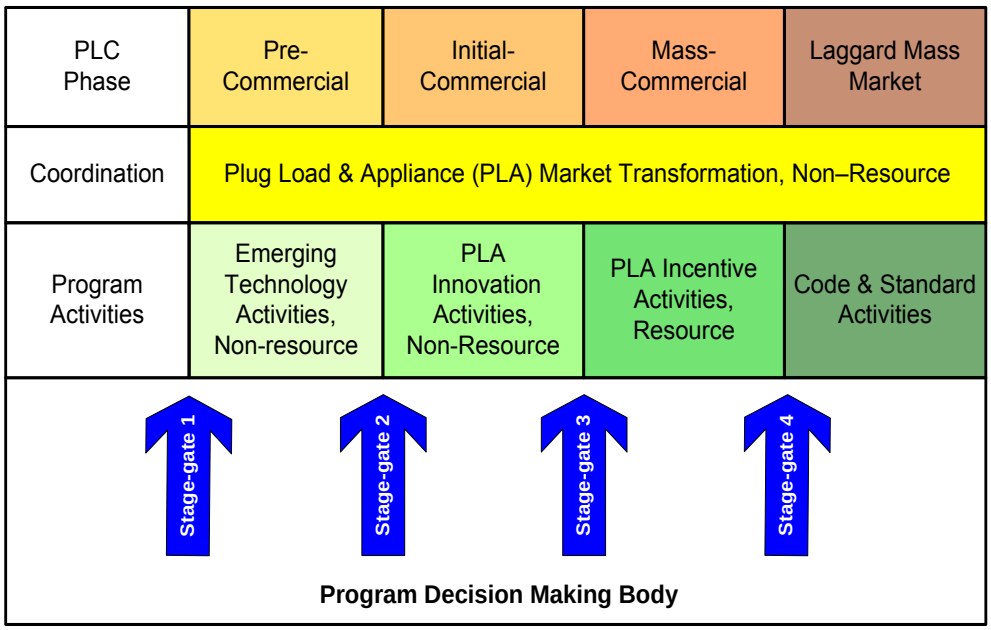
Interventions Influence on Marketing 4Ps					
Marketing 4Ps		Product	Pricing	Placement	Promo
Intervention mechanism	Incentive	✓	✓	✓	
	ME&O			✓	✓
	WE&T	✓			✓
	C&S	✓	✓	✓	

The PLA's process for evaluating the measure's commercialization stage and, formulating the right combination of intervention elements to exert the desired market influence, could be enhanced through a formal decision process for managing the flow of measures through the PLA sub-program. This enhancement could be satisfied by a stage-gate process as shown in Figure-5. In this diagram, the stage-gate design takes into account the unique requirements of each commercialization phase and provides criteria for the PLA measure entry into or exit from a subprogram. The explicit evaluation checkpoints would allow measures to move onto the next subprogram, reject measures from the portfolio at any point along the market transformation life cycle or return the measure back through the loop for further development based on to be established stage-gate criteria. Key criteria to be considered as part of this stage-gate process are as follows:

1. Saving potentials (technical, economic, market)
2. Cost effectiveness
3. User's needs/wants
4. Market opportunities / risks
5. Technology's maturity stages

6. Industry's supports
7. Compliance to industry's standards
8. Cradle-to-grave's total environmental impacts
9. Code's saving baseline
10. Saving verifications

Figure 5: Stage-Gate Process for Managing Measure Flows



i. Market Actors

Refer to Section 12(ii), Table-B for details on relevant market actors and the relationship among them.

ii. Market Barriers & Proposed Interventions

Refer to Section 12(iv), Table-C for details on Market Barriers & Proposed Interventions.

a) Sub-Program Energy and Demand Objectives - If this sub-program has energy and demand objective, please complete Table 4.

Table 4: Projected Net Energy & Demand Impacts by Calendar Year[18]
[Table-4 to be provided as an Excel Attachment to this PIP]

[18] Individual utility specific information to be provided in this table

b) Program Non-Energy Objectives:

Table 3: PLA sub-program Performance Matrix (PPM)
[Table 3 to be provided as an Excel Attachment to this PIP]

c) Cost Effectiveness/Market Need: What methods will be or have been used to determine whether this program is cost-effective?[19] If this is a non-resource program, describe the literature, market assessments or other sources that indicate a need for this program.

The PLA Sub-program has energy and demand objectives, thus the Cost Effective methods contained in the Standard Practice Manual will be used.

d) Measure Savings/ Work Papers:

a. Indicate data source for savings estimates for program measures (DEER, custom measures, etc) & work paper status for program measures.

Table 4a: Measure Savings / Work Paper
[Table 4a to be provided as an Excel Attachment to this PIP]

Table 4b: IOUs' Exploratory Measures Considered for 2013-2014
[Table 4b to be provided as an Excel Attachment to this PIP]

10) Program Implementation Details

a) Timelines: List the key program milestones and dates.
Table 5: Sub-Program Milestones and Timeline
[Table 5 to be provided as an Excel Attachment to this PIP]

b) Geographic Scope: List the geographic regions (e.g., CEC weather zones) where the program will operate.
Table 6: Geographic Regions Where the Program Will Operate
[Table 6 to be provided as an Excel Attachment to this PIP]

c) Program Administration
Table 7: Program Administration of Program Components
[Table 7 to be provided as an Excel Attachment to this PIP]

d) Program Eligibility Requirements:

i. **Customers:** List any customer eligibility requirements (e.g., annual energy use, peak kW demand):

[19] If the program has energy and demand objectives, simply state that the methods contained in the Standard Practice Manual will be used. If the program does not have energy and demand objective, propose an approach to assess cost-effectiveness.

Table 8: Customer Eligibility Requirements (Joint Utility Table)
[Table 8 to be provided as an Excel Attachment to this PIP]

ii. **Contractors/Participants:** List any contractor (and/or developer, manufacturer, retailer or other "participant") eligibility requirements (e.g. specific IOU required trainings; specific contractor accreditations; and/or, specific technician certifications required).
Table 9: Contractor/Participant Eligibility Requirements (Joint IOU Table)
[Table 9 to be provided as an Excel Attachment to this PIP]

e) Program Partners:

i. **Manufacturer/Retailer/Distributor partners:** For upstream or midstream incentive and/or buy down programs indicate[20]:
Table 10: Manufacturer/Retailer/Distributor Partners
[Table 10 to be provided as an Excel Attachment to this PIP]

ii. **Other key program partners:** Indicate any research or other key program partners.
- California Energy Commission
- EPA ENERGY STAR®
- Consortium for Energy Efficiency (CEE)
- American Council for an Energy-Efficient Economy (ACEEE)
- National Electrical Manufacturers Association (NEMA)
- Natural Resources Defense Council (NRDC)
- Energy Solution
- Ecova
- Navitas Partners

f) Measures and incentive levels: E3 calculators will provide the list of measures and incentive levels to be provided via the program. In this section the utilities should provide a summary table of measures and incentive levels.

i. Use a single excel spreadsheet to indicate the eligible measures for the program across all IOUs. Indicate the expected incentive level by measure or measure grouping for each IOU, making clear where these vary.

ii. For each incented or rebated measure, indicate the market actor to whom this will be provided.

Table 11: Summary Table of Measures, Incentive Levels and Verification Rates
[Table 11 to be provided as an Excel Attachment to this PIP]

[20] Provide in a consistent format for all IOUs. Indicate program partners across all IOU territories in one table or spreadsheet. Append to end of PIP.

g) **Additional Services:** List additional services that the sub-program will provide, to which market actors.

i. For each service provided, indicate any expected charges to market actors of the services, and/or the level at which any such services will be incented or funded.
Table 12: Additional Services
[Table 12 to be provided as an Excel Attachment to this PIP]

ii. Sub-Program Specific Marketing and Outreach:
Refer to Section 10(v) for details on Marketing Education & Outreach.

iii. Sub-Program Specific Training:
Refer to Section 10(v) for details on Worker Education & Training.

iv. Sub-Program Software and/or Additional Tools:

a. List all eligible software or similar tools required for sub-program participation.
None

b. Indicate if pre and/or post implementation audits will be required for the sub-program.
Pre-implementation audit required ___ Yes ☑ No
Post-implementation audit required ___ Yes ☑ No

c. As applicable, indicate levels at which such audits shall be rebated or funded, and to whom such rebates/funding will be provided (i.e. to customer or contractor).

Table 13: ***Post-implementation Audits***
N/A

h) **Sub-Program Quality Assurance Provisions:**
Table 14: Quality Assurance Provisions
[Table-14 to be provided as an Excel Attachment to this PIP]

i) **Sub-program Delivery Method and Measure Installation /Marketing or Training:** Briefly describe any additional sub-program delivery and measure installation and/or marketing & outreach, training and/or other services provided, if not yet described above.

(i) Upstream Incentive Delivery Channel

The PLA program uses "different incentive designs" to influence market actor behaviors. The upstream incentive is paid directly to the manufacturers for the purpose of influencing the manufacturer's product offering in the distribution chain. The upstream incentive can potentially influence the retailer's product assortments and impact the customer's purchasing behaviors. This delivery channel can be a cost effective means for supporting measures that have high

sales volumes, produced by relatively few manufacturers that sell through a large number of independent retailer chains.

(ii) Midstream Incentive Delivery Channel

The midstream incentive is paid to the retailers, e-retailers, distributors, contractors or service providers and is typically used to influence the sales channels' decision on which products to stock and sell. The midstream incentive offers IOUs the advantage of applying the incentives across all brand offerings for a particular product category that a retailer carries without the additional effort of managing multiple manufacturer relationships. This enhances the customer's shopping experiences and allows retailers to offer wider product choices.

Continuing to cultivate strategic alliances to maximize the synergies with retailer partners is an effective strategy for increasing the program cost-effectiveness and efficiency. California IOUs will continue to develop strategic partnerships with the industry to be more effective in promoting energy efficient products and services, showcasing our energy expertise, branding our successes, and maintaining high levels of customer satisfaction. These strategic alliances include the contractors for roofs, pumps, and evaporative coolers in previous program cycles, as well as HVAC contractors from other residential programs.

The continued use of retailers as a go-to-market channel provides an excellent conduit for developing a "one-stop approach" for customers, as noted in the long-term Strategic Plan. By increasing the program participation with national chain mass market and regional vertical retailers, the program will provide the following benefits:

- Expanding network that increase customer convenience;
- Enhancing retail management support for energy efficiency;
- Establishing more opportunities for co-marketing and branding with retailers;
- Expanding cooperation between utilities, retailers and manufacturers to promote and stock high efficiency PLA products; and
- Providing market information for energy efficiency products.

As noted previously, the national trend by nation chain mass market retailers toward promoting "energy efficient" products within their stores provides IOUs the opportunity to reach end-users through a preferred method of communication— directly from the retailer. Beyond leveraging the ENERGY STAR® brand, PLA will use its retail management support to develop bundled promotions, host events, train staff, and conduct promotional campaigns with retailers to directly influence consumers' choice for energy efficiency products.

(iii) **Downstream Incentive Delivery Channel**

The downstream incentive is paid directly to the end-customer and is typically used to directly influence the customer's purchasing decision. While the downstream incentive model has the advantage of capturing more customer information, the more lengthy incentive administrative process of rebates

applications is disadvantageous. Additionally, the administrative efforts supporting downstream rebate applications are typically not cost effective for small rebate amounts.

A major implementation strategy for the program is to expand the downstream incentive delivery channel to include the point-of-sale (POS) “instant rebate”. This implementation would allow retailers to instantly provide the customer the IOU rebate at the register, streamlining the rebate application payment process and integrating appliance incentives with appliance recycling opportunities. This POS strategy seeks to include more retailers that sell high efficient refrigerators, whole house fans, pool pumps and other appliances as applicable with each IOU. Retailers are key market actors in moving the energy-efficient PLA markets, thus the PLA sub-program design will be optimized to maximize the retailers’ participation. The final implementation will be depending on the retailers’ IT structure and capabilities in certain areas.

Table-A: Incentive Delivery Channel Summary

Incentive Delivery Channel	Primary Market Actors Affected	Criteria used to determine the best delivery channel for any PLA measure
Upstream	Manufacturer	1. High volume product 2. More retailers selling product than number of manufacturers producing product 3. Lower value product 4. Low-mid incentive level 5. Lower sales effort required 6. Low promotion requirement 7. Long product life cycle
Midstream	Sales Channel Partners (retailers, contractors, etc.)	1. Mid - High volume product 2. More manufacturers producing product than number of retailers selling product 3. High value products 4. Mid-high incentive levels 5. High sales efforts 6. High promotion requirement 7. Short product life cycle
Downstream	End-customer	1. Low volume product 2. Targeted customer group 3. Strong relationship with customer 4. High value product 5. High incentive level

(iv) Retailer based Appliance Recycling

The PLA sub-program will work with Retailers to support responsible environmental stewardship by providing more comprehensive cradle-to-grave product life cycle management. The program supports the US EPA Responsible Appliance Disposal (RAD) program, which promotes the highest quality recycling, reducing greenhouse gas emissions and landfill waste. The IOUs appliance recycling activities support eliminating the current market practice of reselling old appliances removed from customer homes during the delivery of new ones. The IOUs recognize that customer-facing retail staff has effective point-of-influence to educate customers on the total environmental impacts resulting from adoption of higher efficiency products and permanent removal of older and less efficient PLA products from the grid.

In 2011, SCE and PG&E conducted a trial study on Retailer based Appliance Recycling in which the retailer picked up old but still working refrigerators and freezers upon the delivery of new appliances. The Appliance Recycling vendors then collected these old appliances in bulk from the retailer's warehouse. This trial study showed that the retailer based appliance recycling had generated a

significant increases in the number of older but still working appliances recycled by the program. Based on the latest work papers which use the results from SCE's 2011 Retailer based Appliance Recycling Trial Study, the results show that energy savings are estimated to be 9% higher than the latest DEER values. The Retailer based Appliance Recycling channel is expected to significantly reduce the IOUs implementation costs as a result of the "bulk" pickups by the recycling services contractors from the retailer distribution centers.

Based on the success of SCE's and PG&E's 2011 Retailer based Appliance Recycling trial, the IOUs are proposing to launch and expand this appliance recycling channel to more retailers in the 2013-2014 transition period and explore ways to increase coordination of the appliance recycling with the retailer's appliance disposal activities. When possible, comprehensive education materials on cradle-to-grave product life cycle management will be posted on the retailer's website and at the point-of-purchase. Through targeted marketing, education and outreach, the IOUs seek to increase market awareness and enhance compliance to the codes and standards for appliances and electronics recycling.

The benefits of reduced implementation costs and increased program simplicity that POS instant rebates provide, as discussed above, make it impractical for the IOU's to implement a Cash-4-Appliance rebate program design for refrigerators as suggested in the Final Decision's guidance for the appliance recycling activities. The IOUS will instead focus on implementing existing refrigerator rebates in combination with the new appliance recycling retailer strategy that has been piloted by SCE. This new strategy effectively promotes the purchase of a new efficient refrigerator and combines it with the convenience of allowing customers to recycle their own refrigerators in the new Refrigerator Deliver-N-Haul away process. This approach does not require customer to surrender their refrigerator as part of the rebate process but still allows IOU's to reduce implementation cost for both programs while providing options that improve the customer experience. By working with retailers to integrate appliance recycling to be an integral parts of the product ownership, from new product purchase to retiring old devices from the grid, would provide a simplified and cost-effective long-term solution for cradle-to-grave product life cycle management. And the retailer based appliance recycling solution, which the IOUs plan to expand in 2013-14, would be an ideal solution for realizing this vision.

(v) Statewide Appliance Recycling Channel

The appliance recycling markets could be segmented into three primary customer groups; Group one would be the customers that retired their old appliances when the new ones are delivered; group two would be the customers that retired their secondary appliances (such as the secondary refrigerator or freezer); group three would be those customers and retailers that sell/buy the old working appliances to/from the second-hand appliance markets.

We believe the above retailer-based appliance recycling channel would be an effective intervention for group one. The current Statewide Appliance Recycling

channel, which will be discussed in more detail in this section, could be an effective intervention for group two. The intervention for group three would require a long-term strategy through codes and standards, as well as collaborations with EPA RAD and other market actors to deplete old working appliance stocks that do not meet the 2020's energy efficiency requirements. The intervention for group three would need support from new codes and standards that eliminate the market practices of re-selling old appliances back to the second-hand appliance markets.

The estimated schedule to deplete the old working appliance stocks from the grid would primarily depend on the implementation date of the code and standards that will mandate the 2020's energy efficiency levels and the average product life for that particular PLA product group. Thus, the Final Decision's request to transition the current appliance recycling program to market players by a specific date[21] cannot be answered with certainty at this point. The IOUs will continue to engage the Commission and appropriate market actors on this.

Currently, the Statewide Appliance Recycling picks up older but working appliances from single residential dwellings, multi-family complexes and businesses, and permanently disposes them in accordance to EPA's Responsible Appliance Disposal (RAD) guidance. The Statewide Appliance Recycling channel is designed to incentivize customers to permanently remove and recycle inefficient refrigerators and freezers from the electrical grid by:

(1) Offering customers an incentive along with free pick-up as a convenient option to recycle their inefficient appliance.

(2) Requiring Recycling Service partners to be in compliance with EPA RAD practice so all appliances could be decomposed and recycled in the most environmentally friendly manner possible.

(3) Allowing commercial and multifamily owners/property managers to coordinate bulk pick-ups that simplify the participation process and allows IOU's to reduce program implementation costs.

During the 2013-2014 Transition Period, the PLA sub-program will focus on secondary refrigerators and stand-alone freezers. This initiative aims to stem the tide of the growing number of second refrigerators and freezers in California home. Additionally, the PLA sub-program looks into saving opportunities for both claimable and non-core, non-claimable to avoid lost opportunities for refrigerator and freezer recycling. Lastly, the program is evaluating additional cost-effectiveness and more comprehensive recycling solutions through inclusion of additional recycling of other types of household plug-loads, small business appliances and electronics devices. The team will leverage EPA RAD compliance

[21] Final Decision for the 2013-14 Transition Period at page 207

Recycling Service Provider to provide environmentally safe and responsible recycling solutions.

(vi) Marketing Education & Outreach (ME&O)

IOUs will continue to develop targeted and highly relevant energy efficiency and IDSM marketing messages to encourage behavioral change/action. PLA intends to develop strategic collaboration with industry to motivate consumers to take action in embracing energy efficiency.

To facilitate retail relationships, IOUs will explore co-marketing opportunities with manufacturers and sales channel partners to implement website enhancements that facilitate ease of access to energy efficiency information; enabling customers to readily find information about energy efficient products and services, identify participating retailers in their neighborhoods, and complete on-line sign-ups to receive notification about special efficiency offerings, rebates, or incentives.

The IOUs focus on delivering products, services, and information through the most efficient delivery channel for every customer segment we serve. For PLA, the IOUs will continue to focus on the customer experience at retail, ensuring visibility of rebates and offers and streamlining the transaction and processing of rebates.

There is also opportunity for enhanced engagement with customers with respect to appliances and appliance recycling. With many appliances, customers wait until the appliance fails before considering replacement. Through impactful in-store marketing and clear communication of offers, the IOUs intend to increase customer awareness of rebates and incentives and focus customers on the benefits of upgrades as well as replacement of outdated technologies. In-store marketing will be augmented by promotion of PLA through other channels, such as online tools that create customer awareness of rebate offers and availability prior to the customer stepping into the store. With more online transactions happening each day, it is important that customers be educated about the potential energy savings and rebates for products they are considering should they choose to purchase through an online retailer.

The IOUs will look for opportunities to provide alternative strategies for marketing the programs in constrained areas. One example would be a neighborhood-based marketing campaign that targets older, master-planned communities in order to promote energy efficiency. Through this effort, local contractors will independently market and install cost-effective measures such as duct testing and sealing and other measures to help reduce energy loss in the home and increase overall efficiency. By working with the industry partners to cover energy efficiency measures in high volume, the effort will help to lower measures costs that are adopted by a large number of program participants. In addition to delivering energy savings, this approach will support the advancement

of local community and city goals related to energy efficiency, as well as benefiting many neighborhoods and socio-economic groups.

Customers are often not aware of the true savings potential associated with energy efficient measures nor are they familiar with the many energy efficient products available that are not associated with appliances. Some IOUs may offer an "energy saving starter kit" to customers in order to introduce them to energy efficiency tips that can produce significant savings. This kit will provide information about simple but comprehensive methods to reduce water, gas, and electricity use. By supplying the tools necessary to begin saving gas and water and thereby educating these customers on energy efficiency, the PLA sub-program should see an increase in participation and could include other customer segments that may have been excluded due to high product cost. This will help the PLA to grow as a comprehensive, inclusive residential program and thus maximize potential savings. As applicable, PLA participants will also be educated about additional opportunities for energy efficiency beyond the measures they are adopting.

The IOUs have developed the integrated energy audit tool for residential and small business customers that will assist customers with their energy management decisions. These information platforms are easily accessible to customer to provide immediate feedback, enable a more accurate assessment of program impacts, and empowered the customer to quickly and easily make energy efficiency decisions. In addition, the deployment of AMI provides additional opportunities to educate customers about their energy usage. The IOUs will explore opportunities to maximize energy efficiency and demand side management opportunities as the technology is developed and deployed to residential customers.

After the program is approved, each IOU will develop a market implementation plan that targets owners and renters of single family residences as well as apartments, townhouses, condominiums, and mobile homes and operates in parallel to the operation of the Multifamily Energy Efficiency Rebate (MFEER). This ME&O strategy aims to include coordinated statewide elements as well as elements specially targeted to the customers in each utility's service area. The program seeks to leverage relationships with local government partnerships, water agencies, air quality districts, trade allies, manufacturers, retailers, and distributors to deliver information, measures, and incentives.

Program campaign elements include:

- Statewide rebate promotions;
- Online/mail-in application processing;
- Integration of rebate offers and related content with online tools
- In-store POS instant rebate option where applicable through retailer POS capabilities;
- Whole house approach offering products that address all types of energy use;
- Home energy surveys;

- Energy efficiency customer education and outreach; and
- Other residential EE programs such as upstream lighting.

(vii) Worker Education & Training (WE&T)

PLA sub-program will work with Energy Centers to design and develop training curriculums appropriate for retailers and contractors to develop skills and knowledge on energy efficiency products, codes and standards and IOU EE programs. Additionally, PLA will work with WE&T to identify training opportunities for: (1) the retail store, (2) the retailer corporate/headquarters decision makers, and (3) Original Equipment Manufacturers (OEMs).

- For retail stores - Opportunities to provide training to store-level personnel at participating retailers. These training activities will be supported by regular surveys to determine the effectiveness of the training.
- For retailer headquarters decision makers - Opportunities to provide training to buyers and merchandisers at the headquarters of participating retailers to educate them about the availability, desirability, and benefits of PLA qualifying electronics.
- For OEMs - Opportunities to provide training to with OEM manufacturers to educate their product managers and marketing groups about the importance of designing ENERGY STAR® qualified and beyond features into their products.

Finally, the IOUs seek to develop marketing programs to educate consumers and increase awareness about the benefits of PLA qualifying products. Various efforts to educate sales associates of user and environmental benefits of high efficient PLA products will be explore during the program cycle. PLA's WE&T initiatives may include activities such as site visits by program representatives, program participation agreements, and / or literature, as appropriate.

j) Sub-program Process Flow Chart: Provide a sub-program process flow chart that describes the administrative and procedural components of the sub-program. For example, the flow chart might describe a customer's submittal of an application, the screening of the application, the approval/disapproval of an application, verification of purchase or installation, the processing and payment of incentives, and any quality control activities.

Figure 5: PLA Upstream & Midstream Incentive Process Diagram

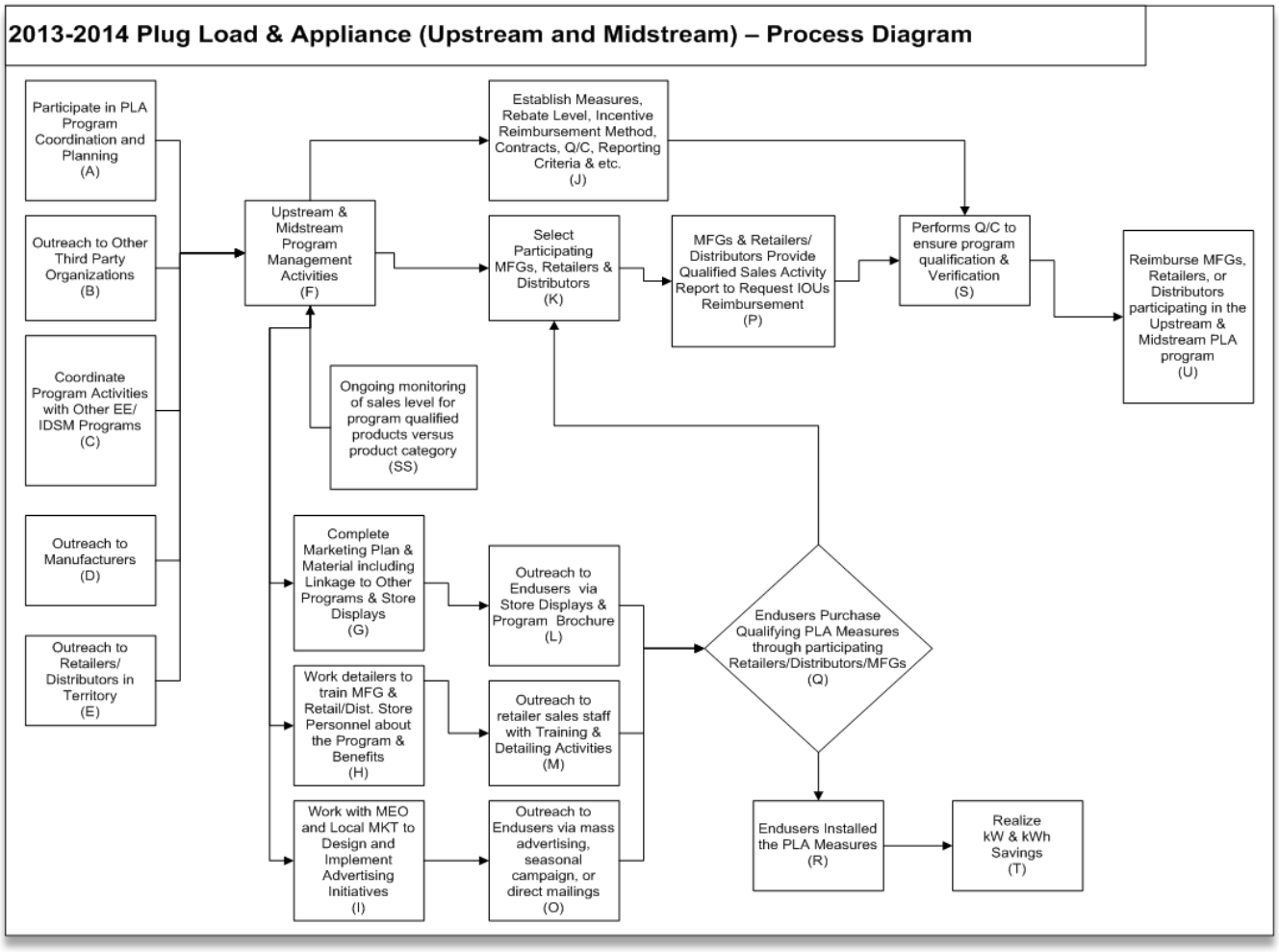


Figure 6: PLA Downstream Incentive Process Diagram

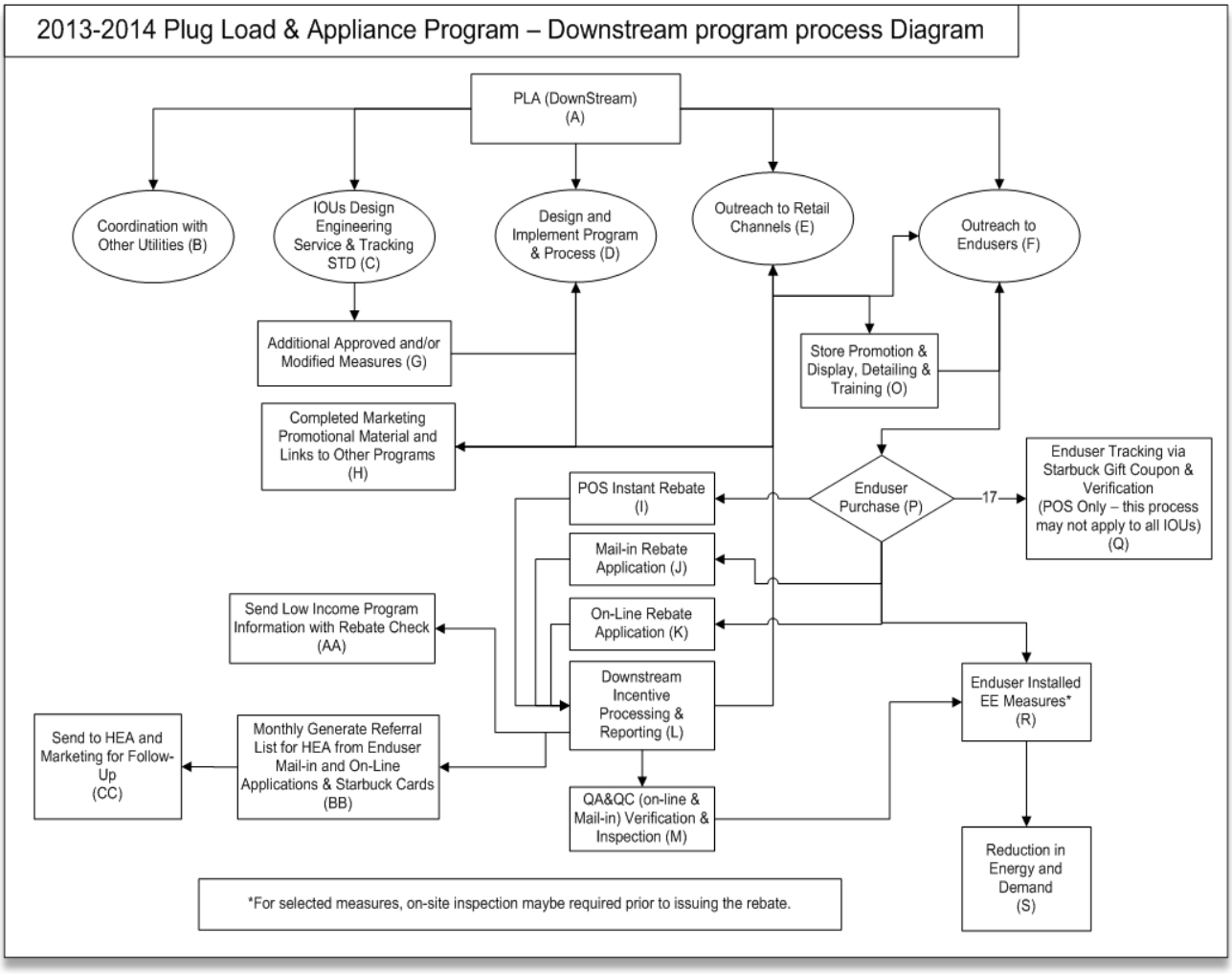
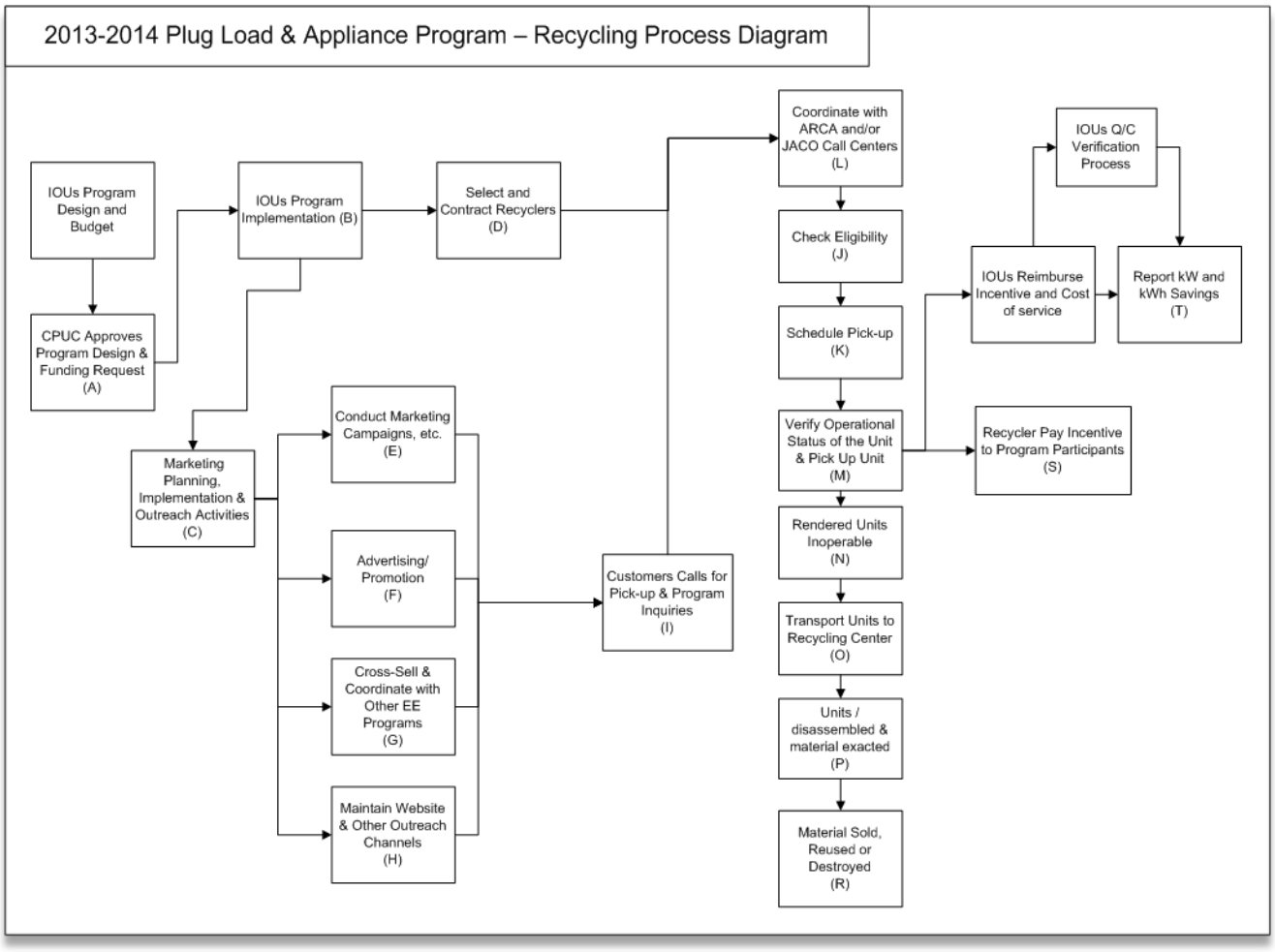


Figure 7: Statewide Appliance Recycling Process Flow Chart



k) Cross-cutting Sub-program and Non-IOU Partner Coordination: Indicate other IOU EE, DR or DG sub-programs with which this sub-program will regularly coordinate. Indicate also key non-IOU coordination partners. Indicate expected coordination mechanisms[22] and frequency[23]:

With respect to low-income customers, each IOU seeks to integrate its Energy Saving Assistance Program (ESAP) into PLA by providing customers with information and marketing material on ESAP, California Alternate Rates for Energy (CARE), and Family Electric Rate Assistance (FERA) discount programs. The strategy to integrate ESAP, CARE and FERA activities into the PLA sub-

[22] "Mechanisms" refers to communication methods (i.e. quarterly meetings; internal list serves; monthly calls, etc.) and/or any cross-program review methods (i.e., feedback on program plans; sign off on policies, etc.) or harmonization techniques (i.e. consistent certification requirements across programs, program participant required cross trainings, etc.).

[23] This does not mean there would be mutual understanding of the on the mechanism or a known frequency of coordination; rather, just provide enough information to give a general sense of the coordinate efforts.

program aims to ensure eligible low-income residential customers are aware of the availability of low-cost energy-efficient services through ESAP, CARE or FERA. Additionally, IOUs seek to ensure that low-income customers are aware of rebates available for appliances through the PLA sub-program, which are not offered through any of the above mentioned programs.

Regarding products that address all types of energy use, each IOU seeks to coordinate the delivery of its PLA sub-program, as well as the Lighting and EUC programs, to maximize the energy saving potentials in every home. Whether customers simply look for an energy efficient light bulb to replace their burnt-out incandescent bulb, or the Energy Star's Most Efficient refrigerator to replace their old unit, or a comprehensive energy saving audit and installation service to support a deep retrofitting project of their home, the customer-facing staff must be able to guide the customer seamlessly to the appropriate programs. All of the program's ME&O and WE&T would be conducting coordinated initiatives to equip the customer-facing staff with the necessary knowledge to assist customers in maximizing their comfort, security and saving by helping them make the right choice in energy efficient solutions.

Table 15: Cross-cutting Sub-program and Non-IOU Partner Coordination
[Table-15 to be provided as an Excel Attachment to this PIP]

l) **Logic Model:** Please append the logic model for this sub-program to the end of this PIP. Describe here any additional underlying theory supporting the sub-program intervention approach, referring as needed to the relevant literature (e.g., past evaluations, best practices documents, journal articles, books, etc.).

Figure 8: PLA sub-program Logic Model

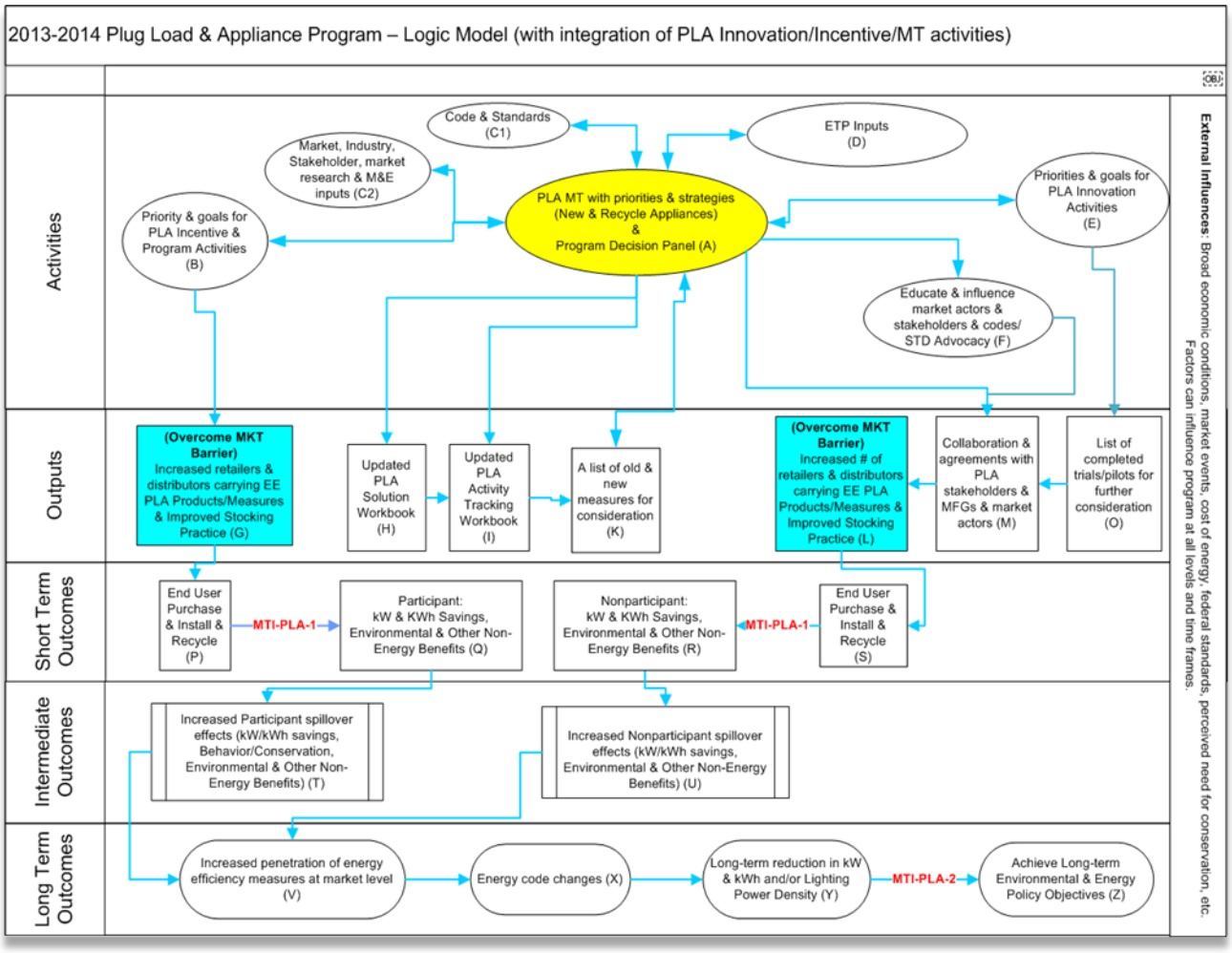


Figure 9: PLA innovation Process Diagram

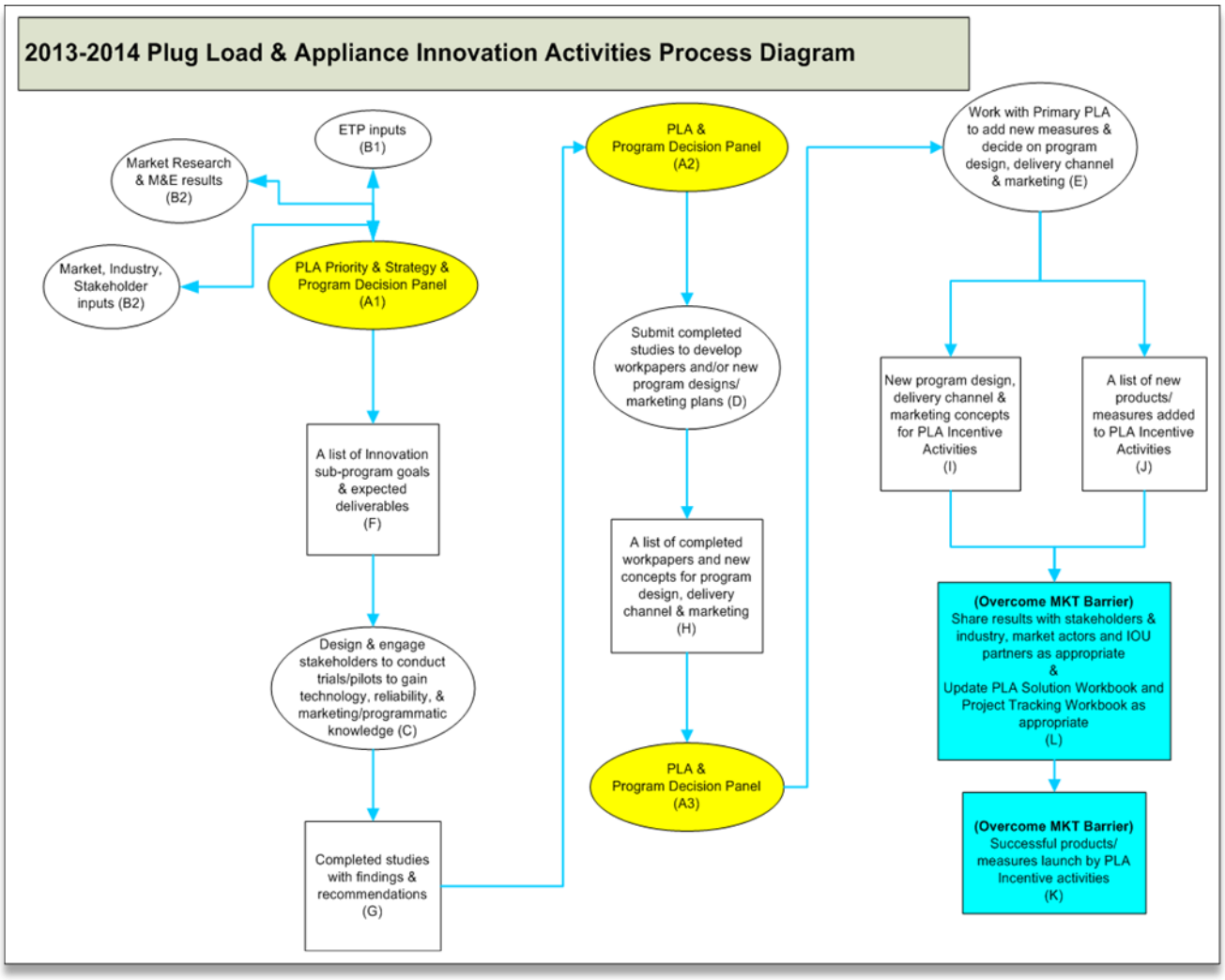
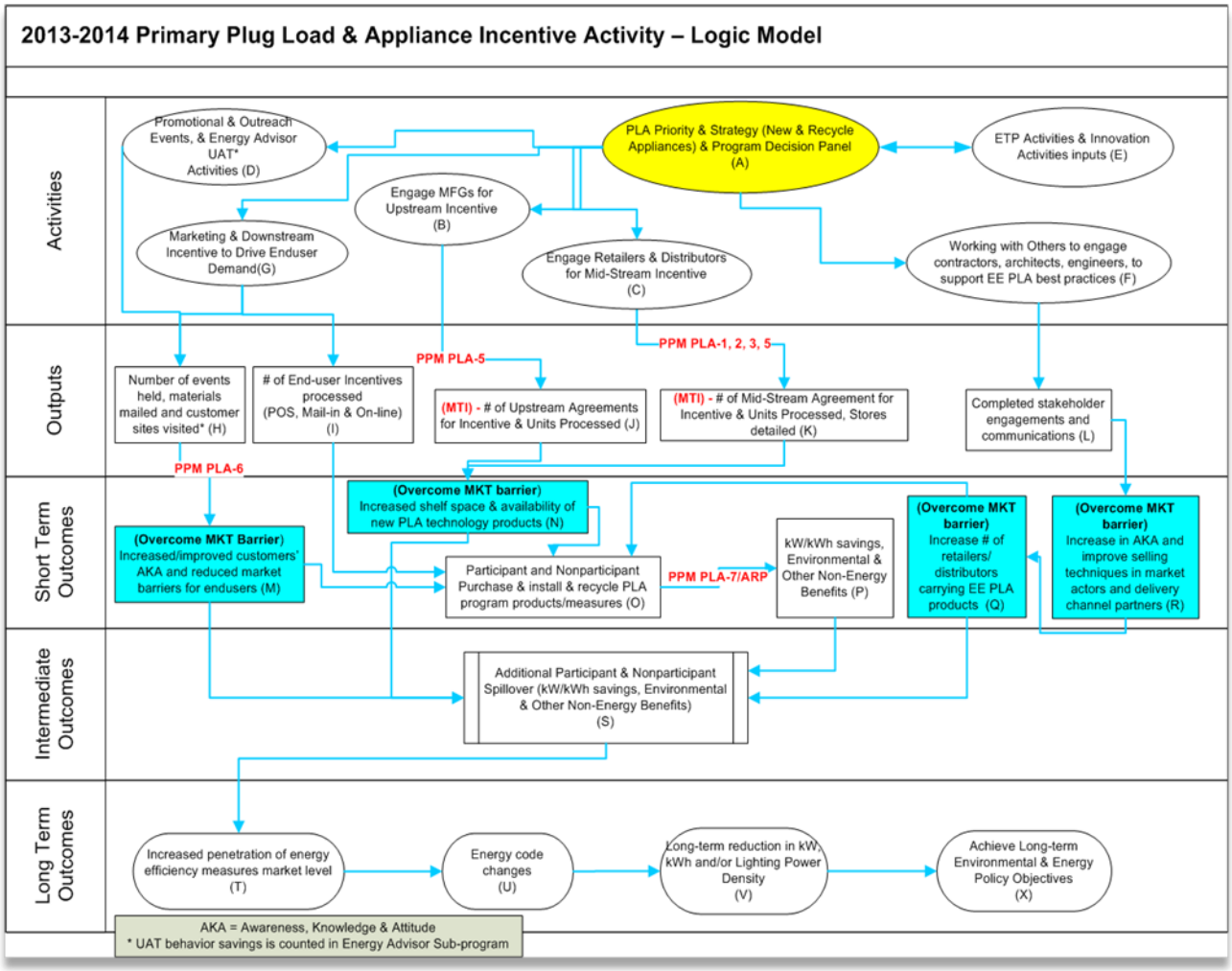


Figure 10: Primary PLA Incentive Activities Logic Model



11) Additional Sub-Program Information

a) **Advancing Strategic Plan Goals and Objectives:** Describe how sub-program advances the goals, strategies and objectives of the California Long Term Energy Efficiency Strategic Plan

The PLA sub-program will help to achieve the goals identified in Chapter 2 of the Strategic Plan:

2-2: Promote effective decision-making to create wide-spread demand for energy efficiency measures. California IOUs will aggressively incorporate results from studies that determine homeowner "decision triggers" for improving home energy efficiency; and

2-3: Manage research into new and advanced cost-effective innovations to reduce energy use in existing homes. California IOUs will work collaboratively to promote the commercialization of home energy management tools, including Advance Metering Infrastructure (AMI)-based monitoring and display tools.

The "Smart Meter" deployment provides the customer the opportunity to access near-real time monitoring of their energy usage patterns at home. The feedback on how a customer is consuming energy through access to hourly billing data will support long-term behavioral strategies to reduce consumption. Moreover, when combined with automated enabling system (e.g., more integrated home management system through In-Home devices/displays and systems, programmable controllable thermostats, load control devices, smart appliances, etc.), the Smart Meter technology will provide customers the energy management tools that report increased savings as energy-efficient measures are installed. At the same time, the Smart Meter will offer residential customers the unique opportunities to participate in demand response and AMI-enabled technologies services. These information feedback systems enable more accurate assessment of IDSM program impacts and guide the future energy management strategies for customers.

b) Integration

i. **Integrated/coordinated Demand Side Management**: As applicable, describe how sub-program will promote customer education and sub-program participation across all DSM options. Provide budget information of non-EE sub-programs where applicable.

The IOUs will coordinate program efforts with the local utility integration teams and the Statewide Integration Task Force to identify successful integration approaches and offerings, potential pilot programs and metrics.

Table 16: Non-EE Sub-Program Information
[Table-16 to be provided as an Excel Attachment to this PIP]

ii. **Integration across resource types** (energy, water, air quality, etc.): If sub-program aims to integrate across resources types, please provide rationale and general approach.

There are integration opportunities that work across resource types that can be further explored such as combining rebates with water utilities which have provided customers a more simplified process for submitting and receiving their energy and water rebates. The residual benefits of this process was the ability to leverage the larger combined rebate amount to significantly drive sales of qualifying models as well as providing a precedent for disparate water utilities to collaborate around a combined product specification and rebate methodology. IOUs will take these key findings and use them with water agencies and air quality districts when there is alignment around customer

offerings. Additionally, the retail channel offers significant integration opportunities for marketing DSM solutions. Through effective and engaging point of sale displays and interactive kiosks, the IOUs will co-market a variety of programs and services through a single point of customer engagement.

For example, PG&E begins its fifth year of a Cooperative High-Efficiency Clothes Washer rebate program with a number of water agencies in the Greater San Francisco Bay Area. 12 agencies together with their sub-agencies, constitute a total of 33 water agencies (wholesalers and retailers) participating on PG&E's program. PG&E processes the rebate applications (submitted via paper application or online), sends customer data to the respective water agencies through a secure swap drive, and then issues one check to the customer that combines PG&E's rebate of $50 and the water agency rebate (either $50 or $75, depending on efficiency rating) for a check total of either $100 or $125.

c) **Leveraging of Resources**: Please describe if the subprogram will leverage additional investments by market actors or other state, local or federal agencies.

N/A

d) **Trials/ Pilots:** Please describe any trials or pilot projects planned for this sub-program

The PLA sub-program may include several additional pilots in the 2013-2014 Transition Period to evaluate new program delivery methods:

- Market trials to explore sales uplift for PLA targeted products by inviting retailers and or manufacturers to submit proposal for energy efficient PLA sub-program promotion[24].

- Collaborate with manufacturers to provide low-cost ENERGY STAR® appliances for lower income customer segments but not qualified for the low-income program services[25].
- Field Service teams to provide in-store training of retailer sales staff about energy efficient products; demonstrate energy efficient products to customers; maintain point-of-purchase education materials and ongoing market surveys of energy efficient products.
- Updating sales channel strategy to respond to growing integration of traditional brick-and-mortar retailers and e-commerce marketing for product evaluation, purchases, and post sales supports.

[24] D&R International, "Massachusetts Market Lift Program - Summary Description and Methodology", April 17, 2012

[25] RIA/EMI's Plug Load Market Characterization study

- Provide incentives to retrofit projects that used qualified contractors to ensure high quality retrofit and enhance code compliance such as pool pump retrofit projects in compliance with code T20.
- Coordination with industry partners on an integrated strategy with Codes and Standards bodies around "Horizontal Standards" strategy to influence product standards that lead to energy savings across many product categories.
- Pilots of Home Energy Centers or Power Management Umbrellas to influence the overall reduction of miscellaneous plug loads in California homes.
- Coordination with industry partners around voluntary agreements for energy reductions, such as, discussions currently occurring in the Cable and Satellite set-top box space.
- Technology evaluation and market acceptance testing of PLA emerging technologies, which may include set-top boxes, game consoles, servers, advanced power strips, imaging equipment, audio, video equipment's and home energy management products and energy saving and demand respond capable appliances and plug-loads.
- Unit Energy Consumption (UEC) as a long term market transformation indicator for monitoring program influence on overall PLA electricity usage in home instead of product-by-product attribution model.

e) **Knowledge Transfer:** Describe the strategy that will be used to identify and disseminate best practices and lessons learned from this sub-program

One-Stop-Shop Information Repository

The PLA sub-program supports the Energy Upgrade California web portal to serve as a one-stop-shop for PLA sub-program information, as well as generalized energy education information for residential and small business consumers on efficient PLA products, while still continuing to prompt home and small business owners to immediately take action to participate in available PLA sub-program activities. It should also serve as a repository of information for the utilities, practitioners, the California Energy Commission, local government programs, and third-party programs participating in PLA sub-program.

Conference, Seminars and Workshops

Participation in conferences, seminars, and workshops are essential for the PLA market transformation efforts to remain up-to-date on key industry players, new technologies, and best practices to properly support PLA sub-program strategy planning. These events allow the PLA sub-program to expand the network of partners for future collaboration efforts within the energy efficiency and PLA industry. Below are few of the key conferences, seminars, workshops and meetings that PLA sub-program may participate:

(1) CEE Program Meetings
(2) EPA ENERGY STAR® Products Partner Meeting
(3) Consumer Electronics Show (CES)
(4) ACEEE's National Symposium on Market Transformation
(5) Western Utilities Collaborative Quarterly Meetings

12) Market Transformation Information: For programs identified as market transformation programs, include the following:

i. A summary of the market transformation objectives of the program.
The PLA sub-program aims to transform the market to achieve sustainable adoption of energy efficient PLA products where ongoing intervention would no longer be required. For the short to mid-term time frame where energy efficiency PLA products are still not the market's default choices, the program uses incentive mechanisms, ME&O, WE&T, and strategic industry collaboration to increase availability, awareness, and adoptions of energy efficient products. For the longer-term time frame, the PLA sub-program leverages Integrated Demand Side Management (IDSM) programs to influence the development codes and standards in order to ensure the minimum required energy efficiency levels, promote "Energy Efficiency" as the preferred choice in life-style and new product purchases. The program's long-term strategy seeks to create ongoing demands for "Energy Efficiency" products and thus motivate the industry to produce and sell high energy efficient PLA products as the market standard offering.

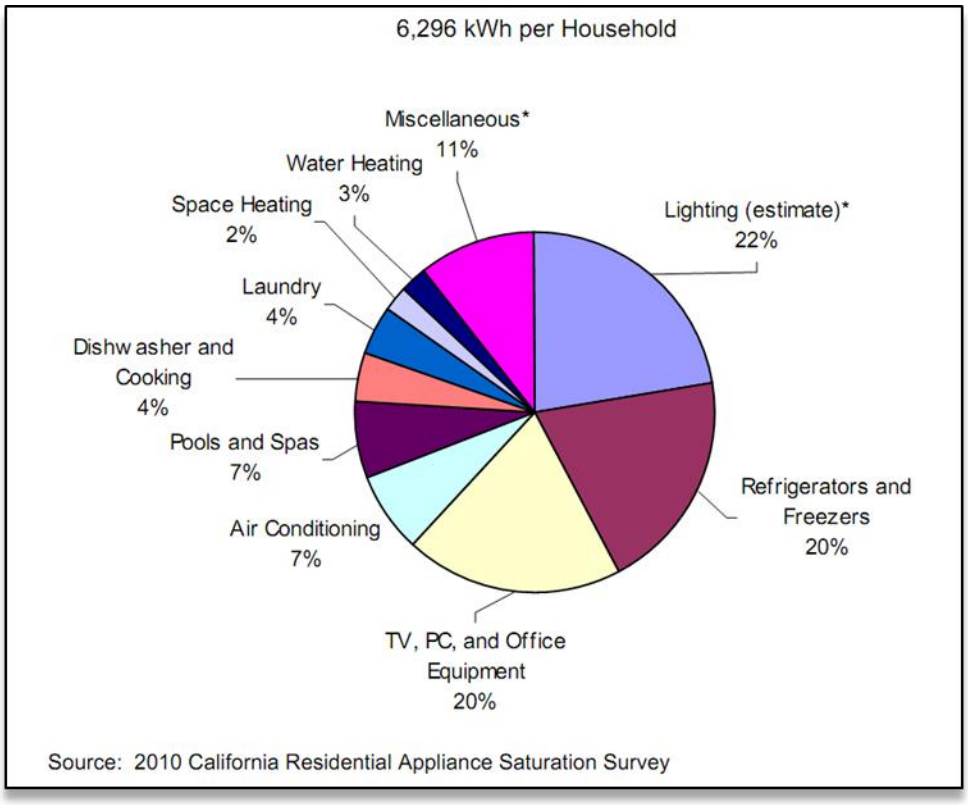
ii. A description of the market, including identification of the relevant market actors and the relationships among them;
PLA markets comprise of traditional "white" goods or durable appliances such as refrigerators and washing machines, plus miscellaneous plug-load products such as consumer electronic, home office equipment and other small electronics devices requiring external power supply.

The PLA products consumes about 66% and miscellaneous plug loads (televisions, personal computers and office equipment) accounting for about 20%[26]. The PLA products comprise one of the largest and fastest growing end-uses of the residential sectors, dwarfing electrical loads from traditional categories such as lighting and HVAC. Clearly, these markets call for strategic interventions if we are to achieve BBEES's 2020 vision of ZNE for new residential construction and reduction of 40% of residential purchase energy from the 2008 level.

The average annual electricity consumption in California was 6,296 kWh per household. This was an increase of approximately 6 percent compared to the 5,914 kWh per household reported in the 2003 RASS. Televisions, personal computers, and office equipment consume a 5 percent higher proportion of the total consumption compared with the results from the 2003 RASS[27]. Figure-3 details the breakdown of the 2009 annual household electricity consumption by end use.

[26] Final Decision for the 2013-14 Transition Period at page 202
[27] 2009 California Residential Appliance Saturation Study at page 3

Figure-11: 2009 annual household electricity consumption by end use



The average annual natural gas consumption in California households was 354 therms per household based on billing data from PG&E, SDG&E, and SoCal Gas. The household natural gas UEC decreased by approximately 18 percent from the 431 therms per household reported in the 2003 RASS. Figure 3 details the breakdown of the 2009 annual household natural gas consumption by end-use. Compared to the 2003 RASS, consumption for water heating increased by 5 percent to 49 percent, whereas space heating decreased by 7 percent to 37 percent[28].

[28] KEMA, 2009 California Residential Appliance Saturation Study at page 9

Figure-12: 2009 Annual Household Natural Gas Consumption by End-use

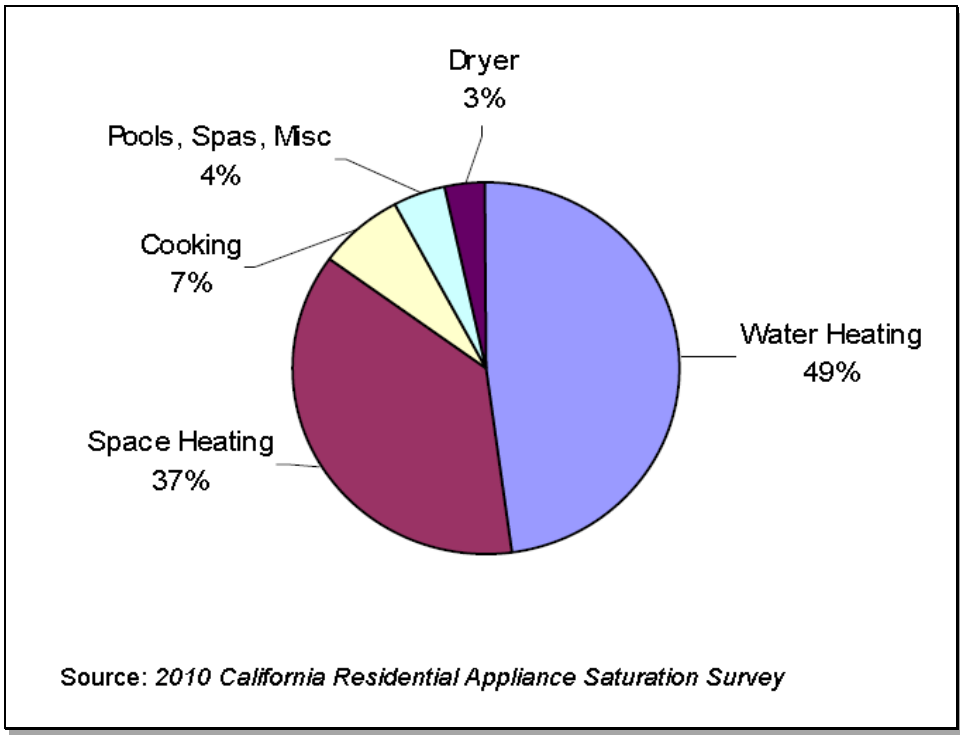


Table-B: PLA Market Actors & Relationships

Relevant Actors	**Relationships & Dynamics Among Market Actors**
Product Manufacturers	Develop and commercialize a family of technologies based on long-term roadmap planning. The products derived from the manufacturer's technology roadmap are released to the markets on an annual basis with incremental new features for consumer electronics categories. The effective point-to-influence of manufacturers would be their technology development roadmap whereby IOUs have the opportunities to influence the manufacturers on a longer-term strategic basis.
Distributors	Most of the appliance and electronic products reach the market through two distribution layers – manufacturers to regional distributor, and then regional distributor to local retailers. The distributor layer is an important layer that must be taken into account in the IOU's program design.

The distributor's key value is to provide product inventory and logistics management on the behalf of the manufacturers and retailers. The manufacturer ideally benefits from working with a distributor as the manufacturer has fewer ship-to locations and fewer retailers to sell their product to. The distributor would break out bulk product packaging and do all the individual shipping and selling to retailers for the manufacturers.

Similarly, the retailer ideally benefits from working with a distributor as the retailer has fewer manufacturers to work with in purchasing their products. The retailer would be able to purchase a wide range of products from different manufacturers which the distributor represents. Sometimes the distributor may even own the product inventory thus allowing the manufacturers and retailers to mitigate the financial risk of holding their own product inventories.

The distributor has significant influences on the manufacturers and retailers. The distributor would be very selective in which manufacturers to represent, which products to carry in their inventories, and which retailers they would sell to. They look for assurance that the represented products would have high sales volume based on the evaluation of the brand's marketing strength, brand advertising and other market data.

The IOUs, representing large regional markets, could work together to exert coordinated influence on the distributor. This in turn would make it easier to the IOUs to convince the retailers to sell and manufacturers to produce products carried by their distributors.

Retailer – National

Retailers serve their target customer bases with store outlets across the country. The national retailers make product purchasing decisions based on maximum sales potential to their target customer base and bulk discounts for those products.

One of the retailer's key objectives is to maximize the sales of their most profitable products. Therefore, the IOUs could influence the retailer's ability to reach their key objectives through inventive program and joint promotions to generate sales uplifts.

Retailer – Regional	Similar to national retailer chain but operates on smaller geographical market foot print. The regional retailers sell products to their targeted customer base through store outlets located within the regional market. The regional retailers generally have less clout in influencing the manufacturers and distributors due to their lower sales volume. The regional retailers have similar business objectives as any other retailers, maximizing the sales by focusing on highly popular products in the markets. Therefore, the IOUs could influence the retailer's ability to reach their key objectives through inventive program and join promotion to generate sales uplifts.
Retailer – Small	Most of the small retailers are privately owned and operate with one or two store outlets in local markets. Their small purchasing power does not allow them to purchase products from big distributors. As a result, the majority of small retailers join large buying groups so that they can leverage their collective buying power to compete with the larger retailers. Small retailers could be an effective channel for reaching small hard-to-reach markets for IOUs programs.
E-commerce Retailer/Resellers	E-commerce has a growing importance in the customer's product purchasing process. The customer toggles back and forth between the traditional brick-and-mortar retailers and e-commerce sites for product research, price shopping, purchases, and post sales support. IOUs will explore new sales channel strategies that include the integration of traditional brick-and-mortar and e-commerce channels to facilitate ease of access to energy efficiency information; enabling customers to readily find information about energy efficient products and services, identify participating retailers in their neighborhoods, and complete on-line sign-ups to receive notification about special efficiency offerings, rebates, or incentives.
Recycle Service Provider	At least 18 states have enacted landfill bans for appliances since 2000 to extend the life of the nation's landfills, requiring private industry and public sector to implement recycling of these goods. The recycling service providers enable the customer to dispose unwanted appliances

and turn recycled appliances into valuable resources manufacturing raw materials. Recycling appliances has positive impact on the environment, since some material takes four times as much energy to manufacture material from their virgin state as it does to make the same steel from recycled scraps.

The typical services provided range from logistic arrangements to pick up of old appliances; tracking recycled items' serial number, manufacturer, model; dismantling the appliances into various materials; glass recycling by removing all glass and create cullet to be used in remanufacturing; shredding the separated materials to reduce their size; sorting shredded material into non-ferrous metals, plastics and other distinct categories which are then bulk packed for transport; commodity sales of the recycled materials in a wide range of new products and keeping building block materials out of landfills.

The recycle service provider works with the retailers for bulk pickup of collected turn-in old appliances from the retailers' new appliance customers, collaborate with organization such as Utilities to pick up individual old appliances from the Utility's customers. The bulk pickup from the retailer's collection point is more cost effective as compare to individual pickup from multiple customer homes.

Pay TV Service Providers

There are nearly 22 million set-top boxes (STB) delivering paid television content to California residential markets. Nearly all of these STBs are owned and installed by approximately nine large Pay TV service providers. In 2009, set-top boxes in California homes consumed approximately 4.4 billion kilowatt-hours of electricity, which is a significant consumption load demanding a strategic approach to improving the efficiency and reducing the cost of operating these electronics relied upon by so many customers.

These service providers have relatively strong marketing power with their customers. They have the opportunity to access a customer's home, track STB inventory, device configuration and possibly power states of the installed devices. They would be in a unique position to provide home energy management systems through these ubiquitous set-top boxes.

Contractors	Contractors have significant influence on home owner's purchase of low-touch appliances such as pool-pump/motor and water-heaters. IOUs could use midstream incentive to influence the products that the contractors carry and recommend to their customers. The IOUs have the opportunity to influence the contractors by providing: 1. Incentives for projects installed by certified or qualified contractors would be an effective solution to ensure pool pump and motor retrofit projects be in compliance to code T20. 2. Training either at the IOU's Energy Centers or in conjunction within store retailer trainings on installing energy efficiency products and control system, IOUs energy efficiency programs and codes and standard relating to energy efficiency.
ACEEE	The American Council for an Energy-Efficient Economy (ACEEE) is a nonprofit organization founded in 1980 by researchers in the energy field that aims to advance energy efficiency policies, programs, technologies, investments, and behaviors. ACEEE carries out its mission by collaborating with government, private sectors, research institutions and other nonprofit organizations to cover energy efficiency policy and technology issues.
CEE	The Consortium for Energy Efficiency (CEE) is a consortium of efficiency whereby program administrators from across the U.S. and Canada who work together on common approaches to advancing efficiency. Through joining forces, the individual efficiency programs of CEE are able to partner not only with each other, but with other industries, trade associations, and government agencies. By working together with CEE, administrators leverage the effect of their funding dollars, exchange information on effective practices and, by doing so, and achieve greater energy efficiency for the public good.
Advocate Organizations	Non-profit organizations dedicated to advocates for various stake holder groups (end-customer, environment, manufacturers, etc.) and at time exert influences on California's energy policies making process and California IOUs activities. Examples of such organizations in California would be Natural Resources Defense Council (NRDC) and Division of Ratepayer Advocates (DRA).

NRDC is an effective environmental action group, combining the grassroots power of 1.3 million members and online activists with the courtroom clout and expertise of more than 350 lawyers, scientists and other professionals. NRDC staffs work with businesses, elected leaders, and community groups on the biggest issues we face today such as "Curbing Global Warming and Creating the Clean Energy Future".

The DRA is an independent consumer advocate within the California Public Utilities Commission (CPUC) that advocates solely on behalf of investor owned utility ratepayers. DRA plays a critical role in ensuring that the customers of California's energy, water, and telecommunications utilities are represented at the CPUC and in other forums that affect how much consumers will pay for utility services and the reliability and safety of those services. Additionally, DRA supports environmental protections and seeks to ensure that utility actions comport with CPUC rules and California environmental laws. DRA actively participates in CPUC proceedings to aid the Commission in developing the record from which it will formulate its final decisions. DRA also actively lobbies decision-makers on behalf of ratepayers to ensure that the consumer perspective is heard.

Both NRDC and DRC are active key players in California's energy industry. They provide inputs into CPUC's policy and rule making processes.

EPA Energy Star

Energy Star is a joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy helping the market to adopt energy efficient products and practices. Energy Star helps customers make energy efficient choices by providing a market accepted energy performance rating system that is being used across the country on hundreds of thousands of PLA products.

Energy Star works with the manufacturers, trade associations, government agencies and utilities to set energy performance rating system.

EPA RAD

EPA Responsible Appliance Disposal (RAD) is a voluntary partnership program that began in October 2006 by the U.S. Environmental

	Protection Agency to help protect the ozone layer and reduce emissions of greenhouse gases using best practices. As part of the RAD program, partners recover ozone-depleting chemicals from old refrigerators, freezers, window air conditioners, and dehumidifiers. EPA RAD serves as a technical clearinghouse on responsible appliance disposal program development and implementation; calculates annual and cumulative program benefits in terms of ozone-depleted savings and greenhouse gas emission savings and equivalents and, as available, potential cost savings; and provides partner recognition for achievement, such as through press releases, brochures, articles, and awards. EPA RAD partners include utilities, retailers, local governments, manufacturers, universities, and other interested organizations.
CEC	The California Energy Commission (CEC) is the state's primary energy policy and planning agency. It is responsible for promoting energy efficiency by setting the state's appliance and building efficiency standards Title-20 and Title-24 respectively. The CEC works with local government to enforce those standards. The IOUs work very closely with the CEC to develop energy efficient codes for appliances and plug-loads.
Local Government	In D.05-01-055, the Commission also directed the IOUs to initiate energy efficiency partnerships with local governments. Having continued this practice in the 2013-2014 portfolios, the IOUs now have two portfolio cycles and almost seven years of experience with increasing levels of local government. The IOUs continue to partner with local governments to increase the delivery of energy efficiency and enhance code compliance programs.
Regional Utilities / IOUs	The IOUs collaborate with each other and other regional Municipality-Run-Utilities to share resources, information, and joint research projects. By working closely with each other, the IOUs seek to increase the collective negotiating power when working with PLA retailers.
Customers	End-user of residential Energy Efficient products and services that are provided by sales channels through IOUs' EE program intervention.

The IOUs may reference to the PLC framework to segment the customer bases for targeted intervention initiatives.

iii. A market characterization and assessment of the relationships/dynamics among market actors, including identification of the key barriers and opportunities to advance demand side management technologies and strategies;

Utilities face uphill battles in influencing the PLA markets due to powerful national market trends that dominate manufacturers and national retailers' choice of product offering. Other market characteristics that pose great challenges to the current product-by-product program design include: small incremental energy savings from many plug load devices resulting in product-based programs that are not cost effective for IOUs; the consumer electronics' rapid product life cycle of 6-12 months pose significant difficulties in establishing saving baselines and timely work-paper approval for individual measures; and growing trends of networked home electronics making energy savings attribution on a product-by-product basis problematic.

There are still specific product-based saving opportunities that address specific market barriers or conditions. However, the big market trends suggest a holistic market transformation approach that targets an overall reduction in plug loads and using Unit Energy Consumption (UEC) as a market transformation indicator (MTI) could be more effective in addressing the market long term barriers. In this approach, the program could rely on California Residential Appliance Saturation Survey or equivalent reports which provide forecast of plug load use in California as a basis for the measurement of program impacts. Once a forecast of plug load energy usage is established, the targets could be set for changing the UEC curve to slow its growth or even lower its intensity over time. This approach could improve flexibility in measure implementation by moving away from the work paper process and short-term cost-effectiveness requirements that hamper effective product based program design in fast-moving markets.

The PLA sub-programs could evaluate current pilots, such as the PG&E Home Energy Centers that provide consumers with energy usage information from smart meters or SCE's proposed Power Management that provide an umbrella approach to influence the overall reduction in miscellaneous plug loads in California homes. By 2015, we expect smart chip-enabled and networked appliances to be available, and thus fueling the proliferation of more comprehensive home automation and energy management systems (i.e., Intelligent Home Network, comprehensive Home Automatic Network and etc.). These systems will help customers lower their overall energy consumption at home instead of focusing on savings per product basis. The Emerging Technology activities in the 2013-14 period will assess the enabling smart and connected PLA technologies that have the potentials to deliver not only hardware based energy savings, but also information feedback to enable broad customer's behavior savings opportunities.

On the state of recycling, the saturation level of second refrigerators and freezers has been slowly creeping up over the last decade. From the 2009 CEC Residential Appliance Saturation Study[29], the second refrigerator and freezer saturation levels are up to 33% for second refrigerator and 23% for additional freezer for the statewide single family home. This is a marked increase of secondary refrigerators from the 2003 RASS results, which may have resulted from the popularity of large super-stores such as Costco and Super Wal-Mart stores in the past ten years. The large discount stores encourage large bulk food purchases, which in turn, generates the need for increased food cooling storage. The current Statewide Appliance Recycling channel offers customers the convenience of free-pickup plus small cash incentives for old working refrigerators to help minimize the return of units back to the used-appliance market as secondary refrigerators. Similarly, the IOUs work with the retailer based appliance recycling channel to offer customers the convenience of "deliver-and-haul" by hauling away the old appliance when the new one is delivered. Furthermore, the PLA sub-program supports the US EPA RAD, which eliminates the current market practice of reselling old appliances removed from customer homes during the delivery of new ones.

Market Actors and Their Relationship in the Markets

Depending on the application and appliances, market actors within the supply chain may be involved in the delivery of products and services to the customers. The list of key market actors and the dynamic relationship among them is discussed in Table-B.

iv. A description of the proposed intervention(s) and its/their intended results, and specify which barriers the intervention is intended to address;

The PLA sub-program is designed with the overarching objectives of influencing the market to produce and sell high energy efficient products, customers to adopt energy efficient products and employ energy conservation usage behavior, and codes and standards to support minimum energy efficiency levels across all PLA product categories. The PPMs (Section 9, iv, (c)) are goal posts guiding the program's efforts and MTIs (Section 12, vi) provide feedback on how the program progresses against the overarching objective stated above. Table-C below identifies key market barriers, and the intended market effects from the proposed intervention.

Table-C: Market Barriers and Market Affects from Proposed Intervention

#	Barrier	Interventions & Intended Results
1	High first cost	Applying appropriate incentive to influence the market or the customer through the appropriate stream (upstream, midstream or downstream) The intended results of this intervention are to help customers overcome the high first-cost barrier and encourage adoption of higher energy efficient products over standard offerings.

[29] KEMA, 2009 California Residential Appliance Saturation Study

#	Barrier	Interventions & Intended Results
2	Lack of retailer sales staff knowledge on how to sell energy efficiency products	Providing in-store training for sales staff or associates on program guidelines and energy efficiency. The intended results of this intervention are to increase sales sales staff's or associates' knowledge and increase accessibility to energy efficiency information thus enabling more effective sales efforts.
3	Lack of contractor's awareness of energy efficiency products and code requirements	a) Providing training for contactors either at IOU's Energy Centers or in conjunction with the in-store retailer trainings. b) Providing incentives to projects installed by certified or qualified contractors The intended result of this intervention is to increase the contractor's knowledge on energy efficiency. Thus enable more effective sales efforts and higher efficient installed projects.
4	Lack of customer's knowledge on benefits of energy efficiency	a) Providing in-store demo to customers b) Enhancing in-store marketing and education materials c) Providing product information on websites and other communication channels d) Providing customer education at community out-reach events The intended result of this intervention is to increase the customer's knowledge on how energy efficiency benefits their lives and to impart "energy efficiency" as the preferred life style and choice in new product purchases.
5	Incremental savings too small to motivate customer's behavior changes and not cost effective for IOU's program	Create a holistic and flexible program to address residential plug loads as a category and develop intervention that targets an overall reduction in plug loads. It would also require an evaluation framework that assesses the overall reduction in plug loads due to multiple measures, instead of focusing on a per-product/per-measure evaluation framework. The intended results of this intervention is to move away from the short-term cost-effectiveness requirements and work paper process that hampers effective product based program design in fast-moving markets.
6	Short product life cycle for miscellaneous electronics make the establishment of baseline difficult and timely work-paper development and approval impractical	Same solution as above – moving toward comprehensive approach rather than focusing on per-product/per measure program. Targeting the same intended results as above.
7	Proliferation of interconnected electronics and small devices making intervention per products less efficient.	Same solution as above – moving toward comprehensive approach rather than focusing on per-product/per measure program. Targeting the same intended results as above.
8	National market trends dominate the PLA markets	Develop longer-term market transformation initiatives that seek to influence key market actors' long-term technology development roadmap. This also calls for the program design and evaluation framework

#	Barrier	Interventions & Intended Results
		that address the residential plug loads as a category and develop programs that target an overall reduction in plug loads versus saving per-product/per-measure. Targeting the same intended results as above.
9	The market is able to make more money by selling older but still working appliances to the second-hand markets as compared to permanently dispose them.	Data suggests that around 11% of the customers prefer to sell their old appliances into the used appliance markets. Additionally, about 10% - 25% of old appliances picked up by the retailers are often reconditioned and put back into the used appliance market. Proposed Intervention to address customers that sell their old appliances to used appliance market - Provide free-pickup and downstream incentive and/or other strategies to customer who surrenders their old but still working appliances to IOUs. This strategy will win over customers who seek the most convenient way to dispose of their old appliance. Proposed Intervention to address retailers that sell the collected old appliance to used appliance markets: a) Provide higher midstream incentives to retailers that provide completed cradle-to-grave product life cycle management and compliance to EPA RAD b) Provide to customer down-stream incentives plus free-pickup of old but still working appliances c) Increase in-store marketing education's efforts to educate the customer about high operating cost from using old appliances.
10	Customer's lack of awareness of the high energy cost in operating secondary and older appliances. This has led to the significant growth of secondary refrigerators and freezers found in homes over the last decade.	a) Increase marketing education and outreach efforts on the high operating cost when using old and or refurbished/resold appliances. b) Provide free-pickup and downstream incentive and/or other incentives to customers who surrenders their secondary old but still working appliances to IOUs. This strategy will win over customers who seek the most convenient way to dispose of their old appliance. To reverse this trend, the IOUs are directing more focus toward retiring secondary units in the 2013-2014 Transition Period. And to better distinguish and track "primary" vs. "secondary" units, the IOUs will explore new program design logic to more clearly differentiate between a primary and a secondary unit. Also, this new process may require additional verification procedures to ensure the participants would demonstrate persistence of this removal and not replace the secondary unit at a later date.

v. A coherent program, or "market," logic model that ensures a solid causal relationship between the proposed intervention(s) and its/their intended results[30];

Refer to Section 10(l) for detailed diagrams of PLA sub-program logic models that describe the relationship between the proposed interventions and their intended results.

The Principal logic model (PLA Program Logic) for the Plug Load and Appliance Program (PLA) is the governing model for the PLA program components. This program component is responsible for selecting and prioritizing new products to be introduced to incentive programs as well as for judging when markets for products currently in incentive programs have been transformed so that the products can be removed from incentive programs. The PLA Incentive logic model portrays the logic of the incentive program, i.e. the production aspect of the PLA program.

PLA Program Logic

Since the primary function of this program component is to make decisions about the entry and exit of products to and from the PLA Incentive programs, the central activity is represented in the model by the Program Decision Panel (A). The logic of the program component is that this decision panel takes information and research from many sources and makes its decisions, assures that programs are designed and tested and that they are ready as production programs. The sources that feed into and receive feedback from the Decision Panel are: Priority & goals for PLA incentive and program activities (B), market, industry, stakeholder inputs, market research, and M&E studies (C2), codes and standards (C1), and ETP inputs (D). With all of this information the decision panel facilitates solution workbooks, activity tracking workbook, and, of course, lists of new and old measures. More centrally, it oversees the education and influence of market actors and stakeholders (F), which produces collaboration and agreements (M), thus overcoming some market barriers at that level. It also causes trials and pilots to be completed (O), which also feeds into the agreements with PLA stakeholders and manufacturers. These agreements promote end user purchase and installations and recycling among participants and ultimately non-participants as well (spillover).

PLA Incentive Program Logic

The PLA Program Logic described above addresses the collaborations and agreements that the IOUs generate with various market actors and stakeholders, but the PLA Incentive program logic specifies these activities in more detail. The activities at this level include promotion, and outreach events, EA Universal Audit Tool (D), advertising and direct mailing and incentives (G), engaging manufacturers with upstream incentives (B), engaging retailers and distributors (C),

[30] If this logic model is the same as that requested in #10.(O), only provide once. As needed, provide a more detailed logic model emphasizing the market transformation elements of the program and/or how such elements integrate with resource acquisition elements.

and working through professional and trade organizations to engage contractors, architects, and engineers to support best practices (F). These agreements and collaborations yield reductions in market barriers at the upstream and midstream levels so that program products will be stocked and available to customers. The direct mail, advertising, and EA UAT promote the products directly to consumers so that they will look for the products at stores, and purchase them, reflecting the overcoming of barriers sufficient to generate the initial purchase. After the initial purchase, further barriers are reduced and more purchases are envisioned, both under the program and outside of the program (spillover).

vi. Appropriate evaluation plans and corresponding Market Transformation indicators and Program Performance Metrics based on the program logic model.

Due to the need to comply with the Decision's timeline for filing the 2013-2014 PIP, and our desire to comply with earlier Decisions that call for gathering stakeholder input in informing market transformation efforts, we suggest that a full market effects evaluation plan be developed during the formulation of the Joint EM&V Plan as described in section "18.1, Evaluation Budget" in Decision R.09-11-014. Until then, we suggest the following approach:

Summative evaluation - Market Effects: The market transformation program's theory and logic model will be used to guide the evaluation efforts. The scope of the market effects study should be defined by the MT program's scope. The timeline for specific market effects that are to be evaluated should be defined by the MT program theory. Among other indicators, the program theory may specify changes in market characteristics that can be evaluated, such as 1) Spillover, 2) attitudes, awareness and knowledge, 3) reductions in specific market barrier, 4) current pricing and product availability, and 5) other market milestones.

Formative evaluation: The formative evaluation of a market transformation program is typically performed at the intervention (i.e. program) level. The methods are the same as would be used in a program process evaluation, and would include interviews with program staff, participants and non-participants as well as an assessment of the program's direct outputs.

Attribution: Outside of California, most guidelines for evaluating market transformation acknowledge that it is very difficult to attribute market effects to any single program, and nearly impossible to partition out the respective contributions of several coordinated programs on market effects and market transformation. In California, the Framework (Sebold et al., 2001) emphasized that attribution of market effects to programs bears further research. Others (Rosenberg & Hoefgen, 2009; Keating & Prahl (MT Workshop, Nov 2011) suggest that declaring the program's strategic intent through the market transformation initiative's theory and logic model is key to establishing future claim on transformation effects. The methods proposed by Rosenberg & Hoefgen (2009) for attributing market effects to individual programs include a number of approaches, all of them qualitative: self-report of spillover and free ridership; cross-sectional comparisons with other

geographic regions; structured expert judging; and case studies. But attribution using a "preponderance of evidence" approach would likely be expensive and still yield arguable results. Attribution by nature focuses on individual efforts, and we believe the market transformation evaluation discourse should be focused on collaboration. We will disregard MT attribution by realizing we all have a "Shared Mission" of meeting the CPUC's very aggressive Strategic Plan goals and it doesn't matter which entity contributed how much but whether, as a state with our numerous market actors, we were successful or not. The PLA sub-program's MTI will be based on the Commission Staff's recommendation as shown in Table-D below.

Table-D: PLA Market Transformation Indicators[31]

MTI #	Description
Appliance-3	Percentage of key appliances sold in California that are ENERGY STAR®

13) Additional information as required by Commission decision or ruling or as needed: Include here additional information as required by Commission decision or ruling (As applicable. Indicate decision or ruling and page numbers)

[31] Market Transformation Indicator Final List, May 24, 2012

Table-E: Final Decision's Ordering Paragraphs on PLA Sub-program[32]

Ordering Paragraph	SW PLA PIP's Response	PLA PIP's Reference
Include the criteria used to determine the best delivery channel for any given plug load or appliance incentive or intervention - OP 63	Criteria used to determine the best delivery channels for any given PLA product is based on the market characteristics for the products and specific barriers or market opportunities.	Section 10(f) Section 10 (i)(i,ii,iii)
Identify the selected delivery channels for all measures - OP 64	The selected delivery channels for all measures follow practice of the current cycle. For post-2012, the criteria used to determine the best delivery channels is based on the current cycle practices	Section 10(f) Section 10 (i)(i,ii,iii)
Identify where synergies allow for more coordinated engagement work with retailers and manufacturers - OP 64	The PLA sub-program framework provides guidance for synergistic collaboration with industry partners as the measures transition through different market adoption stage.	Section 9(a) Section 12(ii)
Simplify and streamline program to maximize synergies with manufacturers and retailers and reduce administrative costs - OP 65	The PLA sub-program framework provides guidance for simplifying and streamlining program in order to maximize the collaboration with industry partners for reducing cost.	Section 9(a) Section 10(c) Section 12(ii)
Explore how to implement voluntary product specifications that support the development of mandatory "horizontal standards" (i.e., product standards that lead to energy savings across many categories) - OP 66	Coordination with NRDC, Code & Standard bodies, manufacturers and other market actors to develop and adopt "horizontal standards" for multiple product groups.	Section 11(d)
Re-orient Appliance Recycling Program and take all feasible steps in minimizing cost while maximizing savings - OP 68	Increase collaboration with retailers and the current appliance recycle service providers to support completed cradle-to-grave product life cycle management and encouraging disposal of older inefficient products from the grid.	Section 10(iv,v)
Discuss how the program advance market transformation toward Title 20 Codes & Standards changes - OP 67	Work with manufacturers, Codes & Standards bodies to influence code development and approval process	Section 12(ii)
Identify potential pilot projects or trials to test new program designs that would improve marketplace innovation and engagement and homeowner awareness within the 2013-2014 timeframe – OP 71	PLA sub-program identifies multiple potential trial and pilot projects planned for the 2013-13 Transition Period to evaluate new program delivery methods through a variety of channels and industry partners.	Section 11(d)

[32] Final Decision for the 2013-14 Transition Period on pages 411-412 and 434

Ordering Paragraph	SW PLA PIP's Response	PLA PIP's Reference
Propose initiatives that have been designed to accomplish "market transformation" – OP 162	Proposing PLA sub-program framework with embedded market transformation functions and dedicated program activities for driving successive waves of advance PLA technologies through the market adoption life cycle. The proposed PLA sub-program framework employ stage-gate process for managing the flow of technologies through IOUs EE programs.	Section 9(a) Section 12(ii)

Additionally, Table-F below provides the Final Decision's requirements on the Re-orientation of the Appliance Recycling activities and IOUs' responses.

Table-F: Final Decision's Requirements on Appliance Recycling[33]

Final Decision's Requirements	SW PLA PIP's Response	PLA PIP's Reference
1) Add New Appliances: Expand recycling efforts to include clothes washers and air conditioners - (FD, page 206).	Explore the opportunities to add new appliances but will not consider clothes washers or room air conditioners as both have been proven not to be cost effective.	Section 10(v)
2) Switch to Distribution Center Pick-Ups: Reduce overall program costs by directing retailers to pick up units for recycling. IOU program collections of appliances in the home could be replaced by collections at partner retailer distribution centers. IOUs must avoid duplicating existing efforts with these strategies - (FD, page 206).	Will use the results of SCE's Retailer Based Appliance Recycling Trial Study to develop the new Retailer Base Appliance Recycling Element.	Section 10(iv)
3) Emphasize High Consumption and Secondary Units: Target units with highest savings potential and emphasize collection and recycling of vintage models, secondary units, and extra freezers - (FD, page 206).	Increasing focus on recycling of higher consumption and secondary units as part of the Statewide Appliance Recycling activities.	Section 10(v)
4) Influence Appliance Purchaser's Decision: Use the results of current recycling retailer trials to	Will use the results of SCE's Retailer Based Appliance Recycling Trial Study to develop the new Retailer Base Appliance Recycling Element.	Section 10(iv)

[33] Final Decision for the 2013-14 Transition Period on pages 206-207

Final Decision's Requirements	SW PLA PIP's Response	PLA PIP's Reference
determine the best approaches to partnering with retailers. These partnerships could seek to cost-effectively capture savings through influencing a new appliance purchaser's decision to retire their old units. IOU retailer partnerships could include delivering new appliances at the same time as collecting old units for recycling. The IOUs should seek to coordinate collection of old units with appliance manufacturers and recyclers - (FD, page 206).		
5) Participants Receive Appliance Incentives upon Surrender of old Appliance: Condition the provision of appliance incentives upon surrender of older units for recycling - (FD, page 207).	Will focus on combining rebates for the purchase of high efficient appliance and Retailer Based Appliance Recycling program. This new strategy allows customers to participate in appliance recycling as part of the new appliance delivery-and-haul away process. This approach will not require customer to surrender their appliance as part of the rebate process but still allows IOU's to reduce program implementation cost while providing options that improve the customer experience.	Section 10(v)
6) Transition of Recycling to Market Actors: Transition the current appliance recycling program to market players by a specific date - (FD, page 207).	Transition of the current appliance recycling program to market players by a specific date could not be answered with certainty at this point. The IOUs will continue to engage the Commission and appropriate market actors on this – See Section 10(v) for more detail intervention treatment in the short-mid and long terms.	Section 10(v)
7) Highest Standard of Recycling: Require ARP participating recyclers to comply with highest standards of recycling, including for GHG emissions in refrigerants and foam insulation - (FD, page 207).	Continue to require all participating recycling service providers to comply with the EPA RAD (Responsible Appliance Disposal) guidance.	Section 10(iv, v)
8) Properly Target Multifamily Residences: Develop new recycling approaches for the multifamily sector, including a bulk exchange approach - (FD, page 207).	Offer bulk pickups (at reduced recycling costs) and explore adding new program element to include appliance exchange program.	Section 10(v)

1. **Program Name:** Multifamily Energy Efficiency Rebate Program (MFEER)
   Program Type: Core

2. **Projected Program Budget Table**
   Table 1 - reference the CalSPREE for budget details

3. **Projected Program Gross Impacts Table – by calendar year**
   Table 2 - reference the CalSPREE for projected gross impact details

4. **Program Description**

   a) <u>Describe program</u>

   The MFEER is a continuation of the existing statewide program within the residential energy efficiency portfolios. In accordance with the Strategic Plan, this program advances comprehensive energy efficiency measures, including: whole house solutions, plug load efficiency, visual monitoring and displays, performance standards, local government opportunities, and DSM integration.

   Historically, owners and managers of multifamily properties have been less responsive to energy efficiency efforts than other residential customers. As one of California's largest segments, this unique market warrants additional attention and effort needed to motivate property owners and managers to actively participate in energy efficiency programs. The MFEER proposes a series of comprehensive measures designed to address systems within multifamily housing.

   The MFEER offers a variety of incentives for energy efficient products and services to motivate the multifamily property owners/managers to install energy efficient products in both common and dwelling areas of multifamily complexes and common areas of mobile home parks and condominiums. An additional objective is to heighten the energy efficiency awareness of property owners/managers and tenants.

   The creation of energy-efficient complexes provides benefits beyond the direct energy savings. Through the incorporation of energy efficient measures by multifamily property owners and managers, tenant behaviors can be influenced and comfort improved. The hope is that these behaviors can contribute to a virtual cycle of energy efficiency - as tenants receive upgrades that reduce their energy costs and improve comfort, they in turn recruit and mentor other tenants.

   The MFEER addresses the ongoing concern with "split incentives", where the residents are not the owners of the property, so they lack incentive to improve their energy usage. Similarly, the property owners do not live on-site and pay higher utility expenses due to inefficient appliances, thus lack any incentive to upgrade. The MFEER is designed to drive this customer segment toward participation by offering property owners a variety of energy efficiency measures and services.

Program Integration: The MFEER marketing plans include print material, direct mail campaigns, print advertisement, trade show exhibitions, and presentations to related target market organizations.;

The program also links program incentives from the PLA) and coordinates with the Energy Savings Assistance Program (ESAP), Middle Income Direct Install (MIDI) Program, Multifamily Energy Upgrade California (MF EUC) Program, as well as other Energy Efficiency programs.

Support for ESAP Qualifying and Non-ESAP Qualifying Low Income Families: To make property owners/managers aware of income-qualified services available to tenants, the MFEER promotes the ESA Program within the customer application and outreach efforts. The MFEER will work with municipal entities to support AB811 to serve the needs of non-ESAP qualifying low income families while still adhering to MFEER's program design.

b) List measures

Measures and services to reduce energy usage may include, but are not limited to, the following:

Lighting

- Screw-in CFL Reflector bulbs (ENERGY STAR® Qualified)
- Interior LED Lamps
- Interior CFL Fixtures (ENERGY STAR® Qualified)
- T5 or Lamps w/electronic ballasts
- Exterior CFL fixtures (ENERGY STAR® Qualified)
- Exterior LED lamps
- Exterior LED fixtures
- Occupancy sensors
- Photocells
- Ceiling Fans (ENERGY STAR® Qualified)
- LED Pool and Spa lighting
- Vending Machine Controls

Building Envelope

- High Performance Dual-Pane Windows
- Attic and/or wall insulation

Water Heating

- Electric storage water heaters
- Central system natural gas water heaters
- Natural gas water heater and/or boiler controllers
- Natural gas storage water heater

HVAC

- Package terminal air conditioners & heat pumps
- Unitary AC Units
- HVAC Quality Maintenance
- Brushless Fan Motor for Central AC
- Evaporative Coolers
- Programmable Thermostats

Appliances

- Refrigerators (ENERGY STAR® Qualified)
- High-efficiency Clothes Washers
- High-efficiency Dishwasher
- Central natural gas furnace
- Cold Water Clothes Washers

Pumping

- Variable Speed Pool Pumps
- Programmable Thermostats (Common Areas only)
- Demand Control for Centralized Water Heater Recirculation Pump

Measures may be added or removed from the program as technologies evolve and market potential warrants.

c) List Non-incentive Customer Services

MFEER schedules training workshops to educate contractors about the benefits of the measures offered by this program and other energy efficiency programs, including the ESA program.

5. Program Rationale and Expected Outcome

a) Quantitative Baseline and Market Transformation Information

On December 2, 2010, the Commission issued Resolution E-4385, approving Program Performance Metrics (PPMs) for Pacific Gas and Electric Company, Southern California Edison Company, Southern California Gas Company and San Diego Gas and Electric Company for 2010-2012 statewide energy efficiency programs and subprograms. The Commission gave each PPM a metric type which indicated the reporting frequency: Metric type 2a indicates that the IOUs should report on the metric on an annual basis (unless indicated otherwise). Metric type 2b indicates the IOUs should report on the metric at the end of the program cycle.

Below are the approved PPMs and metric types for the Multifamily Energy Efficiency Rebate Program (Resolution E-4385, Appendix A):

Table 3 – MFEER PPM

Multi-Family Energy Efficiency Rebate	1. Percentage of non-lighting measure savings as compared to the total EE measures adopted in the MFEER program. (KWh for single-commodity IOU and BTU for mixed-commodity IOU.)	2a

b) Market Transformation Indicators

Per Resolution E-4385, a subset of market transformation indicators (MTIs) for statewide energy efficiency programs and subprograms were presented at a public workshop on November 7, 2011, to allow for public comments and discussion before being finalized. Per Energy Division Guidance on June 19, 2012, the MTIs to be found in Appendix "H" are approved for this sub-program as applicable.

c) Program Design to Overcome Barriers

Previous MFEER participants often state their intent to continue upgrading their complexes with energy-efficient products. Lowered energy bills and reduced maintenance efforts (e.g., changing out short-lived incandescent lamps) are economical. Below is a list of program barriers:

Ongoing Concern with Split Incentives

While some market barriers are the same as for other residential programs such as the HEER (described below), others are unique to the MFEER. For this program, which must deal with both owners/managers of multi-family buildings and with tenants, the split-incentive barrier is high. Any measure or appliance that is installed in the tenant dwelling area will provide benefits to the tenant while costs may go to the owner/manager. This fact implies an uphill effort to get owner/manager participation.

In alignment with California's BBEES and EAP policy initiatives, and advanced by the Strategic Plan, the MFEER is in the unique position to overcome the split incentive barrier by serving two distinct beneficiaries of energy savings, the property owner and the tenant. MFEER design has been overcoming the split incentive barrier since the program's inception in 2002, as had its predecessor; the Residential Contractor Program did since 1999. Program design has been effective to such an extent that the majority of MFEER rebates paid were for products installed in tenant dwelling units.

The diversity of multifamily building types makes it highly challenging to develop program delivery models, incentives and consistent packages of building upgrade measures that meet the needs of every situation.

The multifamily sector encompasses a range of building sizes, system types and configurations of dwelling units and nonresidential areas. Because multifamily building types are so diverse, it is highly challenging to develop program delivery models, incentive

programs and consistent packages of building upgrade measures that meet the needs of every situation.

In many cases, the property owner or manager's energy efficiency knowledge is limited. As such, deciphering though the variety of offered measures can prove to be challenging, and in some cases even discouraging. Additionally, in a multifamily building's lifecycle, there are specific times when it is most cost effective and convenient for the property owners/mangers to make energy and green upgrades. The program needs to focus on these triggers or entry points to engage and educate customers on energy efficiency benefits.

MFEER has proven success developing an established network of professionals who are experienced in their specific trade and are effective at both marketing program availability to potential clients and installing the specific set of measures.

This network of professionals tailors their services (lighting, HVAC, appliances, etc.) to take advantage of these entry points.

Difficult to reach due to property owners lack cohesiveness as a group and high turn-over rate of property managers

Further planning difficulties are generated by the fact that property owners/managers, in large part, are not a cohesive group. This leads to disparities and gaps in industry knowledge and poses a barrier to knowledge sharing. In addition, since on-site property managers tend to be somewhat transient, maintaining consistent contact is difficult.
The multifamily property sector consists of commercial enterprises that provide residential living spaces. In this quasi-commercial role, the property owner straddles the residential and commercial energy efficiency programs' definitions. The MFEER specifically addresses their often overlooked needs.
The desired outcome of MFEER implementation is to realize long-term energy savings through the installation of energy-efficient products in both the common areas and dwelling units of multifamily complexes and the common areas of condominium complexes and mobile home parks. Another objective is the inclusion of rented mobile homes when those park owners/managers are making replacements in common areas.

The creation of energy-efficient complexes provides benefits beyond the direct energy savings to common areas. Through the incorporation of EE measures by multifamily property owners and managers, the opinions and behaviors of tenants can be influenced. These behaviors can contribute to a self-reinforcing cycle of EE responsibility throughout a complex as more knowledgeable customers install measures that can reduce the overall energy footprint, with no loss of safety or comfort.

Issue of Affordability
Out-of-pocket costs pose a significant participation barrier for the customer. With the exception of some of the larger property management firms, pay-back terms, no matter how favorable, are perceived as an unacceptable risk by the average customer.

Program Integration to Overcome Barriers

Multifamily building owners and managers find it daunting to sort through the various programs, funding and incentive options, and program requirements. To address the trend toward comprehensive solutions and to reduce the potential for lost opportunities, MFEER will integrate opportunities with other energy efficiency programs and services, such as the existing ESA Program and ARP, as well as the MF EUC and MIDI programs. While programs will be coordinated and integrated, their respective policies and procedures will be followed in the delivery of services. Operational efficiencies will be employed to streamline the application process and installation of measures. This unprecedented integrated approach combines market-rate and income-qualified energy efficiency measures that will benefit multifamily property owners and tenants; providing the opportunity to educate building owners on the benefits of energy efficiency and conservation efforts spanning the range of needs for the multifamily market.

This collaboration should increase participation levels for each respective program.

- The MFEER will continue to work with the ARP to promote the turn-in of inefficient (but functional) property owner-owned refrigerators. To generate interest and gain higher participation levels through joint marketing efforts, MFEER will also consider opportunities to cooperate with other energy efficiency programs or services.
- MFEER will promote the ESA Program and the California Alternate Rates for Energy (CARE) program within the application by making the property owner/manager aware of the available income-qualified services for the tenants. Additional marketing efforts may include reaching tenants through direct-mail to promote services not offered under MFEER, such as the CARE electricity bill discount of 20% or more and the income-qualified refrigerator replacement.

- MFEER will coordinate with the Energy Advisor ("HEA") program to promote, and potentially develop, a survey specific to the multifamily segment that engages the property owners/managers by helping identify opportunities for saving energy and money by using MFEER and other energy efficiency programs.
- The MF EUC program seeks deeper energy savings through a comprehensive approach. The program targets property owners/managers with scheduled project rehabilitation who are willing to invest in a performance-based whole-building approach. The incentives are designed to influence the implementation of comprehensive measures and therefore are based off of energy reduction achieved. As such, MFEER will guide property owners/managers with comprehensive project potential to the MF EUC program.

d) Quantitative Program Targets

The statewide MFEER is striving to meet the following program activity targets. The proposed targets may be modified due to funding restrictions, especially for the 2013-2014 year.

Table 5: Proposed Program Activity Targets

Program Target	Program Target by 2013	Program Target by 2014
Target #1 Direct mailing to reach 5,000 multifamily property owners/manager Advertising in trade journal (depended on approved marketing budget) Support outreach events such as trade shows	Complete 5,000 pieces of direct mailing, place monthly trade journal advertising, attend 2 trade shows per year	Same as 2013
Target #2 Require 100% of program participating electrical contractors to meet licensing requirements	100% for 2013-2014 program cycle	Same as 2013
Target #3 Deliver program specific communications to participating contractors	2 communications per year	Same as 2013
Target #4 Continue to solicit participation from mega property management Company	3 per year	Same as 2013

Note: The proposed activities above may be limited by program funding restrictions

e) <u>Advancing Strategic Plan Goals and Objectives</u>

In accordance with the Strategic Plan, this program advances comprehensive energy efficiency measures, including: whole-house solutions, plug-load efficiency, performance standards, leveraging of local government energy partnership opportunities, and DSM integration. As technology progresses, this program will adopt newer measures such as home energy monitoring and displays. Each of these measures works to reduce the energy and carbon footprint of multifamily dwellings and will create additional energy savings and integration opportunities through inter-program referral, data sharing, and bundling of DSM solutions across energy efficiency, DR, CSI, smart meter and other IDSM efforts.
The MFEER will support the following Strategic Plan as described below:

- 2.1.3.2. Home buyers, owners, and renovators will implement a whole-house approach to energy consumption that will guide their purchase and use of existing and new homes, home equipment, household appliances, lighting and "plug load" amenities;

- 2.1.3.3. Plug loads will be managed by developing consumer electronics and appliances that use less energy and provide tools to enable customers to understand and manage their demand; and

- 2.1.3.4. The residential lighting industry will undergo substantial transformation through the deployment of high-efficiency and high-performance lighting technologies, supported by state and national codes and standards.

The current program design does not specifically address the Energy Division's market transformation goal of having 100% of multifamily households achieve a 40% reduction in energy consumption from 2008 levels by 2020. However, the program is part of the solution to reach the multifamily transformation goal for California. A portion of the 2020 goals could be achieved through codes and standards ratcheting or by other local program's implementations. To become a market transformation program, MFEER will need to make significant changes to program design, program cost effectiveness, and many other economic feasibility issues. Furthermore, the MFEER program will need to be sensitive to the CPUC/CEC market potential studies.

5. Program Implementation

a) Statewide IOU coordination

i. Program name: Multifamily Energy Efficiency Rebate Program

ii. Program delivery mechanisms

The MFEER offers a variety of incentives for installing qualified energy-efficiency products in existing apartment dwelling units and in the common areas of apartment and condominium complexes, and common areas of mobile home parks. Property owners and managers of existing residential multifamily complexes with two or more dwelling units may qualify.

The MFEER offers incentives in the following forms:

- Prescribed rebates;
- Mid-stream incentives through retailers, distributors, and/or contractors; and
- Direct Installation of energy efficiency products

iii. Marketing and outreach plans, e.g. research, target audience, collateral, delivery mechanisms

The MFEER statewide marketing plans include print collateral material, direct mail campaigns, print media advertisements, trade show exhibitions and presentations to related target market organizations, and leveraging with other IOU energy efficiency efforts and programs where feasible (see targets above, Table 5). The utilities may use a range of tactics such as; e-mails, flyers, on-Line marketing, direct mail, bill messaging, social media, local events, ethnic media, and other channels that suit the target audience, the message, and the resources. MFEER will also coordinate outreach activity with the ESA Program, WHUP, PLA, HVAC programs to maximize customer engagement and opportunities.

iv. IOU program interactions with CEC, ARB, Air Quality Management Districts, local government programs, other government programs as applicable

The MFEER program will coordinate with CEC, ARB, AQMD, and other local agencies and municipalities to implement environmental programs in support of California's long term Strategic Plan and CPUC initiatives.

v. Similar IOU and POU programs

The MFEER is a statewide program. Programs outside of California are implementing similar program designs (e.g., Austin Energy).

b) <u>Program delivery and coordination</u>

To motivate multifamily property owners/managers to install energy-efficient products in the common areas and dwelling units of multifamily complexes and common areas of mobile home parks and condominiums, the MFEER Program offers prescribed rebates for energy efficient products An additional objective is to increase the energy efficiency awareness and knowledge of property owners/managers and tenants.

The program leverages an extensive network of contractors to reach property owners and property managers. In addition to these contractors, the program also makes direct outreach to larger property management companies. This network of contractors helps identify prospective properties and contact people. The contractors also help property managers develop lists of improvements that are eligible for utility incentives. When ready, the contractors install the measures then often will assist the property owners/managers complete the incentive application paperwork.

For marketing and outreach activities, the MFEER not only reaches out to the end users, but will also make special outreach and training sessions available to the specific trade contractors.

i. Emerging Technologies (ET) Program

The program collaborates with the Emerging Technologies Program in assessing energy efficiency technologies that are new and/or underutilized in the residential/multifamily market.

ii. Codes & Standards Program

The MFEER works with the codes and standards group to ensure that all the measures offered by the program are updated timely.

iii. WE&T efforts

The implementation of various training and coverage may differ for each IOU. For SCE, the energy centers traditionally did not offer classes specifically designed for the MFEER contractors and property owners. The MFEER will work with the energy centers to develop new and modify existing education and training classes for contractors and property owners, to assist in advancing the objectives of the Strategic Plan.

iv. Program-specific marketing and outreach efforts

The MFEER marketing plans consist of print collateral material, direct mail campaigns, print advertisement, trade show exhibitions and presentations to related target market organizations, and leveraging other IOU energy efficiency efforts and programs where feasible. Additionally, program-specific marketing and outreach activities are necessary to drive participation and attain program goals.

v. Non-energy activities of program

Training of contractors and outreach to large property owners are part of the program's non-energy activities.

vi. Non-IOU programs

The program allows cross promotion of other applicable programs, such as those of water agencies that offer rebates for clothes washers and dishwashers. Program staff will work with other utilities and groups, as appropriate, to increase program participation and savings levels.

vii. CEC work on EPIC

The MFEER will work with the residential program team to track the latest developments from CEC and EPIC.

viii. CEC work on C&S

MFEER is very sensitive to the codes and standards that the IOUs and CEC are working on. The program will monitor these activities and incorporate any standards ratcheting as appropriate.

ix. Non-utility market initiatives

Along with the HEER program, MFEER supports all ENERGY STAR® activities. In addition, MFEER also participates in activities with the local and national housing authorities.

c) Best Practices

Given the difficulty of reaching potential customers, the MFEER is designed to leverage the knowledge and contacts of its network of contractors. Given the limited marketing budget, this targeted outreach method has yielded fruitful results for the program. It also consistently helped the program in overcoming the split-incentive barrier within this segment.

This program also drives permanent change in California and achieves market transformation through the installation of ENERGY STAR® qualified products, thereby reducing tenants' energy usage in apartments and also reducing property owners' energy usage in common areas.

d) Innovation

A key program innovation is the customer referral process, which was developed to assist property owners who own apartment buildings served by different IOUs. In this process, a property owner who is working with an IOU and owns properties served by other IOUs is automatically referred to the appropriate program managers at those IOUs. Confusion and

barriers that can result when working with multiple entities is reduced since the IOUs operate identical rebate programs and use similar rebate applications.

As one of the few programs in the nation that specifically address this hard-to-serve market segment, this unique and innovative program has developed a model approach for other utilities to emulate. In addition, the program represents an innovative partnership among California utilities, demonstrating the great potential of a statewide energy efficiency program and creating processes, upon which other partnerships can build.

This program is especially innovative since multifamily property owners/managers and tenants have traditionally been unable to receive energy efficiency rebates. Some tenants qualified for the low-income programs, and before 2002, under the RCP program, a few multifamily properties received installation of CFLs, water heater controllers, and duct test and sealing. The development and implementation of the statewide MFEER has increased the participation of not only property owners/managers (for the common area energy efficient measures), but also of tenants who use approximately 80% of the energy in multifamily buildings. Traditionally, this has been an untapped market. Each year that rebate funding has been available, energy savings have increased exponentially.

e) Integrated/coordinated Demand Side Management (ISDM)

To identify successful integration approaches and offerings, potential pilot programs and metrics, the IOUs will coordinate program efforts with the local utility integration teams and the Statewide Integration Task Force.

The MFEER will work with IDSM initiatives to identify the best possible collaboration. The potential offer could include smart metering, load management and other services, as appropriate. The details of this collaboration will be better defined in the 2013-2014 program cycle.

f) Integration Across Resource Types (energy, water, air quality, etc)

The program allows for cross-promotion of other available programs, such as water companies that offer rebates for clothes washers and dishwashers. SCE agrees to investigate and implement a similar market program to make multiple resource offerings in MFEER consistent statewide. SCE and SCG will identify areas of opportunity to collaborate to create a pilot program specifically for the multifamily market segment.

g) Pilots

MF Audit Tool - Pilot to target other mixed use property types such as: SF HOA common areas, Senior Living facilities and SROs (i.e. dorms), would like to consider including common areas of HOA for single-family home communities, and Single-room occupancy (SRO) facilities, such as dormitories and assisted living facilities; these are not segments currently targeted by other efforts.

h) EM&V

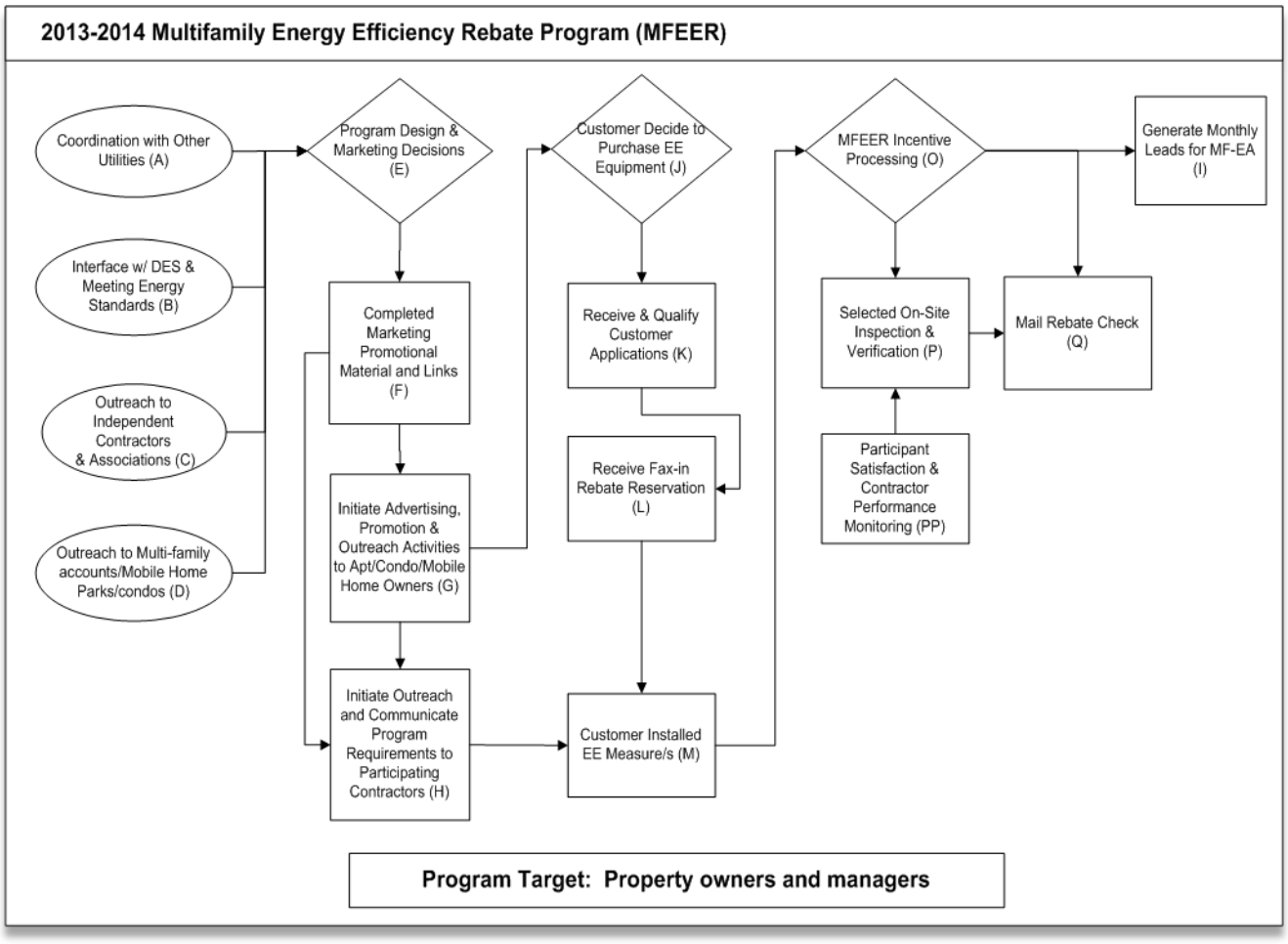
The utilities plan to work with each other and with the Energy Division to develop a complete plan for 2010-2012 studies and budgets after the program plans are finalized and filed. This plan will be submitted to the CPUC in time for approval along with the PIPs.

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 Energy Division to resolve market baseline and transformation issues;
- Update and repeat CLASS and RASS/RMST Appliance Tracking & Saturation studies, as appropriate;
- Conduct statewide process evaluation to assess the following:
  i. Track the all proposed key metrics;
- Conduct SCE specific process evaluation to improve program design, implementation and market effectiveness; and
- Design an M&E study to monitor the pilot program mentioned above, especially to examine the conversion rate from multifamily EA to MFEER program participation and assess the level of participation relative to the scope of EA recommendations.

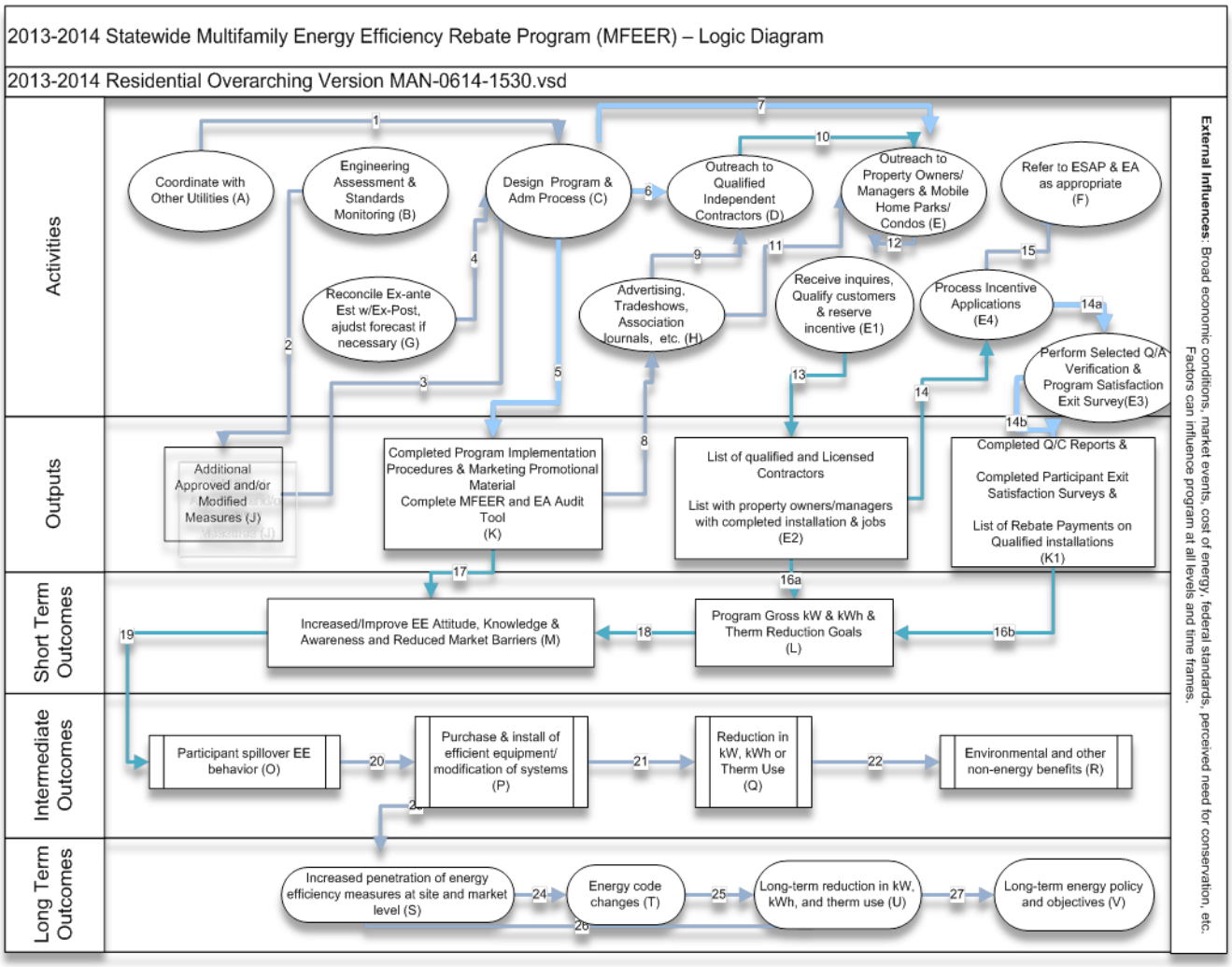
As indicated by the Itron Final Report: Scenario Analysis to Support Updates to the CPUC Savings Goals, 3/2007, the residential sector (single family and multifamily) will be expected to deliver a significant portion of California's energy savings in nearly all scenarios. The statewide MFEER program delivers a portion of the required savings and is part of the total energy efficiency strategy.

MFEER Process Diagram

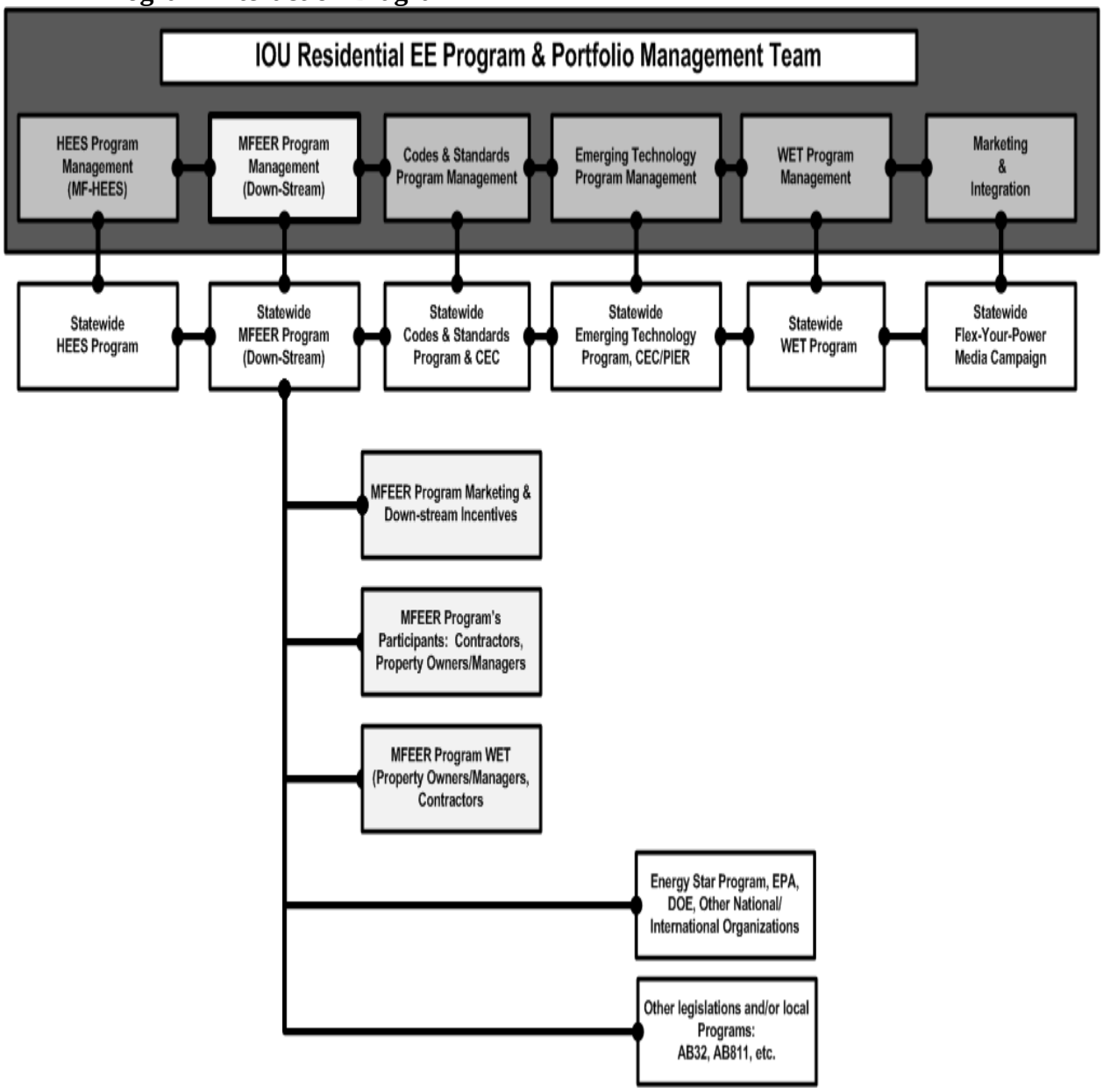


Program Logic Model MFEER

Note: On December 2, 2010, the Commission issued Resolution E-4385, approving Program Performance Metrics (PPMs) for Pacific Gas & Electric Company, Southern California Edison Company, Southern California Gas Company, and San Diego Gas and Electric Company for 2010-2012 statewide energy efficiency programs and subprograms. In addition, this Resolution approved updated logic models for the statewide programs. Below is the approved logic model for the Multifamily Energy Efficiency Rebate Program.

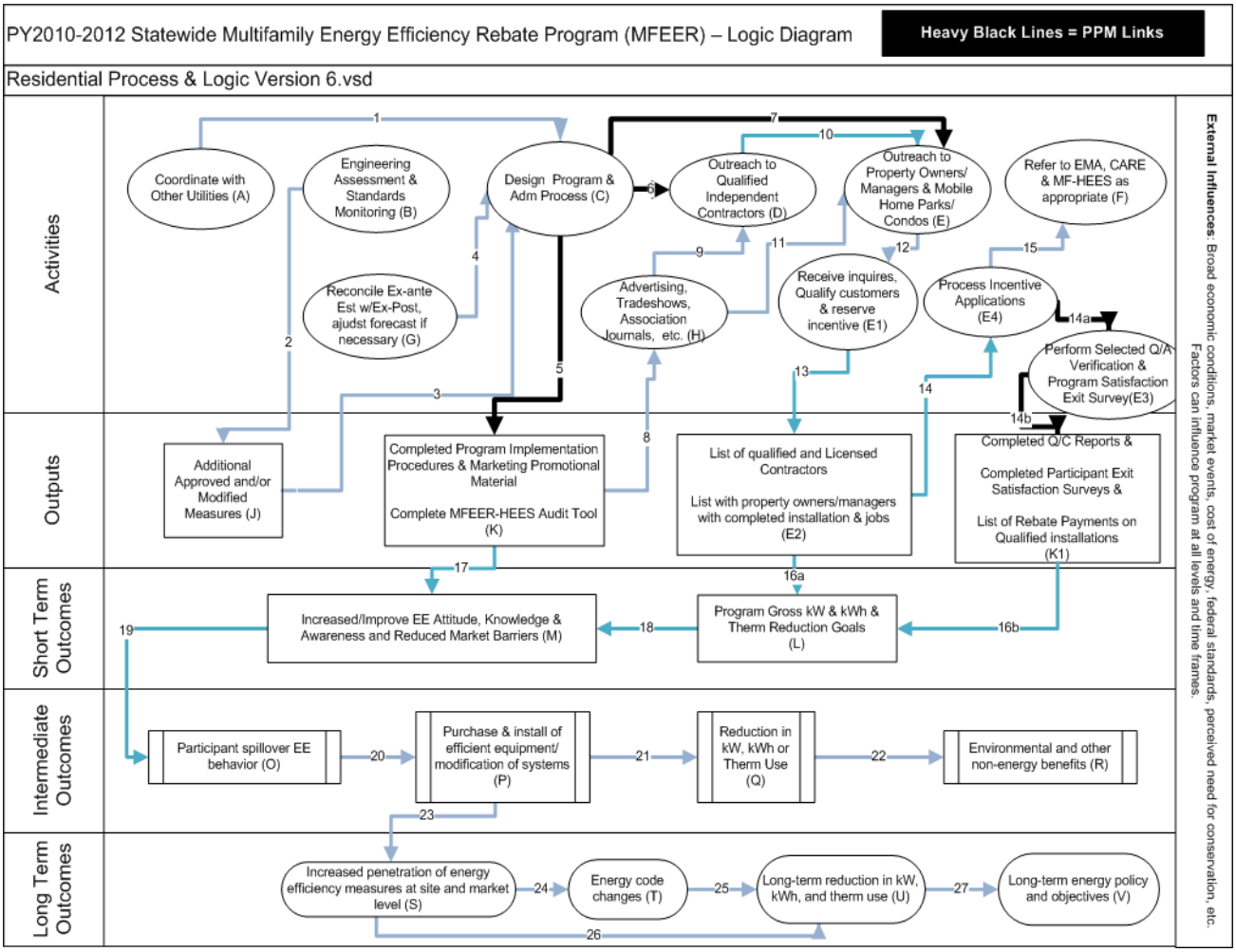


Program Interaction Diagram MFEER

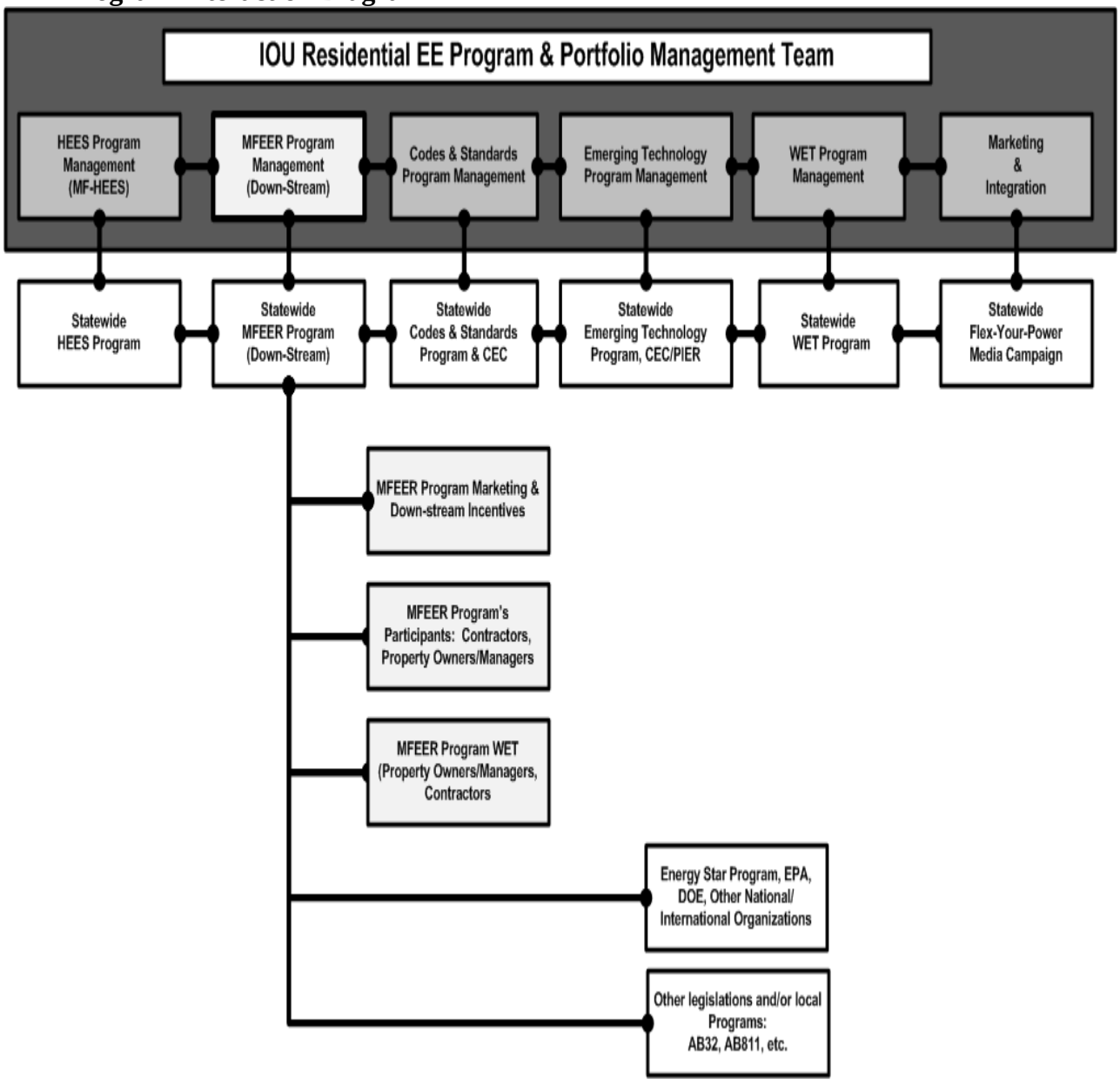


6. Program Logic Model MFEER

Note: On December 2, 2010, the Commission issued Resolution E-4385, approving Program Performance Metrics (PPMs) for Pacific Gas & Electric Company, Southern California Edison Company, Southern California Gas Company, and San Diego Gas and Electric Company for 2010-2012 statewide energy efficiency programs and subprograms. In addition, this Resolution approved updated logic models for the statewide programs. Below is the approved logic model for the Multifamily Energy Efficiency Rebate Program.

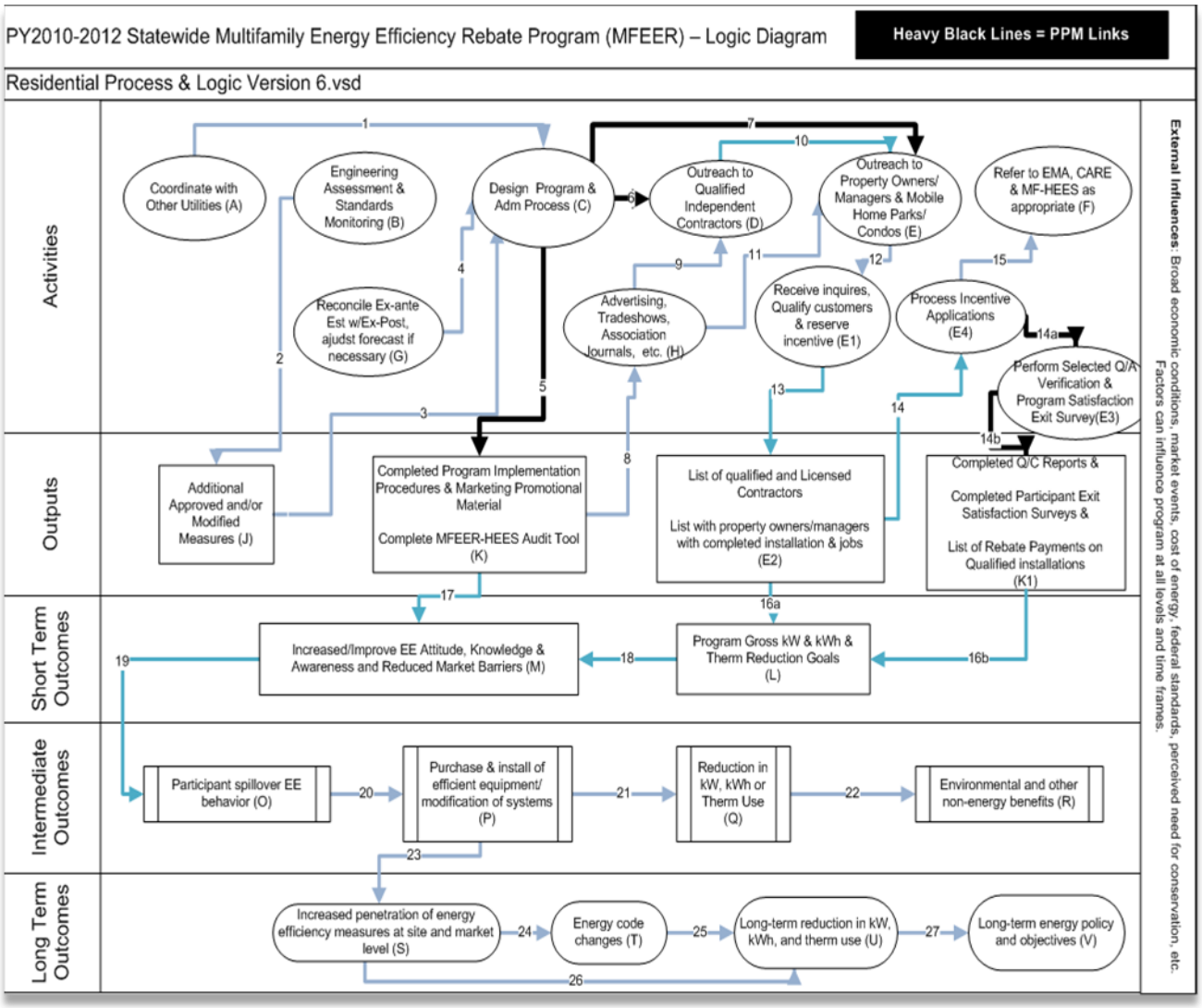


Program Interaction Diagram MFEER



7. Program Logic Model MFEER

Note: On December 2, 2010, the Commission issued Resolution E-4385, approving Program Performance Metrics (PPMs) for Pacific Gas & Electric Company, Southern California Edison Company, Southern California Gas Company, and San Diego Gas and Electric Company for 2010-2012 statewide energy efficiency programs and subprograms. In addition, this Resolution approved updated logic models for the statewide programs. Below is the approved logic model for the Multifamily Energy Efficiency Rebate Program.



1) **Sub-Program Name:** Whole Home Upgrade Program (WHUP)

2) **Sub-Program ID number:** TBD

3) **Type of Sub-Program: _X Core __Third Party __Partnership**

4) **Market sector or segment that this sub-program is designed to serve:**
   a. _X_ Residential
      i. Including Low Income? __ Yes _X_ No;
      ii. Including Moderate Income? _X_ Yes __ No.
      iii. Including or specifically Multifamily buildings _X_ Yes __ No.
      iv. Including or specifically Rental units? __ Yes _X_ No.
   b. __ Commercial (List applicable NAIC codes: _____)
   c. __ Industrial (List applicable NAIC codes: _____)
   d. __ Agricultural (List applicable NAIC codes: _____)

5) **Is this sub-program primarily a:**
   a. Non-resource program ___ Yes _X_ No
   b. Resource acquisition program ___ Yes _X_ No
   c. Market Transformation Program _X_ Yes ___ No

6) **Indicate the primary intervention strategies:**
   a. Upstream ___ Yes _X_ No
   b. Midstream ___ Yes _X_ No
   c. Downstream _X_ Yes ___ No
   d. Direct Install __ Yes _X_ No.
   e. Non Resource __ Yes _X_ No.

7) **Projected Sub-program Total Resource Cost (TRC) and Program Administrator Cost (PAC)** TRC ___ PAC ___

8) **Projected Sub-Program Budget**

   Table 5. Projected Sub-Program Budget, by Calendar Year
   [Table-5 to be provided as an Excel Attachment to this PIP]

9) **Sub-Program Description, Objectives and Theory**

   a) **Sub-Program Description and Theory:**
   According to a report released 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."[34] 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

[34] Middle Class Task Force. Council on Environmental Quality. "*Recovery Through Retrofit.*" October, 2009. Page 1.

households is necessary to achieve the target outcome for the 2020 existing residential *Strategic Plan* goals."[35]

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 customers, towards a whole house approach must take place to drive customer action. WHUP 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, WHUP for single family residences will:

1) Offer a statewide entry level pre-set measures based approached (*Basic Path*) and a comprehensive and flexible performance based approach (*Advanced Path*) whole house incentives to help build the home performance contracting industry and offer customers and building owners and managers 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 to undertake comprehensive residential retrofits (barrier 1); and
5) Coordinate with relevant utility financing programs and external funding and financing mechanisms at the county, state and federal levels (barrier 2).

In addition, energy efficiency efforts for the multifamily (MF) segment must overcome a number of barriers, primarily:

1) Lack of knowledge regarding energy efficiency, as well as the comprehensive energy efficiency EE programs offered by IOUs;
2) The economics of "split-incentives" where the building owner invests capital but the savings primarily benefit the tenants;
3) Access to investment capital and insufficient return on investment (ROI). Up-front out-of-pocket costs and extended payback periods required pose a significant participation barrier for property owners and managers;
4) Hassle of dealing with multiple contractors and visits required;
5) Time burden for tenants and owners;
6) Impact on rental income; and

[35] D. 09-09-047. Page 110.

7) Business policy/ profit incentive from replacing equipment on burn-out and unwillingness to negate remaining life in building components requiring capital outlay.

The *Multifamily Path* is envisioned to include a number of tactics to overcome these barriers, primarily:

1) To improve a property owner or manager's energy efficiency knowledge, the *Multifamily Path* would seeks to leverage comprehensive investment grade building assessments to identify potential energy efficiency opportunities. (barrier 1).
2) To address split incentives and cost of upgrades, the *Multifamily Path* would integrate with the existing Energy Savings Assistance Program ("ESAP") and the Multifamily Energy Efficiency Rebate ("MFEER") Program. This would provide comprehensive services to the building, including "low cost" or "no cost" tenant measures in conjunction with the WHUP *Multifamily Path* whole building incentives in order to maximize energy savings for the up-front investment. (barrier 2).

3) Incentives would assist property owners or managers with overcoming a wide array of market and financial barriers which may otherwise prevent energy efficiency upgrades (barrier 1 and 5).
4) Create a single point of contact that would assist the property owner or manager navigate through the incentive and retrofitting process. This approach would provide support in understanding the various program rules and assistance in determining eligibility. The property owner or manager would be guided through an easy and streamlined preliminary assessment to establish feasibility and estimate project cost for the *Multifamily Path*, with an eye toward leveraging all eligible programs. (barrier 4).
5) Target buildings planning on or undergoing renovation projects to limit customer time burden and lost rental income. (barrier 4 and 5).
6) Multifamily sector is comprised of a wide diversity of properties which can be segmented by: 1.) rental rate (low – medium – or high; and/or 2.) size of the building and also size of the company that owns or manages the building. Defining the unique concerns and needs of building owners and managers by these variables of tenant socio-economic status and ownership/management structure will allow much more effective messaging and marketing communications. (barrier 1, 2, 3, 4, 7)
7) Statewide EE energy efficiency financing (SW Fin) which could be focused on the tenant or the common property energy agendas. This program will provide access to capital to fund investments in energy efficiency upgrades for buildings at an attractive interest rate. (barrier 2, 3, 7).

Other considerations to meet all income strata and address split incentives for property owners and tenants may include a direct install strategy, as well as prescriptive rebates through the existing MFEER Program. While programs will be coordinated and integrated, their respective policies, and procedures will be followed in the delivery of services. Efforts at operational efficiencies would be made to streamline eligibility, income verification, and installation of measures.

Despite the noted barriers, the multifamily sector presents a significant opportunity for whole building energy efficiency programs with a deep energy reduction approach. A whole building offering has the potential to achieve deep energy savings because:

1) Building owners can leverage incentives to address common areas and systems as well as individual unit upgrades to make more cost effective improvements.
2) Major rehabilitation projects are common in the multifamily sector. It is theoretically more cost effective to include energy efficiency upgrades at the time of these renovation projects. These projects typically have well-financed construction budgets and broad scopes that could include energy efficiency measures.
3) Multifamily properties tend to be operated and maintained by professional building staff. Providing resources to building staff would theoretically would increases the odds that the building will be operated efficiently after energy upgrades are installed, perpetuating savings benefits.
4) Within the tenant units, the energy efficiency upgrades will often be duplicated – allowing for efficiency in bulk purchases of supplies and equipment, as well as hiring of specialized workers with less non-productive set-up/break-down and travel time.

The Whole Home Upgrade Program (WHUP) is a Market Transformation orientated program and is a continuing program which began in 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 (SoCalGas).
As a recognized market transformation program only halfway through its second full year of statewide rollout, the WHUP is expected to be a major contributor to achieving the goals of the California Long Term Energy Efficiency Strategic Plan (*Strategic Plan*) as it relates to existing residential homes, and it faces significant hurdles in customer and contractor awareness, industry and workforce development, and traditional cost effective metrics towards measuring effectiveness and success.

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

WHUP is designed to build customer and contractor[36] 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. It promotes the idea that energy efficiency measures are most effective when taking into account interactive effects of measures.

[36] 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.

The WHUP moves customers from a prescriptive, widget or single-measure based approach to energy efficiency to one of deeper, comprehensive energy retrofits that respect the energy efficiency loading order [37], and which takes the approach that a house is a series of interdependent systems that must be considered holistically.
In addition, this approach optimizes building shell (thermal boundary) provides increased comfort and indoor air quality while enabling smaller and more affordable space conditioning equipment 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 WHUP will be coordinated with other IOU Demand Side Management (DSM) program offerings (e.g.,), Energy Advisor, Plug Load and Appliance (PLA), Comprehensive HVAC, SmartAC and other Residential Demand Response programs, Energy Savings Assistance Program, California Solar Initiative (CSI)) to leverage multiple customer touch points.
For single family residences, the whole house approach of WHUP promotes two paths, a prescriptive based *Basic Path* and a comprehensive, measured *Advanced Path*. These complimentary paths will be presented to customers[38] as one comprehensive offering.

For multifamily buildings, building owners and managers will be able to participate in the WHUP *Multifamily Path*. WHUP will offer a consistent program model that can be contractor or rater driven and/or adopted by local governments for roll-out in their communities.

In sum, these paths 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.

WHUP *Advanced Path*
WHUP *Advanced Path* offers customers a customized path to comprehensive whole house energy efficiency that drives the customer to deep retrofits. *Advanced Path*

[37] 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.
[38] Residential customers including homeowners, renters, and multifamily properties when these services are available to them.

solutions will require Participating Contractors to obtain higher levels of expertise than those who perform the *Basic Path* installations. Customers can also participate in *Advanced Path* by using a Participating Rater. The *Advanced Path* requires diagnostic "test-in" and "test-out" whole house assessments. The "test-in" assessments will generate a comprehensive work scope and the "test-out" assessments will be used to document that specified improvements have been properly sized and installed. The *Advanced Path* will build off of the pre-set measures of the *Basic Path* and:

The *Advanced Path* delivers comprehensive energy efficiency improvement packages tailored for both the home resale and home remodeling markets. The *Advanced Path* solicits, screens, and trains qualified residential repair and renovation contractors and HERS II Raters, to assemble capable contracting teams and perform whole-house diagnostics, propose a comprehensive energy efficiency improvement package, and install the improvements. The program also includes marketing activities to help educate customers on program services, and in some cases may provide additional customer leads to trained and experienced contractors. Incentives and resources for available financing options will be provided to help offset the initial homeowners cost for the energy efficiency improvements.

WHUP *Basic Path*

During the 2013-2014 transition cycle, the IOUs will convene interested stakeholders at the state and/or regional level to propose one or more statewide and/or regional pilot programs to explore potential changes to the *Basic Path* in order to make it more appealing to customers, particularly moderate income households.

WHUP *Basic Path* will offer customers and contractors an easy entry point on the path to home performance with a defined package of measures. Incentives will be available for customers to offset a portion of the cost of specific comprehensive retrofits. The *Basic Path* will allow customers to reduce their energy usage while increasing the energy performance of their existing homes and minimizing lost opportunities for future comprehensive retrofit options.

The *Basic Path* 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. The *Basic Path* will help to:

- Utilize no-cost (to customer) Home Energy Efficiency Surveys (Energy Advisor) as an entry point to identify opportunities for efficiency improvements[39];

- 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;

[39] The Energy Advisor 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 WHUP. The Energy Advisor surveys are also an ideal link between the California Solar Initiative (CSI) and EUC WHRP. This synergy will be discussed later in the document.

- 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;

- Leverage available opportunities to move customers to the *Advanced Path* by informing them about available local or third-party financing options and other complementary revitalization efforts that may be available within a particular jurisdiction;

- 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, workforce education & training, industry organizations and allied third-parties for outreach on local retrofit and contractor training opportunities available.

The WHUP *Basic Path* offers a comprehensive approach to delivering prescriptive pre-set retrofit solutions to Californians by recognizing the essential interplay and relationships between groups necessary in the delivery of a successful program.

WHUP *Multifamily Path*

The vision of a WHUP *Multifamily Path* is to deliver comprehensive energy efficiency upgrades tailored to the needs of existing multifamily dwellings and their owners, tenants and management companies

The *Multifamily Path* will is envisioned to specifically target the multifamily housing (MF) retrofit market and would promote long-term energy benefits through comprehensive whole building energy efficiency retrofit measures —including building shell upgrades, high-efficiency HVAC units, central heating and cooling systems, central domestic hot water heating and other deep energy reduction opportunities. These energy efficiency measures would be identified through an investment grade assessment.

This performance-based approach would assist property owners and managers with making informed decisions, identify measures for energy savings, and to maximize energy reductions for each property owner, manager, and tenant, as applicable.

The *Multifamily Path* is envisioned as a logical next step to the prescriptive based MFEER and would be coordinated with Energy Savings Assistance Program and MFEER to present a singular and streamlined approach for multifamily tenants, property owners and property managers, in accordance with the Strategic Plan. A key feature of the *Multifamily Path* would be a single point of contact to assist multifamily raters and customers and to streamline their experience. The single point of contact will recruit and assist multifamily owners and property managers to evaluate specific property and advise the program that best suits the needs of particular buildings.

This integrated approach combines market-rate and income-qualified energy efficiency measures and educates building owners on the benefits of energy efficiency and conservation efforts spanning the range of needs for the multifamily market. The *Multifamily Path* will leverage and integrate the MF MFEER resource components and MF ESAP offerings in a singular customer facing program that presents a simplified view from the customer perspective.

The *Multifamily Path* would guide MF customers towards deeper, comprehensive energy efficiency measures, including: whole house solutions, plug load efficiency, visual monitoring and displays, performance standards, local government opportunities, and IDSM integration. The *Multifamily Path* will support the strategies, where possible, in the Low Income Proposed Decision.

b) **Sub-Program Energy and Demand Objectives**-

Table 6: Projected Sub-Program Net Energy and Demand Impacts, by Calendar Year *[Table-6 to be provided as an Excel Attachment to this PIP]*

c) **Program Non-Energy Objectives**:
Table 16: Non-Energy Objective
[Table-16 to be provided as an Excel Attachment to this PIP]

d) **Cost Effectiveness/Market Need**:
The California IOUs look forward to continue playing a leading role, in collaboration with local governments, in moving the existing residential homes market towards larger reductions in energy usage and towards the *Strategic Plan* goal of achieving 40% purchased energy reductions in all existing homes by 2020. At this time, current market conditions and barriers are:

1. Relatively high cost of home assessments.
2. Relatively high gross costs of comprehensive energy upgrades.
3. Market unawareness of non-economic value to comprehensive energy upgrades.
4. Fledgling contracting and supporting industry for existing home energy upgrades.
5. Low consumer awareness of incentive programs and the concepts of comprehensive home energy assessments and upgrades.
6. Lack of common home rating protocols and common vernacular for the market to assign value to homes which undergo comprehensive energy upgrades.

The WHUP seeks to address these barriers through:

1. Continued marketing of Energy Upgrade California and whole house concepts. (barrier 3, 5).
2. Continued contractor recruitment (at a pace aligned with demand), training and mentoring. (barrier 4, 5).
3. Continued customer uptake through WHUP incentives. (barrier 1, 2, 5).
4. Continued stakeholder outreach to address barriers. (barrier 1, 3, 4, 5,6).

5. Continued partnerships with local and state government to address barriers. (barrier 1, 2, 3, 4, 5, 6).

It will be critical to establish market transformation (MT) metrics and milestones that are in alignment with cost effective metrics that can more accurately assign cost effectiveness of resources expended towards MT goals. As the Value Proposition figure below represents, there currently is significant non-economic value being assigned by the marketplace towards whole house projects but which are not accounted for in cost effectiveness metrics currently used.

Non-economic value can be assigned as:
Gross Cost – (annual savings x EUL) – (assigned increased market value of home)

By this definition, and information regarding gross costs and savings to date, it would appear that the market currently is assigning significant non-economic value to WHUP projects. However, current cost effective metrics assign all value towards economic value related to energy savings only. Failure to align MT goals and cost effective metrics will result in inaccurate measurement of resource impacts on MT goals.

The IOUs during the 2013-2014 cycle recommend the Commission remove the WHUP from the EE portfolio cost effective analysis and to work with commission staff and relevant stakeholders to develop meaningful cost effective metrics during the 2013-2014 cycle that aligns MT goals of WHUP towards the *Strategic Plan*.

VALUE PROPOSITION
(Greater the Value Proposition = Faster Market Transformation and Consumer Uptake)

	Consumer Value	**Consumer Costs**
Economic Value	• Monthly utility bill savings (kWh, kW, therm) • Recognized Market Value of EE home	• Gross Project Costs

Non-Economic Value	• Health & Comfort
	• Altruistic
	  • Environment
	  • National Security
	  • Being part of Green Movement
		• ***Offsets:***
		IOU Incentives
		Financing

	Driving Up Value	**Driving Down Costs**
	• Standard Ratings where the Market can assign value • Higher monthly utility bills	• More Qualified Providers • Higher Demand • Streamlined Processes • Innovative Marketplace

e) **Measure Savings/ Work Papers**:

a. WHUP *Basic Path* utilizes deemed savings values by climate zone for building vintages pre-1979 and by climate zone post- 1979

WHUP *Advanced Path* utilizes CEC approved software (i.e. Energy Pro Res Module at the time of this PIP) for calculated project savings.

WHUP *Multifamily Path* envisions measured savings for all low-rise multi-family buildings utilizing the Energy Pro, Residential Performance Module (for Site savings calculations). For all high-rise buildings, would utilize the Non Res Module.

b. Indicate work paper status for program measures:

Table 4 – Work paper Status
[Table 4 Work paper Status to be provided as an Excel Attachment to this PIP]

10) Program Implementation Details

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 and will continue to invite input from stakeholders to further develop additional ways to meet program objectives.

One of the avenues that the IOUs plan to pursue to advance the program's efforts to achieve deeper energy savings retrofits in homes is to build closer partnerships with California's real estate industry, including via such activities such as voluntary training and outreach partnerships. Based on input already gathered from relevant stakeholder groups, experts, and Commission Staff, the IOUs plan to implement the following main areas of activities for this initiative to leverage partnerships with the real estate industry:

1) Training for all relevant aspects of the real estate industry and point of sale chain (real estate agents, lenders, inspectors, green/efficiency specialists, appraisers, rater's public agencies and contractors). An emphasis will be placed on training the cross-functional teams that already work together in the market, since all pieces of the process needs to be covered to be effective, especially on the financing side. The use of successful case studies will also be explored.

2) Driving customer demand for energy efficient homes via collaborative consumer education and outreach, using easy to understand messaging and including efforts such as the promotion of home energy improvements and "green" labeling around the time of purchase and sale of a home. This is a critical timing in the market that can be leveraged. The Joint Center for Housing Studies estimates that home buyers spend more than $6,000 per year on home improvements in the

first two years after buying homes. In subsequent years, the annual average outlay drops to $2,500.[40]

A key to success for this initiative is properly aligning design with the personal and business interests of the stakeholders involved particularly the Realtors, home buyers, and sellers. While promotion of energy efficiency and green building practices is the paramount objective, the initiative would remain consistent with stakeholders' interests. By remaining stakeholder focused, the initiative aligns short-term private interests with long-term public interests.

Further details and continuous improvement of this plan will be developed by inviting additional input from an ongoing set of stakeholder collaboration discussions. Identification of appropriate regional differences and their implications to implementation will be incorporated into the plan. And short- and long-term success criteria and a periodic assessment timeline for evaluation of this initiative will be developed.

Also, during the transition cycle the IOUs will explore potential of offering pilot tests of expanding building science certifications and home evaluation and performance improvement processes beyond BPI to potentially include equivalent certifications, and home evaluation and performance improvement processes such as those through ACCA. To increase the number of qualified participating contractors and contribute to the creation of a sustainable workforce, third party program implementers will solicit and screen qualified contractors. The program will also include marketing activities to help educate customers on program services and other activities to provide additional customer leads to trained contractors.

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. ESAP, HVAC, HEER, Energy Advisor and MFEER) 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 broadened statewide "Energy Upgrade California" 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 to undertake comprehensive residential retrofits.

[40] Joint Center for Housing Studies of Harvard University (2011), *The State of the Nation's Housing: 2011*, http://www.jchs.harvard.edu/research/state_nations_housing

Statewide Steering Committee

Given the ambitious market transformation goals of WHUP, it's relatively new entrance into the IOU EE portfolio, and its challenges during the first two years of rollout, the IOUs during the 2013-2014 transition cycle are committed to providing the leadership and working with CPUC, CEC, local government staff, as well as relevant stakeholders to convene a statewide WHUP steering committee to address relevant and significant issues for adoption in the 2015 IOU program cycle.

Where feasible, necessary and relevant, the IOUs will retain the services of qualified consultants or other entities with experience in the whole house retrofit industry to assist in these efforts in the areas of research, facilitation, or other assistance as may be required. IOUs will also engage utilities, non-profits and other stakeholders who may have experience in other parts of the country in deploying whole house programs.

The steering committee will as necessary to focus on the following issues on a statewide level for consideration in the 2015 program cycle:

1. Role of local governments
2. Software standards
3. Data collection standards
4. Home Assessment standards
5. Home Assessment reporting standards
6. HERS II Ratings and alignment with WHUP EE Programs
7. Contractor certification standards
8. QA/QC standards
9. Streamlined project reporting and programmatic best practices
10. Integration of HVAC programs
11. Engagement of California Real Estate Market
12. Future of Basic Path
13. Identification of Market Transformation Milestones and Metrics
14. Cost effectiveness metrics aligned with Market Transformation goals.
15. Long term incentive structure

a) **Timelines:**

Table 5: Sub-Program Milestones

[Table-5 to be provided as an Excel Attachment to this PIP]

b) **Geographic Scope**:

Table 6: Geographic Regions Where the Program Will Operate

[Table 6 Geographic Regions to be provided as an Excel Attachment to this PIP]

c) **Program Administration**

Table 7: Program Administration of Program Components

[Table 7 to be provided as an Excel Attachment to this PIP]

d) **Program Eligibility Requirements:**

i. Customers:

Single family or multi-family building customers with an active IOU account OR owners or property management firms who own or operate single family or multifamily buildings that are served by an active IOU account, may participate in WHUP provided they utilize a Participating Contractor or a Participating Rater per program guidelines.

Participating Contractors or Participating Raters shall be the single point of contact for customers and are responsible for submission of all program requirements. Participating Contractors and Participating Raters will install or ensure installation of all measures in accordance with IOU QA/QC and Measures Installation Standards guidelines in accordance with applicable contractor/ rater participation agreements.

Table 8: Customer Eligibility Requirements (Joint Utility Table)
[Table 8 to be provided as an Excel Attachment to this PIP]

ii. Contractors/Participants:

Participating Contractor Requirements for Basic Path and *Advanced Path*

Participating WHUP Contractors must be certified and licensed according to all applicable federal, state and local laws. Participating Contractors shall meet, and provide sufficient evidence and supporting documentation for the following minimum requirements:

1. Contractor State Licensing Board (CSLB) license in the appropriate specialty;
2. Bonding and in good standing.
3. Insurance to IOU minimum insurance standard;
4. Execution of a contractor participation agreement;
5. Completion of all utility training course requirements, including Participation Workshop and a 3-Day Basic and/or Energy Upgrade Training, Workshop, if not BPI-certified Basic or Advanced Training, as appropriate;
6. BPI-certified Building Analyst (BA) to complete Combustion Safety and Carbon Monoxide Protection and all other minimum Health and Safety Requirements specified in the BPI Technical Standards for Building Analyst Professional;
7. Ensure HVAC permits will be pulled on all work that is appropriate per local jurisdiction requirements;
8. Participating Contractors who participate in *Advanced Path* projects, must employ at least one staff person who holds an active BPI Building Analyst certification. BPI accreditation is strongly encouraged and may be required of all participating contractors at some point during the program cycle;

9. Additional IOU requirements, as appropriate.

Participating Rater Requirements for All WHRP Paths

Participating Energy Upgrade Raters must meet all requirements as a Participating Contractor and must be both HERS II certified and hold an active BPI Building Analyst certification or BPI MF Building Analyst certification as may be applicable. WHUP *Basic Path* and *Advanced Path* projects submitted by a Participating Rater must utilize a WHUP Participating Contractor for installation of the measures specified by the Participating Rater.

Table 9: Contractor/Participant Eligibility Requirements (Joint Utility Table**)**
[Table 9 to be provided as an Excel Attachment to this PIP]

e) **Program Partners:**

a. **Manufacturer/Retailer/Distributor partners:**
Table 10: Manufacturer/Retailer/Distributor Partners
[Table 10 to be provided as an Excel Attachment to this PIP]

b. **Other key program partners**:
Table 15: Energy Division, California Energy Commission, local governments, BPI and other standards bodies, as well as other partners
[Table 15 to be provided as an Excel Attachment to this PIP]

f) **Measures and incentive levels**:

***Advanced Path* Incentives**

Incentives for the *Advanced Path* will be paid based upon modeled site savings energy utilizing any CEC approved simulation modeling software approved by IOUs. Incentives for *Advanced Path* are designed to encourage customers to reach for deep energy savings. *Advanced Path* incentives are for both gas and electric measures provided by the customers' participating utility program.[41]
Currently, Energy Pro simulation modeling software is the only approved software for use with WHUP. During the 2013-2014 transition cycle, the IOUs will work collaboratively with the CEC and other stakeholders to identify potential approaches to adequately broaden the allowable software under the WHUP while containing costs required for needed Commission Staff reviews.

[41] In various service territory where one of the customer's utility service provider (municipality), is not a program participant adjustments may be necessary to the incentive.

Savings/ Participation Level: % Reduction	Incentive Amount
Basic Package: 10%	*$1,000*
10%	**$1,000**
15%	**$1,500**
20%	**$2,000**
25%	**$2,500**
30%	**$3,000**
35%	**$3,500**
40%	**$4,000**
45%+	**$4,500**

***Basic Path* Incentives**

The *Basic Path* customer incentive is up to $1,000. The customer will receive the entire rebate amount as a direct result of participating in *Basic Path*. Additionally, *Basic Path* incentives will be:

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

***Multifamily Path* Incentives**

Incentives for *Multifamily Path* will be paid based upon modeled site savings energy utilizing any CEC approved simulation software approved by IOUs. Incentives will be offered on a tiered structure, paid per building on a "per dwelling unit" basis according to the total building energy savings percentage. The tiered approach will reward participants for realizing deeper savings. While a "per unit" approach enables participants to experience economies of scale with larger multifamily buildings.

Ten Year Stepwise Incentive Structure

During the 2013-2014 transition period, the IOUs will meet not fewer than two times with statewide stakeholders to develop a 10 year stepwise incentive structure which will be triggered at defined market transformation milestones. It is anticipated that the plan will include a defined timeline**,** for incentive update decisions and that incentive level changes will be updated at defined market trigger metrics associated with the number of participating homes towards the *Strategic Plan* goals. As the number of participants increases over time, incentive levels will be lowered accordingly to reset the incentive amounts.

The IOUs will invite statewide stakeholder inputs to lock in these targets prior to the start of 2015, using every 20,000 homes/dwelling units treated and decreasing incentive levels in $250 increments as a starting point for discussion. Once the statewide target is confirmed, the IOUs will notify contractors when the program has reached 75%, 90% and 95% of the goal so contractors can plan accordingly.

Table 11: Summary Table of Measures, Incentive Levels and Verification Rates
[Table 11 to be provided as an Excel Attachment to this PIP]

Permitting Requirements
No incentives for equipment requiring a building permit shall be provided any contractor or customer without that contractor or customer certifying that s/he has complied with all permit requirements and utilized a licensed contractor.

Qualified Measures
During the transition cycle, the IOUs will work to better leverage WHUP to achieve greater energy savings from plug loads, appliances and swimming pools through:

1. Greater cross marketing of HEER and WHUP customers.
2. Work with EnergySoft to find solutions to pool pump modeling.
3. Incorporate lighting and appliance options as a more predominate feature in standard assessment reports to customers.

Required *Basic Path* Measures Installed Per Measures Installation Standards:
Whole House Air Sealing
Attic Insulation
Duct Test and Seal
Domestic Hot Water Pipe Insulation
Thermostatic Shut-Off Valve
Low-Flow Shower Head

***Advanced Path* Measures Installed Per Measures Installation Standards:**
Attic Insulation
Cool Roof Installation (CRRC-certified)
Cooling System Upgrade
Domestic Hot Water Heater Upgrade (non-solar)
Domestic Hot Water Pipe Insulation
Duct Insulation
Duct Test and Seal
Exterior Lighting Upgrade – Permanently Installed High-Efficacy
Floor Insulation
Heating System Upgrade
Interior Lighting Upgrade – Permanently Installed High-Efficacy
Low-Flow Shower Head
Radiant Barrier Installation

Thermostatic Shut-Off Valve
Wall Insulation
Whole House Fan Installation
Whole House Air Sealing
Window Upgrade
Other Measures as may be modeled and allowed by IOUs per regional market needs

Ineligible Measures

Screw-In Lighting Fixtures and Lamps
Solar Domestic Hot Water Heater System
Distributed Generation Systems - Solar PV, Fuel Cell, Wind, etc.
Pool Pump Upgrade
Clothes Washer Upgrade
Clothes Dryer Upgrade
Dishwasher Upgrade

Multifamily Building Eligible Measures

Attic insulation upgrade
Wall Insulation upgrade
Floor insulation upgrade
Window replacements – 2008 T-24 standard or better
Cool roof – CRRC rated product
Radiant barrier
Window shading – permanent, non-retractable
Duct Sealing - with HERS test
A/C equipment replacement – Must meet current T-20 standard
Furnace replacement – Must meet current T-20 standard
Premium efficiency motors (ECM included)
VFD controls for CHW, HW, CW pumps
VFD controls for cooling tower fans
Pipe insulation – From ½ inch to 1-inch, or none to 1-inch
Controls optimization (OA reset, zone reset)
Boiler or DHW replacement – Must meet current T-20 standard
Insulate hot water piping – From ½-inch to 1-inch, or none to 1-inch
DHW tank insulation
Add VFD to circulation pump
Update central DHW pump to demand control – From no control to demand control
Common area lighting fixtures – high efficacy hardwired fixtures
Dwelling unit lighting fixtures – high efficacy hardwired fixtures
Lighting controls – Occupancy sensor, photo sensor, or dimmer switch
Outdoor lighting retrofits – high efficacy hardwired fixtures
ENERGY STAR® Refrigerator
ENERGY STAR® Dishwasher (if a dishwasher is installed in pre-retrofit condition)

g) **Additional Services:**

Table 12: Additional Service

[Table 12 to be provided as an Excel Attachment to this PIP]

h) **Sub-Program Specific Marketing and Outreach:**

IOUs will conduct integrated as well as program-specific marketing and outreach which will be coordinated with the statewide marketing and outreach program. The utilities may use a range of tactics such as; e-mails, flyers, on-Line marketing, direct mail, bill messaging, social media, local events, ethnic media, and other channels that suit the target audience, the message, and the resources.

Marketing, Education and Outreach plans

1) **Objectives**
   - Generate greater awareness, understanding and for the whole house system concept;
   - Drive response amongst qualified customers to seek out whole house projects; and
   - Build demand in the marketplace for home retrofit services.

2) **Target Audiences**

   WHUP 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 initial target group is comprised of the following audiences listed below and are based on the results of the statewide market survey research.

   Target Group:
   - Single family residential customers in proposed targeted segments
   - Multifamily residential customers
   - Residential customers with a history of prior EE engagement including, but not limited to: rebates, online tool enrollment and energy audits
   - Local governments, community-based organizations and other stakeholders (i.e. the realtor community)
   - Efforts may target select public events and work with local earned media to publicize the program's benefits.

3) **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:

- Continue to utilize a statewide brand and message; and a creative envelope for WHUP marketing efforts to avoid market confusion;
- Co-brand where feasible;
- Coordinate with local governments;
- Engage contractors, stakeholders and local governments in generating customer demand; and
- Provide collateral pieces to participating contractors to assist in lead generation and education;
- Employ expanded community based marketing approach; and
- Use a variety of innovative marketing strategies such as time of sale assessment vouchers.

i) **Sub-Program Specific Training:**

Specific workforce development efforts supporting WHUP include the following:

- CEC/EDD: California Clean Energy Workforce Training Program 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).

WHUP 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.
In addition, IOU WE&T programs will continue to offer both building-block house as a system courses that educate students on the concepts that form the foundation of home retrofit programs when a needs assessment determines that these areas require attention. Those concepts include:

- Advanced house-as-a-system concepts and issues;
- Combustion and other safety training updates;
- Green building techniques applicable to the program;
- Blower Door Based Air Sealing;
- Codes and standards (Title-24) implications;
- Advanced lighting, HVAC technologies and problem solving; and
- Business training (including the enhancement of sales, marketing, training, and accounting skills).

Contractor training requirements will be based WHUP requirements and will provide contractors necessary training without sacrificing any considerations for applicable safety requirements.

Contractor recruitment efforts will be conducted primarily by third party program implementers – a model that has proven successful in statewide IOU HVAC programs in the 2010-2012 program cycle. Program implementers will continue to 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;
- Workforce development departments (to target unemployed general contractors).

Program implementers will verify and enroll Participating Contractors and Raters and provide required program participation related training. Once enrolled, the Participating Contractor and Rater lists will be posted in a centralized location for customers to view. IOUs will direct customers to appropriate websites for lists of eligible Participating Contractors and Raters.

Upon completion of 2012 Energy Upgrade California process evaluations, the IOUs will convene a workshop to review workforce training needs.

j) **Sub-Program Software and/or Additional Tools:**

a. List all eligible software or similar tools required for sub-program participation.
   - Energy Pro energy simulation modeling software

b. Indicate if pre and/or post implementation audits will be required for the sub-program.

   Pre-implementation audit required _x__ Yes ___ No
   Post-implementation audit required _x__ Yes ___ No

c. As applicable, indicate levels at which such audits shall be rebated or funded, and to whom such rebates/funding will be provided (i.e. to customer or contractor).

   Table 13: Post-implementation Audits
   [Table 13 Program to be provided as an Excel Attachment to this PIP]

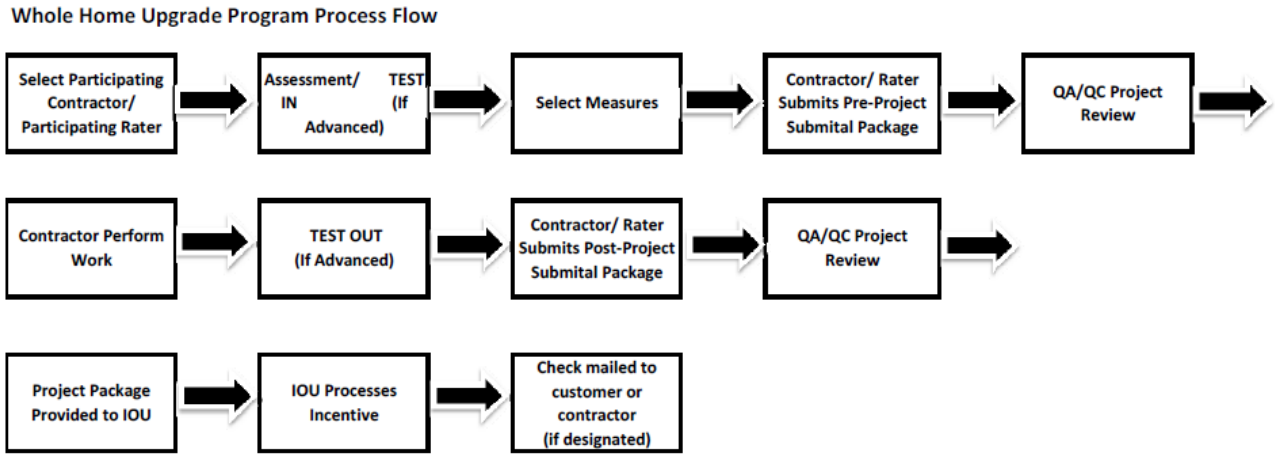
k) **Sub-Program Quality Assurance Provisions:**

Payment of customer incentives will be tied to the contractor's delivery of full job required program documentation. Program implementers will randomly select a minimum of 5 percent of each participating 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. IOUs will collaborate to develop QA/QC plans and documents that reflect statewide uniformity to the greatest extent possible. QA/ QC documents and standards will be updated regularly with contractor input and will include:

1. QA/QC Process and Protocols
2. Minimum installation standards for all allowable measures
3. Emergency and Fast Track equipment replacement protocols.
    a. Exhibit A attached includes existing and continuing IOU Emergency and Fast Track protocols.
4. Permitting requirements
    a. WHUP shall support Heating Ventilation and Air Conditioning permit acquisition as a matter of course.
    b. WHUP jobs involving HVAC replacement must include submittal of the HVAC permit number and a contractor certification that appropriate permits have been obtained, for inclusion in program records.

Table 14: Quality Assurance Provisions
[Table 14 to be provided as an Excel Attachment to this PIP]

l) **Sub-program Process Flow Chart:**

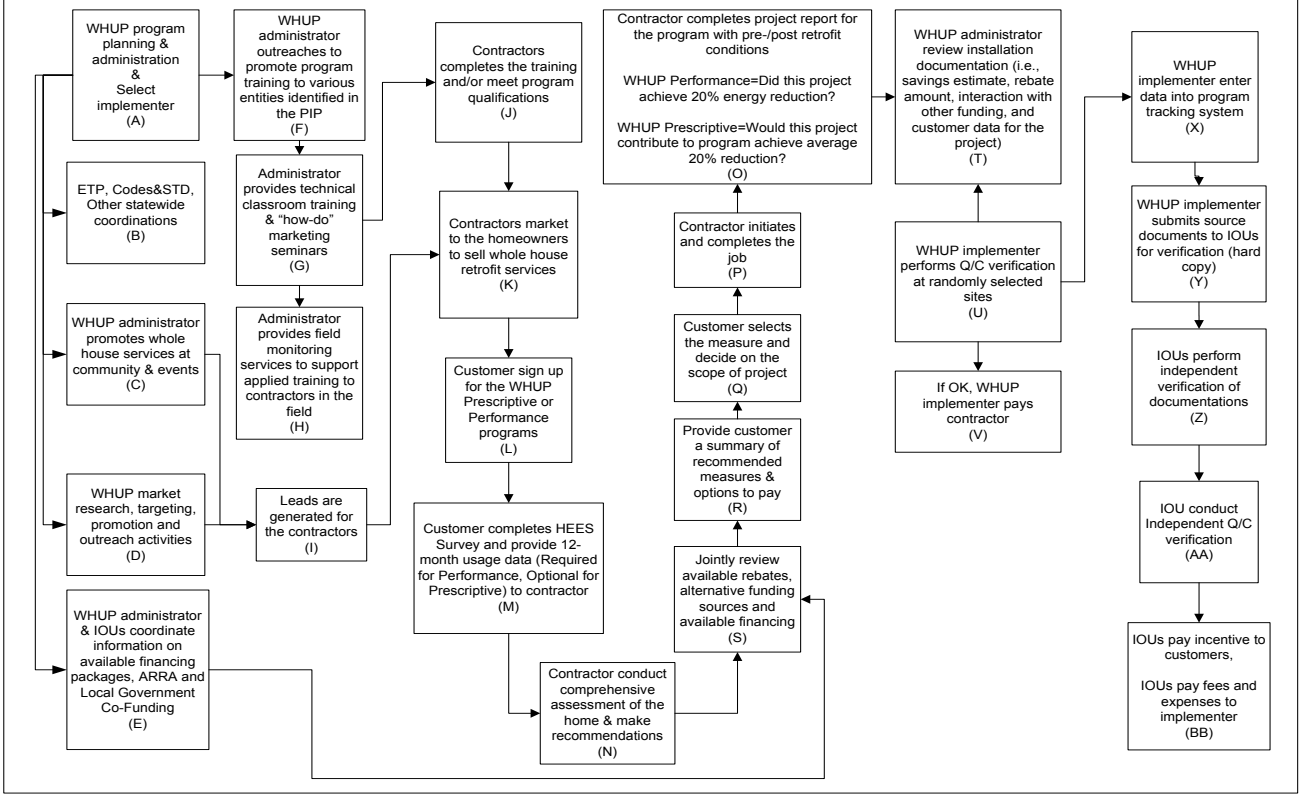


m) **Cross-cutting Sub-program and Non-IOU Partner Coordination:**

Table 15: Cross-cutting Sub-program and Non-IOU Partner Coordination
[Table 15 to be provided as an Excel Attachment to this PIP]

n) **Logic Model:**

2013-2014 Statewide Whole Home Upgrade Sub-Program (WHUP) – Process Diagram



11) Additional Sub-Program Information

a) **Advancing Strategic Plan Goals and Objectives**:

The WHUP is consistent with the requirements of the *Strategic Plan*. It addresses the Whole-House Strategy of the *Strategic Plan* by influencing contractors and customers to implement comprehensive home retrofit energy efficiency measures through either the *Basic Path* on-ramp, *Advanced Path* or *Multifamily Path*. WHUP responds to the need for much larger energy savings in existing homes and multifamily buildings than is possible with conventional checklist audits or single measure improvement (prescriptive) programs. It addresses the key "whole house" strategy of the *Strategic Plan* by influencing "decision triggers" to improving energy efficiency and understand advantages to expand participation to reach savings goals. This program is also a vehicle to increase penetration of shell upgrades and cost effective, high efficiency appliances, water heaters and HVAC upgrades. The *Strategic Plan* further states that a similar approach must be developed for multifamily housing. The program will help to achieve the following goals identified in Section 2 of the *Strategic Plan*:

Table 6. Whole House Alignment with California Long Term Energy Efficiency *Strategic Plan*

Residential and Low Income Goal 2: Existing Homes

Goal Number	Strategy	WHUP Strategy	Integrated Programs & Activities
2-1	Deploy full-scale Whole-House programs.	Monitor performance of selected lower energy homes. Design implement, monitor and continuously improve full-scale programs for whole-house energy efficiency and renewable energy retrofits.	Programs: WHUP, Solar, Demand Response, MFEER, Plug Loads, ESAP 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 Energy Advisor 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: Energy Advisor WHUP, MFEER 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. Promote commercialization of home energy management tools including AMI-based monitoring and display tools	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.	Ensure that customers are aware of the most effective and attractive financing packages that are available to them.	Programs: WHUP 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

b) Integration

i. **Integrated/coordinated Demand Side Management**: As applicable, describe how sub-program will promote customer education and sub-program participation across all DSM options. Provide budget information of non-EE sub-programs where applicable.

The IOUs have identified IDSM as an important priority. The IOUs plan to monitor the progress of other IDSM efforts and to work closely to identify comprehensive integration approaches that feed into the overall statewide strategy and to implement best practices as rapidly as practical.
The statewide WHUP is a platform for integration of solutions to the residential customer and is intended to provide an easy entry point for customers 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, WHUP information will be made available to IOU teams in call-centers with the intent of providing a WHUP 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 Energy Advisor program will also provide a unique nexus between CSI and WHUP. CSI customers are required to conduct an energy efficiency survey prior to installing solar, which presents a unique opportunity to educate customers 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:

- WHUP links and information on IOU CSI sites;
- Links to WHUP landing pages from Energy Advisor;
- Targeted messaging during and after each survey;
- Information about WHUP 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 information or installation of DR technology. WHUP will also serve as a platform to integrate technology advancements in DR and Advanced Metering. IDSM efforts will be part of an ongoing conversation with customers to enhance program offerings and increase their participation in DSM efforts over time.

Table 16: Non-EE Sub-Program Information
[Table 16 to be provided as an Excel Attachment to this PIP]

ii. **Integration across resource types** (energy, water, air quality, etc): If sub-program aims to integrate across resources types, please provide rationale and general approach.

WHUP is designed to deliver comprehensive solutions to customers 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 customers with information on non-energy savings inherent in comprehensive retrofits.

[This information can be found in Table 16 Non-EE Sub-Program Information to be provided as an Excel Attachment to this PIP]

c) **Leveraging of Resources**:

Local Governments

i. SDG&E
Local Governments play a unique and important role in the promotion and advancement of Energy Upgrade California. Beginning in 2009, when the American Recovery and Reinvestment Act was passed and programs like the State Energy Program and the Energy Efficiency & Conservation Block Grant program, jurisdictions across the state were given the unique opportunity to make significant investments on energy programs. Because of the unique and collaborative relationship that exists among the local jurisdictions and SDG&E, and the existence of a non-resource local government partnership program, the San Diego region saw the development of a number of community focused residential retrofit programs including innovative marketing pilots, specialized workforce education & training programs, and a variety of rebate and loan programs that sought to incentivize residents to perform energy upgrades in their homes.

Over the course of the last few years, SDG&E has worked closely with each local government to ensure local programs are closely coordinated and achieve the highest level of collaboration and consistency across the region. Building off the lessons learned over the course of the last few years as well as the unique authorities

afforded local governments, SDG&E and the local government program advisory group has developed the following list of key roles that local governments will play to advance Energy Upgrade California during the transition cycle.

1. Incorporate building retrofits & building occupant health and safety issues into Climate Action Plans, General Plans, and other relevant planning and long term strategy documents;

2. Leverage community relationships and resources to market Energy Upgrade California including targeted outreach and education to the community;

3. Provide targeted education on EUC and its benefits to key community stakeholders, business sectors and elected officials

4. Coordinate workforce education and training program activities;

5. Leverage building permit interactions to encourage WHUP enrollment and work to develop streamlined permitting process as it relates to WHUP;

6. Leverage unique authority to encourage/require building rating/audits to drive customers to EUC;

7. Pilot unique incentive programs such as point of sale audits, to encourage participation in Energy Upgrade California;

8. Work with the financing community to deploy innovative products and services to further enable residential and commercial energy upgrades throughout their jurisdictions.
9. Pilot incentives for Whole Home Energy Rating System II assessment as part of the WHUP.

Please refer to the Local Government Partnership Program PIP for budget details associated with these activities.

WHUP will coordinate IOU incentives and marketing outreach with local government efforts in neighborhood outreach and contractor recruitment. This 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.

ii. PG&E

During the development and implementation of the 2010-2012 Whole House Program PG&E partnered and coordinated closely with recipients of American Recovery Reinvestment Act (ARRA), State Energy Program (SEP), and Energy Efficiency & Conservation Block Grant (EECBG) statewide and within the PG&E service territory. In the 2013-2014 Transition Period, PG&E plans to continue to

work with and leverage these partners as described in further detail in the Local Government PIP.

iii. SoCalGas

iv. SCE

SCE has worked closely with local governments who received American Recovery Reinvestment Act (ARRA), State Energy Program (SEP), and Energy Efficiency & Conservation Block Grant (EECBG) in the last couple of years. This has allowed SCE and local governments to achieve a high level of collaboration and consistency across the service territory. SCE is in discussion with local governments who are interested in continuing collaboration post ARRA, SEP, and EECBG era. These discussions will determine key roles for local governments, based on lessons learned and their successful offerings from ARRA, SEP, and EECBG grants. Such activities may include:

1. Expanding existing outreach programs to the Real Estate Community
2. Leveraging existing low-interest financing
3. Drawing upon LA County's experience with FlexPath for modifications to meet the CPUC's goal for a more appealing approach.
4. Marketing and Workforce Development support for contractors

d) **Trials/ Pilots:**

1) SCE/ <u>SoCalGas Moderate Income Direct Install-MIDI</u>

The Local MIDI Program will be offered by SCE and SoCalGas to eligible customers residing in SF and MF properties (MF common areas excluded) served by SCE and SoCalGas. The MIDI Program will coordinate with SCE and SoCalGas' Energy Savings Assistance Program (ESAP) to deliver MIDI measures through select ESAP Contractors. ESA Program infrastructure will be used to administer the MIDI Program. When working in joint SCE/SoCalGas territory, shared contractors will offer both IOU's Program measures. The MIDI Program will encourage residential owners/property managers of SF and MF properties to install comprehensive energy efficiency improvements.

The EUC Program traditionally requires significant financial contributions by customers who wish to participate. The MIDI Program closes the financial gap by installing no-cost measures thereby reducing the total amount of money a customer would need to invest in their property in order to participate in the SF or MF EUC Program.

SCE and SoCalGas propose:

- To implement a MIDI trial with a set goal of 1,000 units served
- Develop a scalable program design for larger rollout in future cycles.
- Evaluate delivery of MIDI Program utilizing existing ESAP infrastructure.

1) Customer/Living Unit Eligibility

To participate, the following guidelines must be met:

a. participants must be income eligible (between 201% and 250% of FPG)
b. living unit must not have received ESAP services after January 1st, 2002
c. living unit must meet the current ESAP/MIDI minimum measure requirements

2) Measures

(ESAP approved measures excluding appliances)

3) Contractors

SCE and SoCalGas will coordinate with select experienced joint ESAP contractors to perform an assessment of the living unit, complete customer enrollment, and install measures as applicable in the MIDI Program trial.

2) SDG&E Trial Incentives

SDG&E may explore additional incentive trial offerings for customers who perform an HVAC QI installation as part of a scope of work. Additional trial integration offerings may include offering IHDs, PCTs, or other enabling technologies for advance path customers who achieve certain saving levels.

12) Market Transformation Information:

1) Summary of the market transformation objectives of the program.

The WHUP program is designed to fulfill the goals of the *Strategic Plan* by guiding and incenting home and building buyers, owners and renovators to implement a whole house approach in energy consumption undertaken in their purchase and use of existing and new homes and buildings, home and building equipment (e.g. HVAC systems), household appliances, lighting and "plug load" amenities. The target is all existing homes in an effort to realize the maximum energy efficiency potential via the delivery of a comprehensive package of cost-effective whole-house and whole-building energy efficiency retrofit measures. These programs will include building shell upgrades, high-efficiency HVAC systems – appropriately sized for the building structure, and emerging deep energy reductions in the lighting, appliance, plug-load and other residential oriented sectors. This initiative will be structured around a comprehensive audit, installation of the variety of retrofits required across the entire building structure, and access to attractive financing programs. The WHUP effort will be achieved via the parallel and coordinated efforts of the utility programs, partners and other private market actors, and the State and local government policies and programs made available. As IOUs implement a system of automatic meters and wide-area network to enable data transport, the IOUs and customers will have the opportunity to integrate additional home automatic systems and integrated energy management features into the home (i.e., interim Intelligent Home Network, comprehensive Home Automatic Network and etc.) to support IDSM integration and deployment. The Plug Load and Appliance Program

will have the potential to offer not only hardware based energy savings, but also comprehensive behavior savings opportunities.

2) ***A description of the market, including identification of the relevant market actors and the relationships among them***

The Whole Home Upgrade Program is designed to serve residential homeowners, moderate income households and property owners and managers. For the 2013-2014, the program consists of the following paths:

- Whole Home Upgrade Program:
  - *Basic Path*,
  - *Advanced Path*
  - *Multifamily Path*

The Whole Home Upgrade Program is a contractor lead program in that it is the local contractor who interfaces with the customer, markets and sells the concept of Whole House Retrofits, and completes the actual work. The Statewide Process Evaluation (5/1/12) revealed that 32% of participants first heard about the EUC program from a contractor. A number of Local Governments, most initially supported by CEC/ARRA funding during the 2010-12 time frame, also support the program via local marketing and incentive offerings. Coordinated on a Statewide basis – the IOUs offer consistency in program scope (to the degree possible) and a consistent marketing message.

3) ***A market characterization and identification of key barriers and opportunities to advance demand-side management technologies and strategies***

Market Characterization

The IOUs statewide Whole House Program has initially focused on training a pool of qualified contractors available to perform these comprehensive retrofits. The number of individuals with active BPI certifications grew dramatically between January 1, 2010 and November 1, 2011. Total active certified individuals grew from 65 to 1,596. The number of certifications (individuals may have more than one type of BPI certification) grew from 88 to 2,349. The 2010-2012 PG&E and SCE Whole-House process evaluation study by SBW/ODC/ASW, produced a number of findings, including:

Overarching program participant profile

- The program participation is primary through the *Advanced Path* and there is little engagement in the *Basic Path* service.
- *Advanced Path* jobs report energy savings of 30% average in this first program phase.
- The average cost per job ranges from $13,000 to $16,000
- The utility incentives covered typically 23% to 27% of the project costs.
- Despite the large supply of program contractors, only a limited pool of larger contractors complete the majority of the projects
- Many – 44% of participants – used financing to pay for their projects.

Contractor recruiting/training/mentoring—from SCE's in-depth assessment

- There are widespread contractor performance gaps despite a certification requirement (i.e., BPI),
- The current contractors' participation training does not adequately prepare them for job processing expectations and the rigor of the QA/QC process,
- BPI certification does not guarantee a standardized job performance level

- since the requirements for certification often vary (i.e., (1) on-line training versus in-person classes, (2) different region may place different emphasis, i.e., Vermont may focus more on heating, while California may focus more on HVAC).

For the targeted population—from PG&E's in-depth market effectiveness assessment

- 29% of the targeted population are aware of Energy Upgrade California (EUC),
- 13% of the targeted population reported seeing logo displayed,
- 3% of the targeted population have visited the website,
- 43% of the targeted population has been exposed to at least one marketing treatment from EUC.
- Among those "aware" in the targeted population, 27% first heard of the program from radio, (PG&E did not do radio ads but the local governments did), 18% from direct mail, 11% Newspaper, and 10% each for Word-of-Mouth, Internet and Television.
- Among workshop participants, word-of-mouth and events are the most effective communication channels.
- Program homeowner participants ranked "comfort", "reduced energy bill", "benefits of the incentive" and "home energy assessments" as important reasons for why they participated.
- Contractors report the most effective messaging in their opinion are the messages of: Comfort, Incentives, Lowering energy bills

Market Actors:

- Homeowners/renters & property owners/managers
- Contractors
- Realtors
- Financial Institutions
- Property Appraisers
- Local governments

Relationship Among the Market Actors:

The contractor community is the key actor with the WHUP. They are the program actor who outreaches personally to the owner of the building and home and communicates the concepts of approaching a building on an entire whole basis. And it is the contractor who proposes the appropriate work and completes the retrofit. The contractor provides the linkage between the WHUP and the customer who receives the rebate.

Working together, the realtor, appraisal and financial communities are market actors that can help push energy efficiency in the home resale market. Realtors can be educated to differentiate the advantages of purchasing energy efficient existing residential structures to prospective home buyers. Working with the appraisal community to perceive installed energy efficient measure in a home as monetary assets to a structure thus increasing the property's value can be a significant push to the acceptance and importance of energy efficiency and financial institutions recognizing this effort to provide exceptional financing opportunities to prospective home buyers for their investment in an energy efficient home.

Many local governments were very active in the EUC sector in the prior 2010-12 cycle as supported by ARRA funding. Some of those local government programs will be continuing on into the 2013-14 program cycle. The IOUs will continue to provide WHUP as a foundation offering to our customers, and local governments can continue to build upon these (with additional rebates) or support these with customized marketing programs. The IOUs will coordinate and partner with local governments in an effort to achieve the synergy possible between these aligned efforts.

Opportunities to advance demand side management technologies and strategies:
Building owners who have committed to a WHUP retrofit solution will have taken the ultimate step in applying energy efficiency technology to minimize their energy usage. They have evidenced their willingness to pursue minimizing energy usage, and are therefore self-identified as highly likely to embrace the next step(s) of demand side technologies and strategies to further minimize energy usage. So the next phase of energy reduction for the EUC retrofit customers will be the variety of demand side reduction programs that the IOUs can make available.

Key Barriers & Opportunity for Intervention:
The barriers for this program for the homeowner sector are the:

(1) Relatively high cost of home assessments,
(2) Relatively high gross costs of comprehensive energy upgrades,
(3) Market not aware of additional non-economic values resulting from comprehensive energy upgrades,
(4) Fledgling contracting and supporting industry for existing home energy upgrades,
(5) Low consumer awareness of incentive subprograms and the concepts of comprehensive home energy assessments and upgrades,
(6) Lack of common home rating protocols and common vernacular for the market to assign value to homes which undergo comprehensive energy upgrades,
(7) The economic downturn and its impact on the residential housing sector.
(8) Contractor awareness and access to information,
(9) Access to financing,
(10) Lack of access to skilled labor.

Note: Potential participants who have attended a workshop (PG&E) also explain their lack of participation in that they haven't been able to contact/find a contractor yet.

For the owners and/or managers of multifamily buildings, there are another set of barriers, closely aligned to those for private single-family homes, but different in some very important dimensions:

(1) Lack of knowledge regarding energy efficiency as well as the comprehensive programs that are offered by the IOUs,
(2) Challenge of the "split incentive" where it is the building owner/manager who must pay for all building improvements, including those inside of the individual rental units. But it is the tenants of the unit that pay the energy bills and therefore receive the immediate benefits of the energy efficient investment (by the landlord),
(3) Multifamily buildings are managed as businesses, where capital for major improvements must be borrowed. But the extended ROI for most energy efficiency projects is longer than the few years that most business allow for recouping their investments,
(4) To implement a "whole building" retrofit, the apartment owner/manager must typically bring in several specialty contractors for multiple visits, which in tenant occupied units is a very challenging task,
(5) Tenants having to out of the rental units during retrofit work, as well as the management time required on behalf of the building owner/manager – is a costly investment of resources,
(6) Major retrofit often can only happen when the rental unit(s) is unoccupied – which is a significant loss of income for the owner/manager,
(7) Managed as a business – multifamily building owners/managers are not inclined to replace any major building component or energy system prior to its actual wear-out/break-down. Building retrofits usually take place toward the "end-of-life" of key components (HVAC – for example) – but not when they break-down. Building owners/managers cannot afford the impact on tenants of having key systems not functioning for any length of time.

4) A description of proposed intervention(s) and its/their intended results

The WHUP seeks to address these barriers for private single-family homes through:

1) Continued marketing of Energy Upgrade California and whole house concepts. (Barrier 3, 5, 8)
   Intended Results: Increase awareness

2) Continued contractor recruitment, training and mentoring. (Barrier 4, 5, 8, 10)
   Intended Results: Continue to maintain and improve the supply and quality of the contractors serving the program

3) Expanded customer uptake through WHUP incentives. (Barrier 1, 2, 5)
   Intended Results: Use incentives to reduce the barrier of entry into the comprehensive retrofit projects
4) Offering of Financing programs (by IOUs and/or other entities) (Barrier 1,2, 9)

Intended Results: Provide building owners the upfront cash they need to borrow to invest in a retrofit project, and amenable loan terms by which to repay that loan (note: this program component will be particularly important in the multifamily sector).

5) Continued stakeholder outreach to address barriers. (Barrier 1, 3, 4, 5, 6, 8, 10)
Intended Results: Leverage resources outside the IOUs to address market needs

6) Continued partnerships with local and state government to address barriers. (Barrier 1, 2, 3, 4, 5, 6, 8, 9, 10)
Intended Results: Leverage local government resources to engage communities and targeted population to participate in the program

And for WHUP *Multifamily* the barriers will be addressed by these actions:

1) To improve a property owner or manager's energy efficiency knowledge, the *Multifamily Path* would seek to leverage comprehensive investment grade building assessments to identify potential energy efficiency opportunities. (Barrier 1)
2) To address split incentives and cost of upgrades, the *Multifamily Path* would integrate with the existing Energy Savings Assistance Program ("ESAP") and the Multifamily Energy Efficiency Rebate ("MFEER") Program. This would provide comprehensive services to the building, including "low cost" or "no cost" tenant measures in conjunction with the WHUP *Multifamily Path* whole building incentives in order to maximize energy savings for the up-front investment. (Barrier 2)
3) Incentives would assist property owners or managers with overcoming a wide array of market and financial barriers which may otherwise prevent energy efficiency upgrades (Barrier 1, 5)
4) Create a single point of contact that would assist the property owner or manager navigate through the incentive and retrofitting process. This approach would provide support in understanding the various program rules and assistance in determining eligibility. The property owner or manager would be guided through an easy and streamlined preliminary assessment to establish feasibility and estimate project cost for the *Multifamily Path*, with an eye toward leveraging all eligible programs. (Barrier 4)
5) Target buildings planning on or undergoing renovation projects to limit customer time burden and lost rental income. (Barrier 4, 5)
6) Multifamily sector is comprised of a wide diversity of properties which can be segmented by: 1.) rental rate (low – medium – or high; and/or 2.) size of the building and also size of the company that owns or manages the building. Defining the unique concerns and needs of building owners and managers by these variables of tenant socio-economic status and ownership/management structure will allow much more effective messaging and marketing communications. (Barrier 1, 2, 3, 4, 7)
7) On Bill Financing or Repayment program which could be focused on the tenant or the common property energy agendas. This program will provide

access to capital to fund investments in energy efficiency upgrades for buildings at an attractive interest rate. (Barrier 2, 3, 7)

5) A coherent program or "market" logic model

The WHUP is designed to use a market transformation framework to pull in new measures and push out the mature measures. The diagram below describes this iterative process.

The Whole House Program will be serving both homeowners and property owners/managers, with the intent to coordinate its program activities with the low-income program to meet special needs. Like the other market transformation programs, the Whole House program, will work with Emerging Technology (I), Plug Load & Appliance, Residential HVAC Programs and other residential programs to leverage new and innovative technologies and applications, while pruning more mature technologies and applications from program offerings. These program interactions are described in the Whole House Program Key Support Activity Process Diagram below. These interaction and coordination decisions will be facilitated by IOUs' Decision Panel (A) as indicated in the logic model.

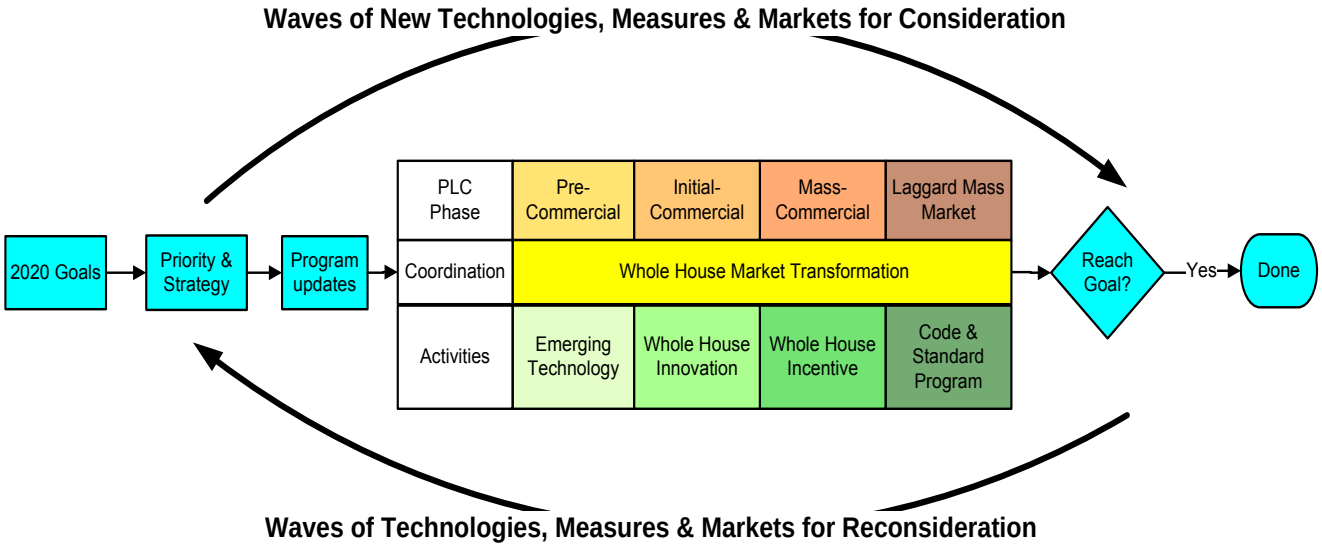
To reduce market barriers, the program's activities are designed to "get the word" out about the benefits of comprehensive retrofits through both mass marketing (D) as well as ground-up individual outreach for neighborhoods and communities (C), by working with local governments and entities. To help property owners understand their energy consumption profile (E), the participants will be encouraged to use a Energy Advisor survey (E) to gauge the overall consumption profile prior to making retrofit decisions, thus respecting the load order of implementation cost effectiveness, and to engage and motivate additional behavior-oriented energy efficiency and conservation actions. To ease the financial burden of the project cost and investment, the program will make financing packages and information available to prospective participants (G).

The program recognizes the importance of having a pool of qualified and competent contractors available to meet the market needs (J & O). The program offers BPI certification training as well as participating contractor ongoing training and mentoring to meet the needs of the workforce and program quality control requirements. This increase in the quality and the quantity of the labor pool, will contribute to contractors' performing projects, outside of the program, to meet deep energy retrofit needs, leading to non-participant spillover effects (R, S & V).

The expected outcome of this program includes increased and improved awareness, knowledge and attitude (AKA) of homeowners and apartment owners towards understanding the benefits of deep energy retrofits (P). After realizing these benefits from program participation, the participant further enjoys other non-energy benefits such as improved comfort of the house and increased value of their properties. The increased value in the property will become more pronounced as the state finalizes its home rating system, so the home purchasers will be aware of the inherent value of properties complete with deep energy reduction retrofits (U). All of these benefits will help the

program participants to continue property improvements outside of the program and outside of the program offerings, leading to spillover effects (T). These participant and non-participant spillover effects will eventually change the overall composition of the housing stock at the market level, making housing and building code ratcheting possible for society (X & Y). These codes and standards changes will lead to further reduction of energy consumption at the market level leading to fulfilling the objectives of the California Long-Term energy and environmental policies (AA).

For the benefit of readers, the associated Program Performance Metrics (PPMs) and appropriate Market Transformation Indicators (MTIs) are identified in this logic model. Additional key program support activities are diagramed as a process diagram for further illustration. The Whole House program will have the option to conduct additional pilots/trials to test technologies, applications or other programmatic design and marketing possibilities. The learning from those activities is expected to contribute to the program innovation and further learning.



Within this context, a decision making body, the IOUs Decision Panel, is formed to manage and guide this process. (Please refer to logic model & activities below)

6) Appropriate evaluation plans, corresponding Market Transformation Indicators and Program Performance Metrics based on the program logic model

Due to the need to comply with the Decision's timeline for filing the 2013-2014 PIP, and our desire to comply with earlier Decisions that call for gathering stakeholder input in informing market transformation efforts, we suggest that a full market effects evaluation plan be developed during the formulation of the Joint EM&V Plan as described in section "18.1. Evaluation Budget" in Decision R.09-11-014. Until then, we suggest the following approach:

Summative evaluation: Market Effects. The market transformation program's theory and logic model will be used to guide the evaluation efforts. The scope of the market effects study should be defined by the MT program's scope. The timeline for specific market effects that are to be evaluated should be defined by the MT program theory. Among other indicators, the program theory may specify changes in market characteristics that can be evaluated, such as 1) Spillover, 2) attitudes, awareness and knowledge, 3) reductions in specific market barrier, 4) current pricing and product availability, and 5) other market milestones. We will make the following distinction between program "spillover" and market effects: spillover is energy savings not directly tracked by the program, whereas market effects are broader and would include spillover as well as meaningful changes in the structure or functioning of the market.

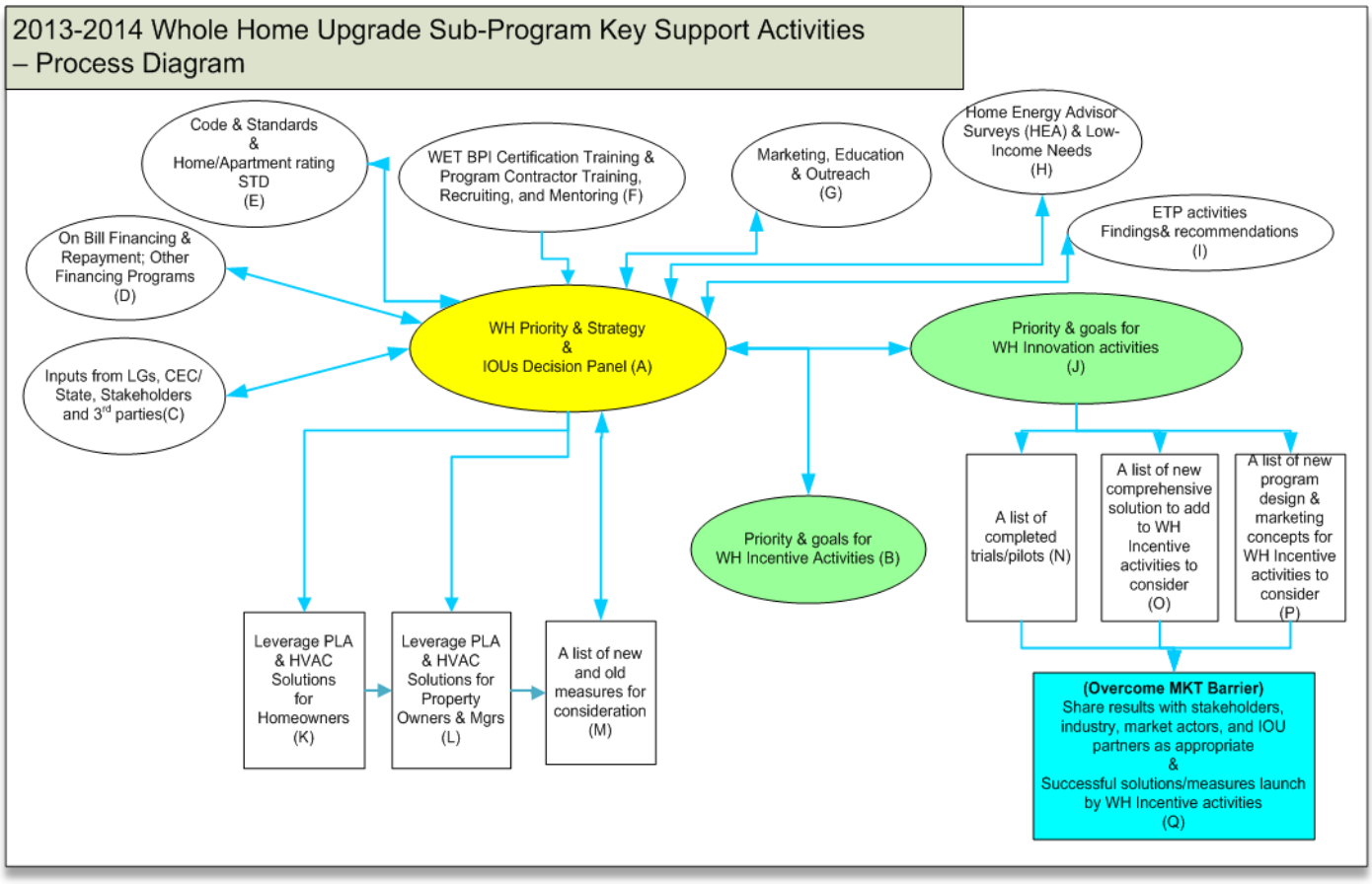
Formative evaluation: The formative evaluation of a market transformation program is typically performed at the intervention (i.e. program) level. The methods are the same as would be used in a program process evaluation, and would include interviews with program staff, participants and non-participants as well as an assessment of the program's direct outputs.

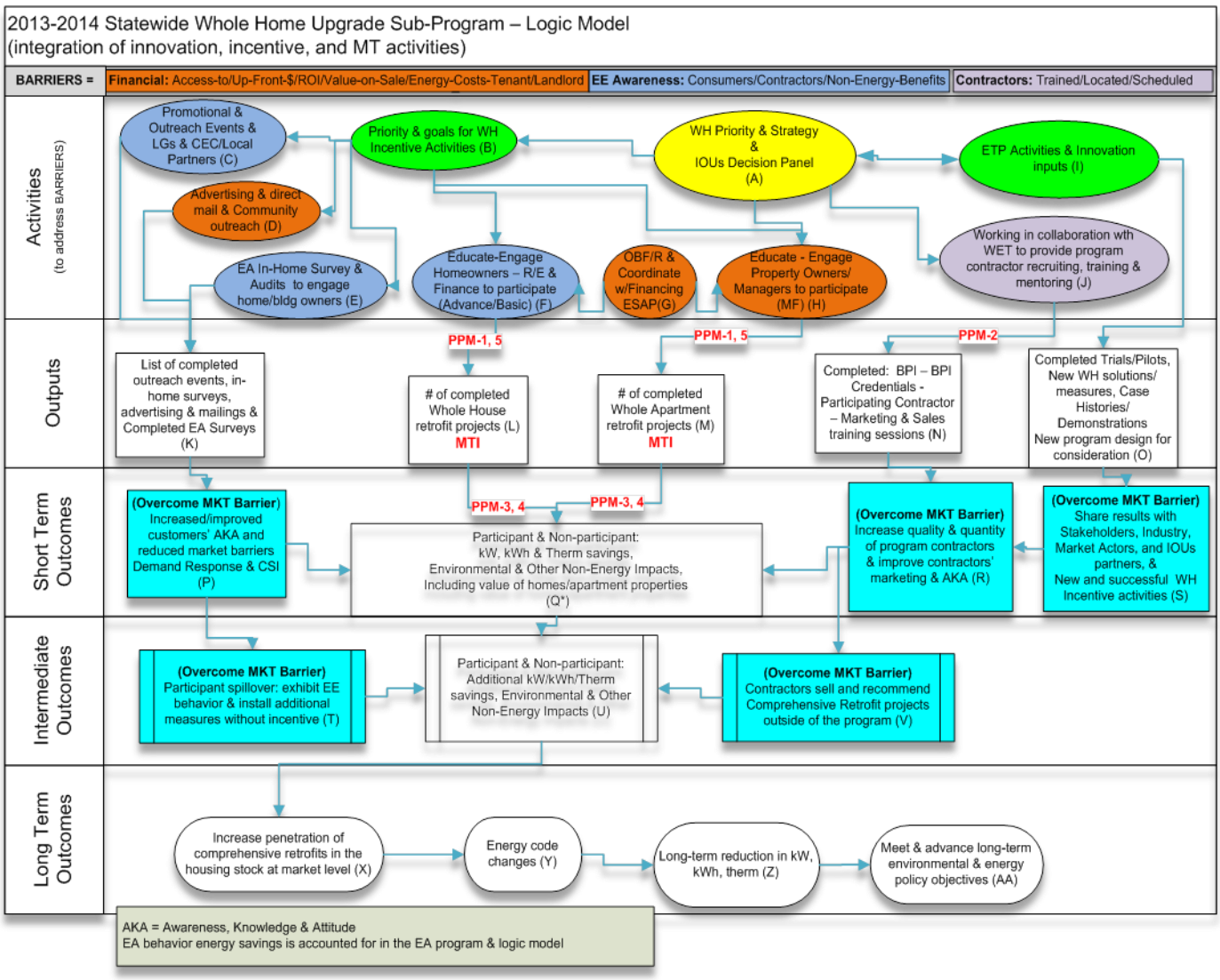
Program Performance Metrics:
This information can be found in Table 3 PPM Information to be provided as an Excel Attachment to this PIP

Market Transformation Indicators: DeepRetrofit-2 The number of households that elect to perform comprehensive energy upgrades.
Market transformation indicator results shall be reported, as available, by Energy Division or the IOUs, depending upon who conducts the necessary market studies. (Res. 4385, 12/2/10)

Attribution: Outside of California, most guidelines for evaluating market transformation acknowledge that it is very difficult to attribute market effects to any single program, and nearly impossible to partition out the respective contributions of several coordinated programs on market effects and market transformation. In California, the Framework (Sebold et al., 2001) emphasized that attribution of market effects to programs bears further research. Others (Rosenberg & Hoefgen, 2009; Keating & Prahl (MT Workshop, Nov 2011) suggest that declaring the program's strategic intent through the market transformation initiative's theory and logic model is key to establishing future claim on transformation effects. The methods proposed by Rosenberg & Hoefgen (2009) for attributing market effects to individual programs include a number of approaches, all of them qualitative: self-report of spillover and free ridership; cross-sectional comparisons with other geographic regions; structured expert judging; and case studies. But attribution using a "preponderance of evidence" approach would likely be expensive and still yield arguable results. Attribution by nature focuses on individual program efforts, and we believe the market transformation evaluation discourse should be focused on the overlapping synergy among all programs and influences in the market. We realize we all have a "Shared Mission" of meeting the CPUC's very aggressive Strategic Plan goals. We do not wish to not invest resources in teasing apart which program entity contributed how much, but instead will plan to focus

on whether all the market forces across the State of California have succeeded in transforming the market.





13) Additional information as required by Commission decision or ruling or as needed:
Include here additional information as required by Commission decision or ruling (As applicable. Indicate decision or ruling and page numbers):

IOU Streamlined Emergency Replacement Protocol and Streamlined High Performing Contractor Protocol

1. **SDG&E**

a. Streamlined Emergency Replacement Protocol

Per section 7 of SDG&E's QA/QC Quality Assurance and Quality Control Plan:

7.0 Emergency Replacement of Major Systems

7.1 It is recognized that there may be instances whereas immediate replacement of major systems is required due to health, safety and quality of life circumstances. In the event the customer has immediate need for equipment replacement, the QA/QC process will not interfere with a customer's ability to participate in the WHUP.

7.1.1 Major systems that qualify under this provision are identified as:
   a. HVAC Systems or components
   b. Hot water heater replacements

7.1.2 In the event that a contractor wishes to install a major system identified herein under the provisions of an emergency replacement, the contractor shall contact and notify the QA/QC vendor immediately of the customer's emergency situation and to request accommodation under this provision. The QA/QC provider will determine if the circumstances warrant this provision.
   a. The contractor will provide the QA/QC the customer contact information, make/model/serial numbers of existing equipment and date the replacement will be installed.
   b. The QA/QC vendor may field-verify the equipment to be replaced.
   c. The contractor can proceed with emergency work.
   d. To include the emergency work as part of any WHUP project scope, contractors must follow all other procedures for participation in the WHUP program.
   e. Any and all changes to the home prior to submitting a Pre-Retrofit Project Submittal Package shall be only for the immediate emergency need pre-approved by the QA/QC vendor and must be documented in the Pre-Retrofit Project Submittal Package.
   f. All other project scope work outside of the approved emergency work must go through the standard QA/QC process as defined in this plan.

b. Streamlined High Performing Contractor Protocol

Per SDG&E's Quality Assurance and Quality Control Plan, SDG&E QA Review turnaround times are guaranteed to be 3 working days or less for both pre and post QA Review (desktop). This time period is consistent with state contracting laws concerning consumer's 72 hr. right to rescind.

Tier 3 contractors, meaning those contractors who have successfully completed a minimum of 30 projects are eligible for random QC Inspection sampling rate of 10% pre and 5% of post project submittals.

In essence this means that high performing contractors with at least 30 projects will have 90% of their pre project submittals and 95% of post project submittals reviewed within 3 working days.

2. SDG&E

a. Streamlined Emergency Replacement Protocol

The following process that is already in place in 2012 serves the purpose of both an emergency replacement protocol, as well as a Fast Track process for all participating contractors in good standing.

The general policy for all equipment replacements performed within the SDG&E program is that participating contractors and their subcontractors should wait for a Notice to Proceed to be issued before commencing work on a job for the program. However, in order to proceed with emergency replacements or expedited upgrades due to customer specific needs,

contractors may proceed within the guidelines of this Fast Track Process. In order to be eligible for this Process, participating contractors must be active and in good standing under the SDG&E program.

Upgrades may be started before the Notice to Proceed is issued if the participating contractor is confident that the job qualifies for the Program. Prior to adjusting or installing measures, the contractor must perform a comprehensive test-in, including combustion safety testing, to document the pre-existing conditions. The contractors should take pictures to document uncommon or unique situations.
Participating contractors that choose to perform work without the Notice to Proceed accept full liability that the rebate funds have not been reserved and that their customers may not be eligible.

In order to make the Fast Track Process work for participating contractors and their customers, the SDG&E program recommends that the contractors do the following:

- Ask for a copy of recent SDG&E bill to validate that the customer has an active account and have a clear understand the Program eligibility requirements
- Make sure to understand how to use and model homes in EnergyPro proficiently to reduce the chance of error in rebate calculation or delayed application processing
- If providing a rebate estimate, make it clear in the proposal that it is based on the un-validated energy model savings and may change after the quality control review process
- Participate in the Process after completing at least 10 upgrades without desktop or field QA issues
- Submit the application as soon as possible to ensure timely payment to the customer

3. SCE

a. Streamlined Emergency Replacement Protocol
Southern California Edison & Southern California Gas Emergency Equipment Replacement Policy for HVAC/DHW System
Due to the climate of Southern California, during the first few months of summer and winter there is a rise in the volume of HVAC emergency replacements driven by homeowners re-engaging their HVAC systems after periods of non-use. Participating Contractors will be involved in these replacements and they have the opportunity to inform homeowners of the additional benefits of the Program. The Emergency Equipment Replacement Policy for HVAC/DHW Systems allows homeowners to take credit for energy savings from emergency equipment replacement provided **all of the following conditions are met**.

Eligibility

1. The homeowner meets all mandatory *Advanced Path* program requirements as described in the Advanced Package Minimum Specifications and this Emergency Equipment Replacement Policy for HVAC/DHW Systems.
2. The space heating and/or domestic hot water system must have been 'red tagged' or deemed unsafe by the utility, service technician or building inspector; or the system has failed, cannot be repaired and must be replaced.

3. The contractor submits the completed Record of Emergency Equipment Replacement Form within the timelines indicated in the Notification/Authorization Requirements section.

Note: In the event the customer/contractor fail to meet the timelines indicated the project runs the risk of not being able to include the energy savings from the installation of the new equipment in the energy simulation (Energy Pro) model.

Notification/Authorization Requirements
To submit notification and receive authorization to proceed for an eligible emergency equipment replacement, the following steps must be followed:

Step 1: Submit for Pre-Replacement Approval
1. The contractor is required to submit a Record of Emergency Equipment Replacement Form.
2. The contractor is required to complete Sections 1 – 4 of the Record of Emergency Equipment Replacement Form, sign and date the customer/contractor signature section, provide detailed photographic evidence of the existing equipment installed in the residence (clearly showing the area around the existing unit) to include nameplate information (make, model, serial number, etc) and then provide a scanned copy in .PDF format to EUCA_Processing@icfi.com.
3. Upon receipt of the completed form, ICF will provide written notification of Authorization to proceed via e-mail to the contractor within one business day (8-10 business hours).

Step 2: Receive Authorization to Proceed
Upon Authorization to proceed the contractor may commence installation of the new HVAC and/or DHW equipment.

Step 3: Complete Emergency Replacement and Submit Final Paperwork
1. Upon completion of the installation of the new equipment the contractor shall complete Section 5 of the Record of Emergency Equipment Replacement Form, sign and date the customer/contractor signature section, detailed installation invoice, and then provide a scanned copy in .PDF format to ICF (EUCA_Processing@icfi.com) within five (5) business days of the new equipment installation. If measures installed exceed the scope of written authorization given, credit will not be given for those additional measures. If the paperwork is not received within those 5 business days, the final decision to allow the credit for the installed equipment will be at the sole discretion of Program Management and will not be able to be appealed.

2. The Incentive Reservation Form must be turned into the Program within 30 calendar days of Emergency Equipment Replacement Approval. Failure to do so will result in not receiving credit for installed equipment.

While age, size and efficiency of the existing system are a factor, it shall not be the sole determining factor for selection of equipment replacement. Best practices dictate that any replacement of central heating or cooling systems require submittal of a Manual J load

calculation and must take into account all existing and/or proposed energy efficiency measures that will significantly impact load and allow for correct equipment sizing.

If HVAC re-ducting is required in this emergency, the pre-retrofit building simulation model will automatically use the default vintage default tables for total duct leakage. This percentage is not able to be contested, should an appeal situation arise.

Mandatory Documentation for Emergency Space Heating Equipment Replacement
The contractor shall provide information about the existing equipment being removed utilizing the Record of Emergency Equipment Replacement Form. At a minimum, the information collected regarding the existing space heating equipment shall include the following:

- Contractor’s business name, address and phone number
- Date of removal
- Reason for replacement (operational failure; health and safety)
- Manufacturer's name and model number of space heating equipment
- Rated efficiency, output, input from the nameplate
- Fuel type (natural gas, electric)
- Type of system (forced air, hydronic/radiant or combo)
- Type of venting (e.g. chimney, side vent, barometric damper)

The existing space heating equipment must be replaced with equipment meeting the Advanced Package Minimum Specifications. New gas-fired furnaces must have an Annual Fuel Utilization Efficiency (AFUE) of 92% or greater to qualify under the Emergency Replacement Policy for HVAC Equipment.

The contractor shall provide a copy of the invoice for the new space heating equipment and the Record of Emergency Equipment Replacement Form to their dedicated account manager within 5 business days of written authorization to proceed with the new equipment installation. At a minimum, the invoice for the new space heating equipment shall include the following:

- Contractor’s business name, address and phone number
- Date of installation
- Manufacturer's name, model and serial number of new space heating equipment
- Rated efficiency, output, input from the nameplate
- Fuel type (natural gas, electric)
- Type of system (forced air, hydronic/radiant or combo)
- Type of venting (e.g. chimney, side vent, barometric damper)

While replacing the space heating equipment, this may be an opportunity to also replace the central air conditioner with a higher efficiency model. The existing equipment must be replaced with equipment meeting the requirements listed in the Advanced Package Minimum Specifications. Contractor will need to supply the following information about both the new and existing air conditioning unit:

- Contractor’s business name, address and phone number
- Date of installation
- Reason for replacement (operational failure; health and safety; Other, please explain)
- Manufacturer's name and model number of cooling equipment
- Type of system (central air, heat pump)
- Rated efficiency (SEER, HSPF),unit size, and cooling output from the nameplate

Mandatory Documentation for Domestic Hot Water Equipment Replacement
The existing domestic hot water system must be replaced with equipment meeting Advanced Package Minimum Specifications. In addition, new domestic hot water heaters must have an Energy Factor (EF) of 0.62 or greater, and new domestic tankless hot water heaters must have an Energy Factor (EF) of 0.82 or greater to qualify under the Emergency Equipment Replacement Policy.

The contractor shall provide a copy of the invoice for the new domestic hot water equipment and the Record of Emergency Equipment Replacement Form to their dedicated account manager within 5 business days of written authorization to proceed with the new equipment installation. At a minimum, the invoice for the new domestic hot water equipment shall include the following:

- Manufacturer's name and model number of domestic hot water equipment
- Type of system (gas, electric)
- Rated efficiency (energy factor)
- Unit size (gallons)
- Input from the nameplate (Btu’s)

Mandatory Requirements for Emergency Equipment Replacement Approval
Once administrative approval and written authorization to proceed is granted, the contractor may immediately install the individual measures if the following conditions are met:

1. Provide photographic evidence of the existing system installed in the residence clearly showing the area around the existing unit and detailed pictures of the existing equipment to include nameplate information (make, model, serial number, etc.).

2. The contractor shall provide a copy of the Invoice for the new space heating and/or cooling equipment and the completed Record of Emergency Equipment Replacement Form to their dedicated account manager within 5 business days of the installation of the new equipment (if applicable).
3. The contractor shall provide a copy of the Invoice for the new domestic hot water equipment and the Record of Emergency Equipment Replacement Form to their dedicated account manager within 5 business days of the installation of the new equipment (if applicable).

In the event the customer/contractor fail to meet the timelines indicated the project runs the risk of not being able to include the energy savings from the installation of the new equipment in the energy simulation (Energy Pro) model.

b. Streamlined High Performing Contractor Protocol

Contractors who have completed 10 Basic or 10 Advanced projects and have completed all of their field mentoring and online learning center modules with a passing score can be eligible for their projects to be sampled instead of being selected for 100% pre and post on-site inspection.

4. SoCalGas

a. Streamlined Emergency Replacement Protocol

Southern California Gas Emergency Equipment Replacement Policy for HVAC/DHW System

Due to the climate of Southern California, during the first few months of summer and winter there is a rise in the volume of HVAC emergency replacements driven by homeowners re-engaging their HVAC systems after periods of non-use. Participating Contractors will be involved in these replacements and they have the opportunity to inform homeowners of the additional benefits of the Program. The Emergency Equipment Replacement Policy for HVAC/DHW Systems allows homeowners to take credit for energy savings from emergency equipment replacement provided **all of the following conditions are met**.

Eligibility

1. The homeowner meets all mandatory *Advanced Path* program requirements as described in the Advanced Package Minimum Specifications and this Emergency Equipment Replacement Policy for HVAC/DHW Systems.
2. The space heating and/or domestic hot water system must have been 'red tagged' or deemed unsafe by the utility, service technician or building inspector; or the system has failed, cannot be repaired and must be replaced.
3. The contractor submits the completed Record of Emergency Equipment Replacement Form within the timelines indicated in the Notification/Authorization Requirements section.

Note: In the event the customer/contractor fail to meet the timelines indicated the project runs the risk of not being able to include the energy savings from the installation of the new equipment in the energy simulation (Energy Pro) model.

Notification/Authorization Requirements

To submit notification and receive authorization to proceed for an eligible emergency equipment replacement, the following steps must be followed:

Step 1: Submit for Pre-Replacement Approval

1. The contractor is required to submit a Record of Emergency Equipment Replacement Form.
2. The contractor is required to complete Sections 1 – 4 of the Record of Emergency Equipment Replacement Form, sign and date the customer/contractor signature section, provide detailed photographic evidence of the existing equipment installed in the residence (clearly showing the area around the existing unit) to include nameplate information (make, model, serial number, etc) and then provide a scanned copy in .PDF format to EUCA_Processing@icfi.com.

3. Upon receipt of the completed form, ICF will provide written notification of Authorization to proceed via e-mail to the contractor within one business day (8-10 business hours).

Step 2: Receive Authorization to Proceed
Upon Authorization to proceed the contractor may commence installation of the new HVAC and/or DHW equipment.

Step 3: Complete Emergency Replacement and Submit Final Paperwork
1. Upon completion of the installation of the new equipment the contractor shall complete Section 5 of the Record of Emergency Equipment Replacement Form, sign and date the customer/contractor signature section, detailed installation invoice, and then provide a scanned copy in .PDF format to ICF (EUCA_Processing@icfi.com) within five (5) business days of the new equipment installation. If measures installed exceed the scope of written authorization given, credit will not be given for those additional measures. If the paperwork is not received within those 5 business days, the final decision to allow the credit for the installed equipment will be at the sole discretion of Program Management and will not be able to be appealed.

2. The Incentive Reservation Form must be turned into the Program within 30 calendar days of Emergency Equipment Replacement Approval. Failure to do so will result in not receiving credit for installed equipment.

While age, size and efficiency of the existing system are a factor, it shall not be the sole determining factor for selection of equipment replacement. Best practices dictate that any replacement of central heating or cooling systems require submittal of a Manual J load calculation and must take into account all existing and/or proposed energy efficiency measures that will significantly impact load and allow for correct equipment sizing.

If HVAC re-ducting is required in this emergency, the pre-retrofit building simulation model will automatically use the default vintage default tables for total duct leakage. This percentage is not able to be contested, should an appeal situation arise.

Mandatory Documentation for Emergency Space Heating Equipment Replacement
The contractor shall provide information about the existing equipment being removed utilizing the Record of Emergency Equipment Replacement Form. At a minimum, the information collected regarding the existing space heating equipment shall include the following:

- Contractor’s business name, address and phone number
- Date of removal
- Reason for replacement (operational failure; health and safety)
- Manufacturer's name and model number of space heating equipment
- Rated efficiency, output, input from the nameplate
- Fuel type (natural gas, electric)
- Type of system (forced air, hydronic/radiant or combo)
- Type of venting (e.g. chimney, side vent, barometric damper)

The existing space heating equipment must be replaced with equipment meeting the Advanced Package Minimum Specifications. New gas-fired furnaces must have an Annual Fuel Utilization Efficiency (AFUE) of 92% or greater to qualify under the Emergency Replacement Policy for HVAC Equipment.

The contractor shall provide a copy of the invoice for the new space heating equipment and the Record of Emergency Equipment Replacement Form to their dedicated account manager within 5 business days of written authorization to proceed with the new equipment installation. At a minimum, the invoice for the new space heating equipment shall include the following:

- Contractor’s business name, address and phone number
- Date of installation
- Manufacturer's name, model and serial number of new space heating equipment
- Rated efficiency, output, input from the nameplate
- Fuel type (natural gas, electric)
- Type of system (forced air, hydronic/radiant or combo)
- Type of venting (e.g. chimney, side vent, barometric damper)

While replacing the space heating equipment, this may be an opportunity to also replace the central air conditioner with a higher efficiency model. The existing equipment must be replaced with equipment meeting the requirements listed in the Advanced Package Minimum Specifications. Contractor will need to supply the following information about both the new and existing air conditioning unit:

- Contractor’s business name, address and phone number
- Date of installation
- Reason for replacement (operational failure; health and safety; Other, please explain)
- Manufacturer's name and model number of cooling equipment
- Type of system (central air, heat pump)
- Rated efficiency (SEER, HSPF),unit size, and cooling output from the nameplate

Mandatory Documentation for Domestic Hot Water Equipment Replacement

The existing domestic hot water system must be replaced with equipment meeting Advanced Package Minimum Specifications. In addition, new domestic hot water heaters must have an Energy Factor (EF) of 0.62 or greater, and new domestic tankless hot water heaters must have an Energy Factor (EF) of 0.82 or greater to qualify under the Emergency Equipment Replacement Policy.

The contractor shall provide a copy of the invoice for the new domestic hot water equipment and the Record of Emergency Equipment Replacement Form to their dedicated account manager within 5 business days of written authorization to proceed with the new equipment installation. At a minimum, the invoice for the new domestic hot water equipment shall include the following:

- Manufacturer's name and model number of domestic hot water equipment
- Type of system (gas, electric)

- Rated efficiency (energy factor)
- Unit size (gallons)
- Input from the nameplate (Btu's)

Mandatory Requirements for Emergency Equipment Replacement Approval

Once administrative approval and written authorization to proceed is granted, the contractor may immediately install the individual measures if the following conditions are met:

1. Provide photographic evidence of the existing system installed in the residence clearly showing the area around the existing unit and detailed pictures of the existing equipment to include nameplate information (make, model, serial number, etc.).
2. The contractor shall provide a copy of the Invoice for the new space heating and/or cooling equipment and the completed Record of Emergency Equipment Replacement Form to their dedicated account manager within 5 business days of the installation of the new equipment (if applicable).
3. The contractor shall provide a copy of the Invoice for the new domestic hot water equipment and the Record of Emergency Equipment Replacement Form to their dedicated account manager within 5 business days of the installation of the new equipment (if applicable).

In the event the customer/contractor fail to meet the timelines indicated the project runs the risk of not being able to include the energy savings from the installation of the new equipment in the energy simulation (Energy Pro) model.

b. Streamlined High Performing Contractor Protocol

SoCalGas follows the Home Performance with ENERGY STAR® guidelines for QA/QC protocols. Since the implementation of the SoCalGas EUC Program, SoCalGas has established an adjustable onsite inspection rate for contractors based on job experience and performance.

SoCalGas conducts onsite inspections, at set inspection rates, of the work of all participating contractors. This inspection rate is reduced as the contractor gains experience in the program and as onsite inspections show the contractor is performing at a satisfactory level per program requirements. See chart below

a. Tier 1Contractor- 60% onsite inspection of first five project
b. Tier 2 Contractor- 27% onsite inspection of next 15 projects
c. Tier 3 Contractor- 5% onsite inspection after 20th project

ATTACHMENT 1

Program Non-Energy Objectives

Table 3 provides targets per approved PPM's for single family homes. Additional PPM's for multifamily may be developed as program develops.

Table 3: Quantitative Program Targets (PPMs)
[Table 3 to be provided as an Excel Attachment to this PIP]

1) Program Name: Residential HVAC Subprogram

Residential Quality Maintenance and Residential Quality Installation will be a program promoted externally to customers and contractors as the AC Quality Care Program. The HVAC Industry Task Force is named the Western HVAC Performance Alliance.

2) Program Description

The Residential HVAC Program is a Statewide program that will continue the transformation process of California's HVAC market to ensure that:

- HVAC technology, equipment, installation, and maintenance are of the highest quality;
- Quality installation and maintenance practices are easily recognized and requested by customers;
- The HVAC value chain is educated and understands their involvement with energy efficiency and peak load reduction; and
- The above changes lead to sustained profitability for HVAC trade allies as the business model for installing and maintaining heating and cooling systems changes from a commodity-based to a value-added service business.

The IOUs propose building towards this vision for HVAC by implementing a comprehensive set of downstream and midstream strategies that builds on existing program, education, and marketing efforts and leverages relationships within the HVAC industry to transform the market towards a sustainable, quality driven market. Through this Statewide HVAC Program and a Statewide HVAC Industry Leadership Task Force (Western HVAC Performance Alliance), we will gain a better understanding of the market response to our programs, as well as the behavioral implications of the various market participants, and then actively revise/update strategies and programs accordingly, as guided by the California Long-term Energy Efficiency Strategic Plan (Strategic Plan).

The IOUs cross-sector collaborative activities and information-sharing tools that have been developed through the 2010-2012 Statewide HVAC programs will be discontinued. These programs were distributed in the Residential, Commercial, WE&T and Emerging Technologies Statewide programs. The Quality Maintenance, Quality Installation Development, and HVAC Core (Western HVAC Performance Alliance) programs will be implemented under this Residential HVAC Subprogram.

Market transformation and direct energy savings and demand reductions will be achieved through a series of sub-programs that are described in detail and summarized below:

Residential HVAC Quality Maintenance

Residential HVAC Quality Maintenance program represents one of the more creative aspects of the HVAC "Big Bold Energy Efficiency Strategy." It is based on the assumption that there are energy and demand savings achievable through the regular application of quality maintenance (QM) procedures applied to existing residential HVAC equipment. This program intends to (1) quantify those potential savings and (2) develop and implement a residential maintenance program. This program will be focused on comprehensive, continuously improving O&M activities that capture energy savings and provide a high value to the end-user thus driving the intense level of market transformation of the HVAC industry envisioned by the Strategic Plan.

Residential HVAC Quality Installation Development

Residential Quality Installation Development is applicable to quality installation (QI) of split or packaged HVAC systems, with a rated capacity up to 65,000 BTU/H.
This Residential sub-program element is based on the assumption that energy and demand savings are achievable through the application of QI in accordance with appropriate industry standards (e.g., ACCA, SMACNA and ASHRAE) applied to new HVAC equipment.

This sub-program intends to:

- Collaborate with EM&V efforts to quantify those potential savings;
- Develop and implement a sub-program focused on comprehensive, continuously improving installation activities that capture those savings and provide a high return on investment to the end-user, thus driving the intense level of market transformation of the HVAC industry envisioned by the Strategic Plan;
- IOU's will continue to development in 2013. The sub-program will be developed in collaboration through stakeholder input from the HVAC industry.

For SDG&E the Quality Maintenance and Quality Installation program may be implemented by a third party through a competitive bid process for the purpose of soliciting innovative ideas and proposals for improved portfolio performance.

a) List of Measures

To achieve the market transformation desired by the Strategic Plan, a variety of appropriate financial and non-financial incentives is required to influence specific market actions. Incentives will be targeted to services including Quality Maintenance and Quality Installation Development.

Residential HVAC Quality Maintenance

In support of both the market transformation and the energy resource savings goals of the program, rebates are available for specific measures. The intention of these rebates is to help offset the extra cost of providing a higher quality comprehensive service performed in accordance with the ACCA 4 industry standard for Quality Maintenance.
Additionally, in coordination with the Emerging Technologies Program, the Residential HVAC QM program will continue to consider higher initial incentives for any HVAC emerging technologies that may be newly introduced to the market place via this program. Once the new products have taken hold in the market place, such incentives would be adjusted to reflect market conditions. The current set of measures is as follows:

Table A – List of Residential Quality Maintenance Measures

Measure	Prerequisite	Measure Requirements	Range
QM-Standard Basic Assessment	No prerequisite measures.	Must cover all the steps included in the Assessment Process, including a conversation with customer about their goals and concerns.	**$ 50.00**
	All measures must be performed by a participating contractor's qualified technician.	Must include a report with a written estimate for work required to meet standard.	
Advanced Air Flow Correction	Completion of the Assessment	Must address any deficiencies in air flow per the standards identified in the Assessment process.	**$ 250.00**
Blower Motor Retrofit	Completion of the Assessment	The installed motor model must be a direct drive, permanent magnet, and constant speed motor.	**$ 150.00**
Refrigerant System Service	Completion of the Assessment and Air Flow Correction	Work must meet the protocols covered in training and is expected to be incorporated into a software tool.	**$50 to $100**
		Must be done when weather conditions will support accurate results.	
		Must be done within eight months of completion of Air Flow Correction work (the delay is allow time for proper weather conditions to resume).	
QM-Standard Preventive Maintenance Agreement	Completion of the Assessment • Completion of either Air Flow Correction or Blower Motor Retrofit	The optional standard service agreement must include the provided Service Agreement QM Addendum. · The optional agreement must cover at least one year of service with two seasonal visits.	**$ 50.00**

Residential HVAC Quality Installation Development

At this point, providing a list of measures and incentive levels is premature, as a valid quality installation based sub-program must be well planned and vetted through the Western HVAC Performance Alliance (WHPA). This sub-program will be designed during 2012 and 2013 for the 2013-2014 program cycle and therefore will not be providing incentives, at least not initially.

c) List Non-incentive Customer Services

Residential HVAC Quality Maintenance

- Education of the market on the value of selecting high-efficiency systems.
- Reports for customers of estimated energy savings, cost savings and carbon reductions for their HVAC systems treated under the program.
- Training for contractors on HVAC industry standards, sales and marketing of the value of those standards, and their implementation in the field.

- Education for customers on how HVAC industry standards can help them compare bids of contractor services and select those with high-road skills.
- Customer education about the benefits of establishing a long-term trust relationship with a qualified contractor, which can lead to future energy and cost savings, such as from better planning for future HVAC system replacements and the quality installation of those systems when replaced.
- Improved comfort and indoor air quality for customers.

Residential HVAC Quality Installation Development
This sub-program development process will be performed with HVAC industry involvement to ensure that:

- The measures eventually included in the program can be reasonably assured to save energy and lower peak demand;
- A clear value proposition can be demonstrated so that contractors will see the path for a profitable business opportunity based on QI and customers will understand the benefits of equipment maintained at a higher level of quality;
- An effective training program will be put in place to ensure that technicians can properly implement QI services;
- The processes employed will document that work performed in the field meets minimum program quality control standards and can be validated.
- The initial QI efforts will focus on uncovering the root causes, rectifying design and implementation shortcomings, determine realistic energy savings estimates, and then launch program incentives.

The following non-incentive services will be offered through this sub-program:

- Active enrollment and promotion of qualified contractors
- IOU promotion of QI through the Whole-Home Upgrade subprogram and other customer marketing.
- Contractor training on quality installation practices, selling and marketing QI, service management of QI, etc.
- If incentives are offered for energy savings and the measures are cost effective, the program will comply with Senate Bill 454 on HVAC permit acquisitions with the work completed by a licensed contractor.
- The program will retain appropriate combustion safety testing and other procedures to ensure customer safety.

Western HVAC Performance Alliance Activities
The program will be active in a number of additional non-resource activities. These activities are required to ensure that the HVAC industry is fully involved in the development and implementation of the many tactics required to address the short and long-term goals of the Strategic Plan. One such non-resource activity is an Western HVAC Performance Alliance that will be initially chartered and funded by the IOUs. The Western HVAC Performance Alliance is necessary to keep the industry engaged in the Strategic Plan process and to provide guidance and support for the implementation

of the various tactics required to transform the industry. Mindful that HVAC industry organizations are not traditionally structured or staffed, and have not traditionally allocated enough resources to achieve the level of involvement envisioned by the Strategic Plan, the HVAC Convener's Report concluded that: *"The agencies and utilities should work together to ensure the working group is adequately funded to meet its responsibilities."*[42]

It is envisioned that this Western HVAC Performance Alliance will involve high-level HVAC industry stakeholders, such as manufacturers, distributors, contractors, associations, organized labor and influential end-user customers—to coordinate industry sponsorship of and participation in HVAC strategies. Membership should also include other key players, including the CPUC, the California Energy Commission (CEC), utilities, building owners/managers, university researchers, consumers, and the Federal Government. The Western HVAC Performance Alliance will be charged with establishing and prioritizing a substantial IOU-funded response (recognizing the roles of other appropriate organizations including CEC, the publicly-owned utilities, and local governments) to the activities described in the suite of IOU-proposed HVAC Programs — both utility administered programs and third-party administered programs which focus on HVAC efficiency — resulting in a structured roadmap with specific actions, schedules, and the technical and financial resources identified to initiate near-term, mid-term and long-term issue resolution.

The Western HVAC Performance Alliance will provide the necessary guidance to both California and the western U.S. so that the many issues required to transform the industry can be prioritized and facilitated by the IOUs and the WCEC (as described in the HVAC Technologies and System Diagnostics Advocacy sub-program).
Some of the actions of the Western HVAC Performance Alliance may include:

- Recommending guidelines that would make it possible for IOUs to directly contract with existing HVAC industry institutions (e.g., associations, societies, conference hosts, and the trade press) through a rigorous Request For Quotation (RFQ) or similar processes to implement specific aspects of IOU-administered energy efficiency programs.
- Making recommendations for standards and qualification guidelines for trainers and educators who receive funding from the IOUs.
- Update the "HVAC Action Plan" that prioritizes specific actions required to address the Strategic Plan.
- Formally reaching out to utilities in neighboring states, including Arizona, Colorado, Nevada, New Mexico, and Utah, and energy organizations in the Pacific Northwest, to involve them in the overall planning and implementation processes.
- Identifying for inclusion in the HVAC Action Plan other HVAC technical work underway through the existing IOU programs, CEC/EPIC-BERG, LBNL, HVAC industry vendors, and others inside and outside California. Much of this work is

[42] HVAC Convener's Report, Appendix B.5, Pg 10.

continuing in a fragmented way. A cohesive planned and prioritized framework and action is needed.

- Channeling appropriate HVAC work through the existing IOU program framework, on a fully-planned basis, not on an *ad hoc* basis.
- Integrating all efforts as appropriate with the current and out year work plans of the WCEC.
- Integrating the suite of demand response/demand side management (DR/DSM) options that are already considered in utility DR/DSM programs as well as additional solutions that are emerging for residential and small commercial markets.
- Create a sustainable governance of the Western HVAC Performance Alliance to assist in meeting the deliverables of the CLTEESP and HVAC Action Plan.

5) Program Rationale and Expected Outcome

a) Quantitative Baseline and Market Transformation Information

On December 2, 2010, the Commission issued Resolution E-4385, approving Program Performance Metrics (PPMs) for Pacific Gas and Electric Company, Southern California Edison Company, Southern California Gas Company and San Diego Gas and Electric Company for 2010-2012 statewide energy efficiency programs and subprograms. The Commission gave each PPM a metric type which indicated the reporting frequency: Metric type 2a indicates that the IOUs should report on the metric on an annual basis (unless indicated otherwise). Metric type 2b indicates the IOUs should report on the metric at the end of the program cycle.

Below are the approved PPMs and metric types for the Quality Maintenance Program (Resolution E-4385, Appendix A, pp 35-36):

Table 3 – Residential HVAC Quality Maintenance

Program	Metric	Metric Type
Residential Quality Maintenance	1. Measured progress towards specific milestones provided in the project GANTT chart indicating the development/finalization of this IOU program based on Quality Maintenance standards.	2a

Residential HVAC Quality Installation Development

Program	Metric	Metric Type
Residential Quality Installation Development	1. Percentage of HVAC contracting companies that are participating in statewide residential QI program as a share of the targeted market* * "Target market" defined as C20 licensed HVAC contracting companies in CA.	2a

b) Market Transformation Information

Per Resolution E-4385, a subset of market transformation indicators (MTIs) for statewide energy efficiency programs and subprograms were presented at a public workshop on November 7, 2011, to allow for public comments and discussion before being finalized. Per Energy Division Guidance on June 19, 2012, the MTIs to be found in Appendix "H" are approved for this sub-program as applicable.

Market Transformation 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."[43] 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[44].

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[45]. Markets are social institutions[46], 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[47] 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[48]. According to York[49], "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

[43] California Public Utilities Commission Decision, D.98-04-063, Appendix A.
[44] California Public Utilities Commission (2008) *California Long Term Energy Efficiency Strategic Plan,* p. 5. Available at http://www.californiaenergyefficiency.com/docs/EEStrategicPlan.pdf
[45] 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
[46] 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/*
[47] 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.
[48] 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.*
[49] York, D., (1999). "A Discussion and Critique of Market Transformation", Energy Center of Wisconsin. Available at http://www.ecw.org/ecwresults/186-1.pdf.

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[50]. 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[51], with the state of a market usually 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[52]. 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[53]. 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.)"[54] The Strategic Plan recognizes that regulatory policies are not yet in place to support the success of market transformation efforts[55], 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

[50] 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
[51] Rogers (1995) Diffusion of Innovations, 5th Ed.
[52] Example in bottom chart of this graphic from the New York Times: http://www.nytimes.com/imagepages/2008/02/10/opinion/10op.graphic.ready.html
[53] Sebold et al (2001) p. 6-5,
[54] 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.
[55] CPUC (2008) Strategic Plan, p. 5.

organizations, providing overlapping market interventions[56]. 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[57] 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.

Historically, the nonresidential retrofit programs have had very low uptake rates on high-efficiency HVAC systems. Consequently, a first step towards market transformation is to do what it takes to achieve a high level of program participation, thereby increasing market share of high-efficiency equipment sales and quality installations. An initial increase in market share allows for increased levels of customer, installer, and distributor/manufacturer knowledge and interest in these systems, which should make further increases easier. In addition, tracking the ratio of certified HVAC technicians in the field, over time, can provide a gauge of the likelihood for quality installations and maintenance.

c) Program Design to Overcome Barriers

Residential HVAC Quality Maintenance and Residential HVAC Quality Installation Development

The program addresses the following barriers:
Recent data available from AHRI indicates that as a result of the 2006 increase in federal residential equipment efficiency standards, which increased equipment costs significantly, unitary equipment sales have dropped while repairs to existing systems (low efficiency compressor replacement) have increased nationwide by more than 25 percent and window unit sales have increased by a similar amount. A similar trend occurred in 2002 when ENERGY STAR® increased its qualifying efficiency level to Seasonal Energy Efficiency Rating (SEER) 13. Prior to the change, ENERGY STAR® Central Air Conditioner (CAC) sales had an average market share of 33 percent[58]. After the change, the average market share of ENERGY STAR® units fell to 7 percent. Additionally, recent studies indicate that 30 to 50 percent of existing systems have not been installed properly.

[56] Nadel, Thorne, Saches, Prindle & Elliot (2003).
[57] Peloza & York, (1999).
[58] Itron, "California Residential Efficiency Market Share Tracking," 2006, pp.3-6.

Further, Title 24 compliance rates for replacement systems are approximately 10 percent[59]. The net effect of this market failure is a 20 to 30 percent increase in space energy use[60].

- Lack of awareness: By demonstrating the energy efficiency benefits of QI/QM, the benefits of QI/QM will be better understood by program participants. It is our goal to discover the evidence, and expected return on investment, that customers will require to authorize payment for these measures (and those premium measures that prove to outperform the QI/QM ANSI standards) when subsidies are removed.

- Performance uncertainties: Much research has been conducted on the energy savings achievable through HVAC system maintenance measures such as RCA and Duct Sealing, but despite all this research many performance uncertainties still exist. The implementation of this program with an increasing set of customers and the corresponding EM&V efforts shall be coordinated through the HVAC EM&V Project Coordination Group (PCG).

- Asymmetric Information: Delivering QI/QM training opportunities through existing industry channels (e.g., distributors, trade associations) will provide a higher level of credibility for QI/QM training rather than offering exclusively through IOUs.

- Bounded rationality: It is logical to assume that the HVAC industry would want to deliver quality service; however, market dynamics have not supported such logic as the industry has largely become commoditized and low price/low quality typically wins out. The program supports HVAC contractors that perform quality work. This helps to build momentum towards market transformation.

- Hidden costs: By promoting the concepts and value of quality maintenance at the time of system installation, the customer is assured that the energy efficiency performance benefits of their new system will continue throughout the life of their system.

- Organizational customs: The HVAC industry has largely become commoditized into an industry driven by low costs and quality, where quality is assumed but not understood or valued by the customer. This is a result, in part, by contractors having minimal success in communicating the value of QI/QM to consumers and consumers not understanding the linkages between comfort and energy use. The HVAC QI/QM Program demonstrates the value proposition of a high quality contracting business and educating consumers on the energy benefits of QI/QM.

- Product cost: Substantial incentives for equipment and QI will offset a substantial percentage of product costs. Customers will be encouraged to participate in the program and use one of the qualified program contractors to install their new HVAC system.

- Lack of awareness: Focused marketing and training on QI and code compliance for consumers, contractors, and building inspectors[61] will ensure that the importance of

[59] Quantec LLC, "Statewide Codes and Standards Market Adoption and Noncompliance Rates," pp. 4
[60] Strategic Plan, Appendix A, HVAC Convener Report, pp. 38-39

complying with Title 24 will be better understood by program participants. Additionally, requiring demonstrated code compliance (e.g., CF-6R) in order to qualify for program rebates will further reinforce the importance of permitted installations.

- Information or search costs: Active support of qualified program contractors and listing them on IOU websites will increase consumer confidence in having a reliable source of quality contractors. Moreover, satisfied customers will recommend these contractors to friends and neighbors and thus create additional momentum for using contractors with a reputation for high-quality work.

- Transaction costs: Potential for streamlined incentive application processes that require the same information required for Title 24 compliance (e.g., CF-6R) will reduce the difficulty of participating in the program and complying with permit requirements. Furthermore, the high incentive levels offered by the program will reduce the likelihood that customers will choose not to participate in the QI activity.

- Hidden costs: Promoting the concepts of QI at the time of system installation will increase the likelihood that customers will understand the energy efficiency performance benefits resulting from maintenance, and will continue such periodic maintenance over the life of their system.

Additionally, several other issues could potentially influence sub-program design, including:

- Other organizations have established processes and procedures for QI. These processes should be evaluated to determine how well they perform in comparison to minimum QI standards.
- Lack of industry consensus on QI standards and technical protocols
- Overcoming market barriers to exceeding Title 24 Standards
- Cost-effective constraints arising from limited savings for QI measures exceeding Title 24.
- Forging sustainable HVAC industry and market actor support.
- Addressing challenges in standard applicability across a range of commercial building types and HVAC systems.
- True energy savings measurement procedures.

d) Quantitative Program Targets

The program will achieve the following program targets:
See Table 5 above.

e) Advancing Strategic Plan goals and objectives

The Residential HVAC Quality Maintenance and Residential HVAC Quality Installation Development program helps to achieve the following near-term strategic goals as identified in Chapter 6 of the Strategic Plan:

[61] See the HVAC WE&T Sub-program PIP, below, for more information.

- 2-1: Create a Statewide QI/QM Brand – In addition to promoting the industry standards for QI and QM, leveraging the program statewide Energy Upgrade California (EUC) brand for all IDSM efforts is a cost effective approach to branding QI/QM. In order to help residential consumers more clearly recognize contractors and technicians who can truly deliver QI/QM, the program also aggressively helps the HVAC industry to more firmly establish the higher value/consumer benefit of its own industry standards and credentials. This program is based on and promotes the use of ACCA Standard 4 for Quality Maintenance and examples of consensus HVAC credentials are the Industry Competency Exam (ICE), technician certification by North American Technician Excellence (NATE), a variety of union "Journeyman" designations, TABB, NEBB, AABC, NBC and STAR® certifications.

- 2-2: Launch Statewide Brand – The Energy Upgrade California IDSM umbrella brand will be expanded via the statewide ME&O program efforts and the Residential HVAC QM program will make corresponding adjustments accordingly to leverage that brand within a reasonable time during 2013-14. This branding activity will help participating contractors to promote the QI/QM effort. The program will continue to communicate information about the QI/QM branding effort to contractors, technicians and other HVAC industry stakeholders via such means as inserts in trade journals such as Indoor Comfort News, The ACHR News, and Contracting Business.

- 2-3: Provide expanded QI/QM training – The program continues to ensure that HVAC service technicians of participating contractors are fully trained on the delivery of the measures promoted by the Program. Furthermore, feedback mechanisms will be utilized to continually evaluate technician performance to ensure that they are applying the information they are being taught in the QI/QM training. As part of the program's market transformation efforts and to ensure quality services are provided to customers, the program will continue to work with the HVAC industry to reduce (and wherever possible eliminate) the direct costs of this transformative training to technicians and contractors willing and able to apply their skills and new tools to delivering industry standard and energy saving Quality Maintenance services.

- 2-4: Implement contractor accreditation program – Additional consideration will be made for program efforts to promote NATE and any other certifications that the consensus of the HVAC industry determines to be appropriate.

- 3-3: Accelerate whole-building educational opportunities - Create pathways for HVAC contractors to evolve into whole building contractors by partnering with private and public community colleges and/or universities to develop the appropriate curriculum on whole building design practices.

- 4-1: Pursue regional climate-optimized equipment standards - IOU staff, in close consultation with WCEC/CEC and other appropriate parties, will continue to stay attentive to and engaged in the federal proceeding as it continues into 2011

- 4-3: Accelerate market penetration of advanced technologies - Partnering with manufacturers through activities such as the WCEC's Western Cooling Challenge will increase their dedication to developing climate-appropriate equipment that delivers energy savings and peak load reduction.
- 4-4: Adopt a progressive set of building codes that support peak-efficient equipment - Through the efforts proposed by the Statewide Codes and Standards Program, the IOUs will continue to work with the CEC to advance current building codes.

- 4-5: Develop standards for on-board diagnostic functionality – In coordination with HVAC efforts within the Emerging Technologies program, the program leverages the use of hand held and other types of systems in the field to assist in determining viable protocols for residential applications.

- 4-6: Prioritize in-field diagnostic approaches – Through coordination with the Emerging Technologies program, the program leverages the use of hand held and other types of systems in the field to assist in determining viable protocols for residential applications and contributes information to the HVAC industry that is expected to be helpful in targeting future efforts based on quantifiable energy efficiency benefits.

6) Program Implementation

a) Statewide IOU Coordination

The IOUs will jointly participate in California's residential HVAC efforts to achieve real-market transformation. In order to accomplish this task, the IOUs will use the principles of adaptive management and follow a structured process to continuously update and enhance the program throughout the 2013-2014 Transition Period. The process will continue as follows:

IOU Program Lead – The process for adaptive management will begin with each IOU designating an HVAC Program Lead. The lead will be the conduit through which information between IOUs will flow and will investigate new innovations, special accomplishments and challenges faced by sub-program managers and the managers of cross-cutting Statewide programs within their own IOU. Where such innovations or challenges intersect HVAC and show potential for improving the HVAC program, the Program Lead will present such information to a quarterly HVAC Program Management Team meeting.

Hold Quarterly HVAC Program Management Team Meetings – At this quarterly meeting, individual innovations and accomplishments experienced in one IOU will be transmitted to all IOUs. The HVAC Program Management Team will evaluate the innovations and accomplishments of the individual IOUs, hear ideas for course corrections and overcoming challenges, measure the HVAC program's progress against Statewide metrics and goals, and prepare summations for presentation to the Western HVAC Performance Alliance at its semi-annual meeting.

Adopt Program Enhancements – Once the HVAC Program Management Team agrees that a particular idea or innovation has merit on a Statewide-level, each IOU Program Lead will distribute the information to their sub-program managers for adoption and integration as appropriate. In some cases, it may be necessary to invite the sub-program managers to the HVAC Program Management Team to get their feedback and ensure they receive the same message.

Evaluate Program Enhancements Against Statewide Targets – To complete the adaptive management loop, the HVAC Program Management Team will track the program's accomplishment of Statewide targets and goals to ensure that adopted program enhancements are generating their intended results. The HVAC Program Management Team will determine whether future course corrections are needed, and if so, will activate a fresh start of the adaptive management cycle to generate the improvements necessary to stay on track
All California IOUs continue to work together and jointly with the HVAC industry to lead efforts to implement and explore design enhancements for a viable residential HVAC program. Specific areas of coordination include:

i. Program delivery mechanisms

Residential Quality Maintenance

The program is delivered to customers via qualified participating contractors. Training of participating contractors and management of the program includes a combination of third-party implementers and internal administrative staff. This follows the adaptive management process. The program is targeted to consumers and contractors to create a push/pull dynamic that influences the achievement over time of sustained market transformation.

Residential Quality Installation Development

The IOUs will jointly coordinate and work with industry groups to prepare a design for a statewide-consistent program design that is cost effective and meets California's market transformation objectives.

After the new program design is launched, the IOUs will manage the program through a combination of third-party programs and internal administrative staff, and will follow the adaptive management process. The program will be targeted to consumers and contractors to create a push/pull dynamic that influences sustained market changes.

Western HVAC Performance Alliance

The IOUs will deliver the program through a combination of third-party vendors and internal administrative staff. The program will be delivered in collaboration with existing industry infrastructures in order to increase its overall effectiveness. Program guidance will be provided to the CPUC/IOUs through the Western HVAC Performance Alliance as described above.

ii. Incentive levels

See Section 4.b above.

iii. Marketing and outreach plans

Residential Quality Maintenance

Program marketing includes common outreach materials shall be developed by the IOU's in partnership with HVAC industry, including feedback from HVAC contractors. This QI/QM branding shall be under the statewide Energy Upgrade California brand efforts after the expansion of that brand. The program will continue to work with industry and participating contractors for additional methods to promote the program and the value of QI. If warranted by such feedback, the program may explore providing additional point-of-purchase information on QI that would be made available for equipment dealer locations and building departments (where residential customers may be receptive to "neutral" public service messages).

Residential Quality Installation Development
Common outreach materials will only be available to participating contractors. Additional point-of-sale information on QI will be made available for equipment dealer locations and building departments.

Western HVAC Performance Alliance
Specific outreach efforts are currently being facilitated to the industry to keep it engaged in the Strategic Plan process (both updates to and implementation of). On a macro level, this outreach is occurring through the Western HVAC Performance Alliance and any subcommittees established by this group. On a micro level, each sub-program has specific tactics in place to engage the industry in its own particular demand reduction, energy savings and market transformation objectives.

Utilities will conduct integrated as well as program-specific marketing and outreach which will be coordinated with the statewide marketing and outreach program. The utilities may use a range of tactics such as; e-mails, flyers, on-Line marketing, direct mail, bill messaging, social media, local events, ethnic media, and other channels that suit the target audience, the message, and the resources.

iv. IOU program interactions

Residential Quality Maintenance
One of the strategies outlined in the Strategic Plan HVAC chapter is to create a better linkage between the CEC's Title 24 compliance efforts with the IOUs energy efficiency programs. Previous efforts have been managed with different yet consistent purposes. The IOU's will continue the market transformation goals of the Strategic Plan; the IOUs will support CEC and CPUC efforts to develop one common effort.

Residential Quality Installation Development
In order to support the need for increased code compliance, the program will cooperate with CEC training and enforcement activities targeted at local building departments. Such activities will also be used to promote the economic and performance benefits of QI/QM. The program will also coordinate its activities with IOU local government partnerships and third-party programs, to ensure that code compliance could become integrated into these programs.

Western HVAC Performance Alliance
One of the strategies outlined in the Strategic Plan HVAC chapter is to create a better linkage between the CEC's Title 24 compliance efforts with the IOU energy efficiency programs. Previous efforts have been managed with different, yet consistent purposes. In order to achieve the market transformation goals of the Strategic Plan, the IOUs will support CEC and CPUC attempts to develop one common effort. Interaction with other IOU programs will be coordinated through the adaptive management process described above. Within this process, a Joint HVAC/Emerging Technologies/Codes and Standards Program Management Team ("Joint Program Management Team") will be established to ensure that the individual program efforts are aligned and progressing towards the same near and long-term goals.

v. Similar IOU and POU programs

Residential Quality Maintenance

As a result of increased federal equipment efficiency standards, many utilities across the country have begun to offer service-based programs that independently offer measures such as RCA and Duct Sealing. It is expected that the HVAC QM Program could stimulate a paradigm shift through its delivery of a comprehensive suite of maintenance services that comply with or exceed ACCA industry standards (premium maintenance) designed to address the full range of efficiency measures available for residential HVAC systems.

Residential Quality Installation Development

The ENERGY STAR®® Residential QI program was introduced in early 2008. Several utilities, including Oncor, National Grid, Nstar, and Puget Sound Energy, are either offering or planning to offer this program. Both PG&E and SCE piloted the program in 2006 and 2007 respectively, and the program continued in SCE's territory from 2009 to 2012. SDG&E launched the program in 2010. Such program design, however, was found to be non cost ineffective, prompting a need to arrive at a new program design that can be cost effective and meet market transformation objectives at the same time. In order to promote the holistic approach proposed herein, the California IOUs propose to initiate a Statewide IOU/POU coordinating group — perhaps under the auspices of CEE or some other umbrella organization — to discuss and implement HVAC program best practices that advance the goals of the Strategic Plan throughout California.

Western HVAC Performance Alliance

POUs manage many different types of HVAC programs. However, none of them seeks to accomplish the aggressive market transformation goals being proposed by the IOUs. During the 2010-2012 program cycle, the IOUs will seek to increase their interactions with the POUs to better align IOU and POU HVAC programs. This involved the creation of periodic Western HVAC Performance Alliance activities with POUs to increase awareness of the Strategic Plan and how programs could and should be designed to help meet its aggressive targets.

b) Program delivery and coordination

The program will be coordinated with the following activities:

- Emerging Technologies program

Residential Quality Maintenance

The Residential HVAC QM Program is expected to interact with the ET Program to ensure the proper focus on remote and on-board diagnostic equipment. Coordination activities will be realized through the Program ongoing statewide coordination among programs and across IOUs.

Residential Quality Installation Development

N/A (this program does not seek to influence emerging technologies).

Western HVAC Performance Alliance

The program is expected to interact with the Emerging Technologies Program to ensure the proper focus on remote and on-board diagnostic equipment. Coordination of HVAC, Codes and Standards and Emerging Technologies activities will be realized through an inter-utility program management

team (consisting of the appropriate program managers from the four IOUs) that meets on a quarterly basis to discuss program integration and implementation issues.

- **Codes and Standards program**

Residential Quality Maintenance
This service-based program is not much affected or regulated by building codes, except in the possible case of a participating contractor installs 40 or more feet of new ducting as part of the Advanced Air Flow Correction measure. Program to help support proper permit compliance, the program requires the reporting of any applicable permit number in such cases or any other case that may require a permit as a result of work performed through the program. Additionally, to further support proper compliance with all permitting and licensing requirements, the program requires that both the customer and the contractor certify that all permitting and licensing requirements were followed before any program incentives would be paid.

Residential Quality Installation Development
Efforts will be coordinated to ensure that a consistent message is delivered regarding code compliance and QI. Codes and Standards will take the lead on compliance items, while the Residential Quality Installation Development will take the lead on QI efforts but will leverage similar delivery channels to increase effectiveness. Additionally, coordination activities will be realized through the Joint IOU Program Management Team.

Western HVAC Performance Alliance
The responsibility for HVAC codes and standards issues has been given to the Statewide Codes and Standards Program. This will ensure that the code-based solutions are consistent with that program's other activities. Section 6 of the Codes and Standards PIP describes the specific actions that the program will employ to address HVAC. HVAC, Codes and Standards, and Emerging Technologies activities will be coordinated through the Joint Program Management Team.

- **WE&T efforts**

Residential Quality Maintenance
Participating contractors are required to attend program-specific QM training in order to participate in the program.

Residential Quality Installation Development
Participating contractors are required to attend program-specific QI training in order to participate in the program.

Western HVAC Performance Alliance
WE&T needs for the HVAC industry are unique to the industry. Therefore, the IOUs have decided to place the responsibility of managing the effort under the Statewide IOU WE&T Program umbrella. However, the HVAC WE&T activity is coordinated with the Statewide activity to ensure that the individual efforts are complementary (e.g., HVAC training information is integrated in the WE&T web portal).

- **Program-specific marketing and outreach efforts**

Residential Quality Maintenance and Residential Quality Installation Development
Utility-branded marketing support for participating contractors is provided to advance statewide QM efforts. Such support may include exclusive promotion on IOU websites, brochures and other leave-behind materials that contractors can use to promote QM and their involvement with the program. As mentioned above, the program will continue to work with industry and participating contractors for additional methods to promote the program and the value of QM, and if warranted by such feedback, the program may explore providing additional general promotional materials such as point-of-purchase displays for equipment dealers. Additional supporting outreach will include QM and QI content on IOU websites and the statewide ME&O program, which will build general awareness and educate customers about energy management and provide a touch point for local marketing efforts related to QM and QI. (Specific IOU budget information for program-specific marketing activity is provided in Table 1).

Targeted campaigns use segmentation analyses, self-selection activities, and event-based knowledge of customer actions to provide residential customers and small businesses with integrated and program-specific solutions that are relevant to their needs. Additionally, program-specific marketing and outreach activities are necessary to drive participation and attain program goals.

Western HVAC Performance Alliance
Such support may include exclusive promotion on IOU websites, brochures, and other leave-behind materials that contractors can use to promote QI/QM and their involvement with the program. Additional general promotional materials such as point-of-sale displays for equipment dealers will also be developed. (Specific IOU budget information for this marketing activity is provided in Table 1, above.)

- **Non-energy activities of program**

Residential Quality Maintenance
The direct energy benefits of the program result from the quality maintenance of HVAC systems. Other activities will be required to support these energy savings goals, as well as the program's market transformation goals. These activities include significant efforts in program design, systems development, contractor training and consumer marketing. Additionally, some incentive measures within the program, such as the QM-standard Basic Assessment and QM-standard optional Preventive Maintenance Service Agreement, have been specifically designed to support market transformation. Finally, by implementing combustion appliance safety evaluation and testing, the program improves customer health and safety.

Residential Quality Installation Development
The direct energy benefits of the program result from the quality installation of central air conditioning systems. Other activities will be required to support these energy savings goals. These activities include significant efforts in contractor training and consumer marketing.

Western HVAC Performance Alliance
The direct energy benefits of the program result from the quality installation and maintenance of HVAC systems. Other activities will be required to support these energy savings goals. These activities include significant efforts in program design and coordination, technology evaluation and integration, contractor training and consumer marketing.

- **Non-IOU Programs**

Residential Quality Maintenance
The program interacts with the HVAC industry to continue to develop and introduce increasingly stronger QM standards that ensure systems are operating in their most efficient state.

Residential Quality Installation Development
Collaboration with local programs will synergize the program delivery.

Western HVAC Performance Alliance
The program will remain engaged with CEC, the California Air Resources Board (CARB), DOE, and other government agencies responsible for regulating various aspects of HVAC equipment, HVAC industry-driven initiatives such as NATE and the HVACR & Plumbing Instructors Workshop, and private/public partnerships such as Skills U.S.A.

- **CEC work on EPIC**

Residential Quality Maintenance
The program continues to coordinate with the ET Program to ensure the proper focus on remote and on-board diagnostic equipment program

Residential Quality Installation Development
N/A (this program does not seek to influence emerging technologies.)

Western HVAC Performance Alliance
The program will interact with the Emerging Technologies Program to ensure the proper focus on remote and on-board diagnostic equipment. Such efforts are already underway with the EPIC Program. This activity will primarily be managed under the Technology and System Diagnostics Advocacy Program (see the sub-program PIP for more details).

- **CEC work on codes and standards**

Residential Quality Maintenance
The responsibility for HVAC codes and standards issues has been given to the Statewide Codes and Standards Program. This will ensure that the code-based solutions are consistent with that program's other activities. Section 6 of the Codes and Standards PIP describes the specific actions that the program will employ to address HVAC. HVAC, Codes and Standards, and Emerging Technologies activities will be coordinated through the Joint Program Management Team.

Residential Quality Installation Development
In a similar manner as with the Codes and Standards Program, the Residential QI Program will work in cooperation with CEC training and compliance efforts targeted at local building departments. The Codes and Standards Program will take the lead on this effort.[62]

Western HVAC Performance Alliance
The responsibility for HVAC codes and standards issues has been given to the Statewide Codes and Standards Program. This will ensure that the code-based solutions are consistent with that program's other activities. Section 6 of the Codes and Standards PIP describes the specific actions that the program will employ to address HVAC. HVAC, Codes and Standards, and Emerging Technologies activities will be coordinated through the Joint Program Management Team.

- **Non-utility market initiatives**

Residential Quality Maintenance
The tenets of QM are being actively pursued by the HVAC industry itself. ACCA has taken the lead in this national effort by developing various ANSI recognized QM standards. These standards have been widely adopted throughout the industry (e.g., AHRI, ASHRAE, CEE, ENERGY STAR, Utilities). Other organizations have also developed processes designed to improve the operating efficiency of HVAC systems (e.g., NCI). The IOUs will remain engaged in these efforts and work to influence the development of increasingly higher standards.

Residential Quality Installation Development
The tenets of QI are being actively pursued through the HVAC industry. The Air Conditioning Contractors of America (ACCA) has taken the lead in this national effort by developing various ANSI recognized QI standards. These standards have been widely adopted throughout the industry (e.g., AHRI, ASHRAE, CEE, ENERGY STAR®®, utilities, etc.) The IOUs will remain engaged in these efforts and work to influence the development of increasingly higher standards.

Western HVAC Performance Alliance
The tenets of QI/QM are being actively pursued by leaders in the HVAC industry itself. ACCA has taken the lead in this national effort by developing various ANSI-recognized QI/QM standards. These standards have been widely adopted throughout the industry (e.g., AHRI, ASHRAE, CEE, ENERGY STAR®®, Utilities, etc.) Other organizations have also developed processes designed to improve the operating efficiency of HVAC systems (e.g., SMACNA, NCI). The IOUs will remain engaged in these efforts and work to influence the development of increasingly higher standards.

a) <u>Best Practices</u>
As described in Section 5.a, the IOUs had been managing RCA and Duct Sealing programs for several years and have seen that the results they delivered were uncertain. This Program has created a new standard for HVAC service-based programs through offering a more comprehensive approach that delivers reliable energy savings. This program was developed with full industry involvement to ensure that it (1) is accepted by the industry, to ensure it meets its market transformation objectives program; (2) effectively trains service

[62] For additional information about Codes and Standards HVAC activities, see Section 6 of the Codes and Standards PIP.

technicians to provide QM services; (3) provides the necessary quality control processes to ensure that the appropriate service measures are performed; (4) delivers reliable energy savings; and (5) demonstrates a clear value proposition for contractors and customers.

b) Innovation

The innovation of this program exists through the adoption of a comprehensive maintenance approach based on industry-accepted standards. Traditional utility programs have delivered individual service measures such as RCA and Duct Sealing. The delivery of these measures has generated questions about their energy savings. A more comprehensive maintenance effort through this Residential HVAC QM program delivers well-documented energy savings and sets the standard for HVAC efficiency programs. Furthermore, delivering this program through active partnership with the industry increases the likelihood of its success. Finally, innovation results through a continuous improvement process to evaluate the viability of offering additional incentives for services and other offerings that exceed established program standards (e.g., TABB, NEBB, and NCI).

c) Integrated/coordinated Demand Side Management

As with most HVAC oriented programs, the primary source of integration exists between energy efficiency and demand response activities. At a minimum, all marketing materials developed to support QM will cross promote DR to educate customers on the availability of IOU DR Programs. The required contractor training will be designed to include a discussion on DR programs and participating contractors will be required to deliver DR information as part of their customer sales efforts. The program will continue to explore closer linkages between EE and DR.

d) Integration across resource types

The program may support CARB's efforts to regulate GHGs by providing consumer information on the phase-out of existing refrigerants and the move to zero-ODP refrigerants with the customer's maintenance invoice. Such information would seek to influence the customer's adoption of newer equipment by explaining the likelihood of increased maintenance costs as existing refrigerants become less available.

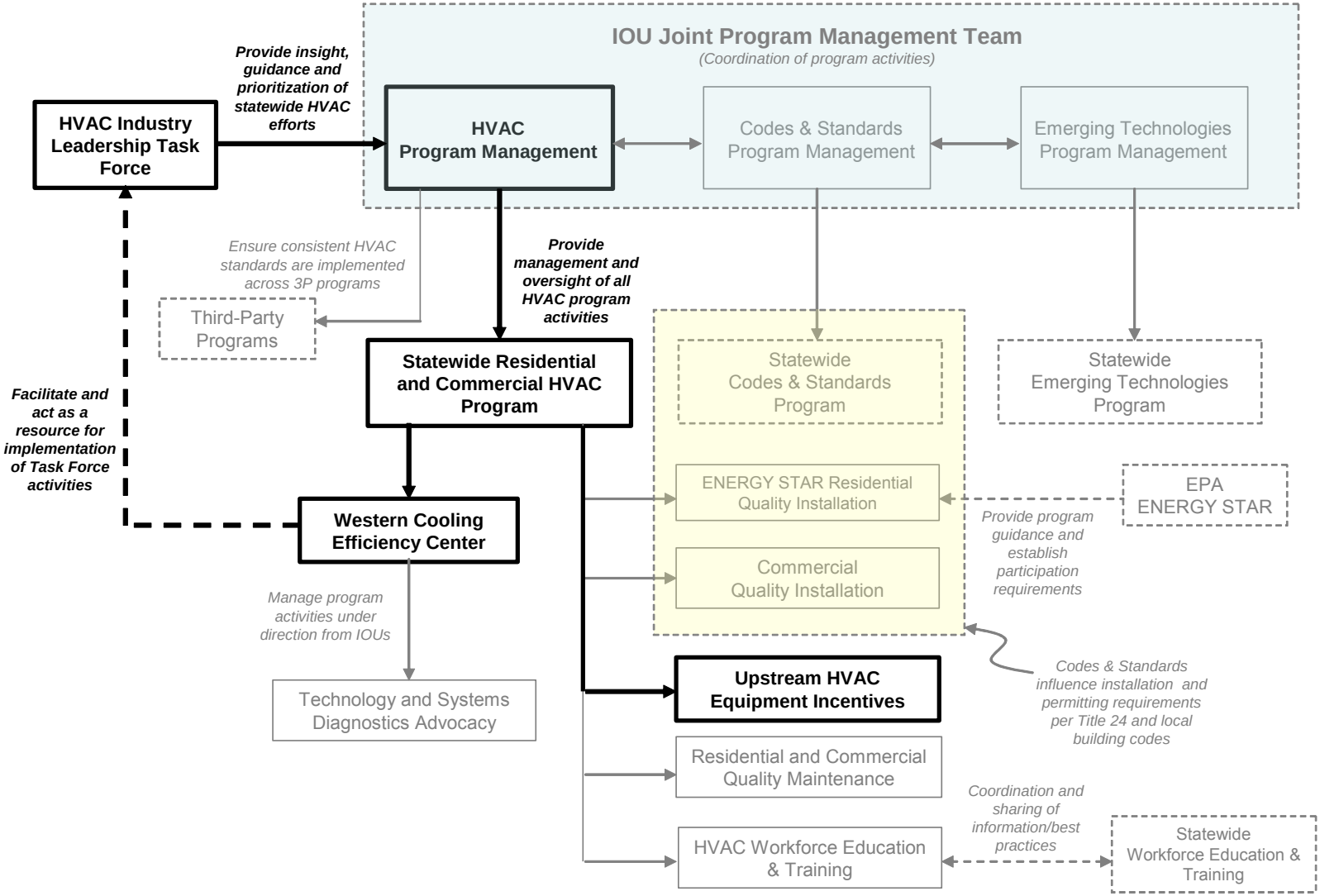
e) Pilots

As with any good product/program design, pilots may be needed to test program enhancement concepts prior to full-scale launch of any enhancement. The HVAC QM Program may utilize pilots to test the implementation of program concepts, processes and the integration of ever increasing QM standards.

f) EM&V

EM&V for the Residential HVAC program will be managed via the EM&V program. Appropriate EM&V activities and detailed plans will be conducted as coordinated by the HVAC EM&V Project Coordination Group (PCG) and overseen by the CPUC.

7) Diagram of Program



8) Program Logic Model

Note: On December 2, 2010, the Commission issued Resolution E-4385, approving Program Performance Metrics (PPMs) for Pacific Gas & Electric Company, Southern California Edison Company, Southern California Gas Company, and San Diego Gas and Electric Company for 2010-2012 statewide energy efficiency programs and subprograms. In addition, this Resolution approved updated logic models for the statewide programs.

Market Transformation Information

a) **Summary of the market transformation objectives of the program:**

The Residential HVAC Program is a Statewide program that will continue the transformation process of California's HVAC market to ensure that:

- HVAC technology, equipment, installation, and maintenance are of the highest quality;
- Quality installation and maintenance practices are easily recognized and requested by customers;
- The HVAC value chain is educated and understands their involvement with energy efficiency and peak load reduction; and
- The above changes lead to sustained profitability for HVAC trade allies as the business model for installing and maintaining heating and cooling systems changes from a commodity-based to a value-added service business.

Description of the market, including identification of the relevant market actors and the relationships among them:

The Residential HVAC market for maintenance and installation is largely a market designed to offer these services at the lowest price to meet acute needs, rather than one with product differentiation by quality that is designed to meet the long-term needs of customers in terms of thermal comfort, indoor air quality, and thermal comfort.

The primary market actors are contractors, technicians, and property owners/managers. Contractors manage the firms that provide installation and maintenance. They set the direction for their firms in terms of what services to provide, how to provide them, and how to price them. Technicians actually provide those services. Thus the successful provision of the services depends on the technicians' skill levels as well as how they respond to the constraints imposed on them by contractors. Property owners and managers constitute the demand side of the market. They request and pay for the services provided by the contractors' firms. Renters do not tend to participate in this market.

b) Market characterization and assessment of the relationships/dynamics among market actors, including identification of the key barriers and opportunities to advance demand side management technologies and strategies:

Property owners and managers often lack important information about the cost and value implications of their HVAC decisions, as well about the quality of the work that contractors' firms can perform. That is, there are not clear indicators of quality by which consumers can judge providers, and consumers do not have a well-defined set of goals by which to evaluate the quality of work after the fact. This facilitates a commoditization of HVAC services whereby firms compete based on price and not on quality, which can lead to a "race to the bottom" mentality in certain segments of the market. This lack of information is exacerbated by the highly technical nature of HVAC maintenance and installation that can confound the efforts of contractors and technicians who are attempting to do high quality work, leading to sub-optimal HVAC system performance in terms of thermal comfort, indoor air quality, and energy efficiency.

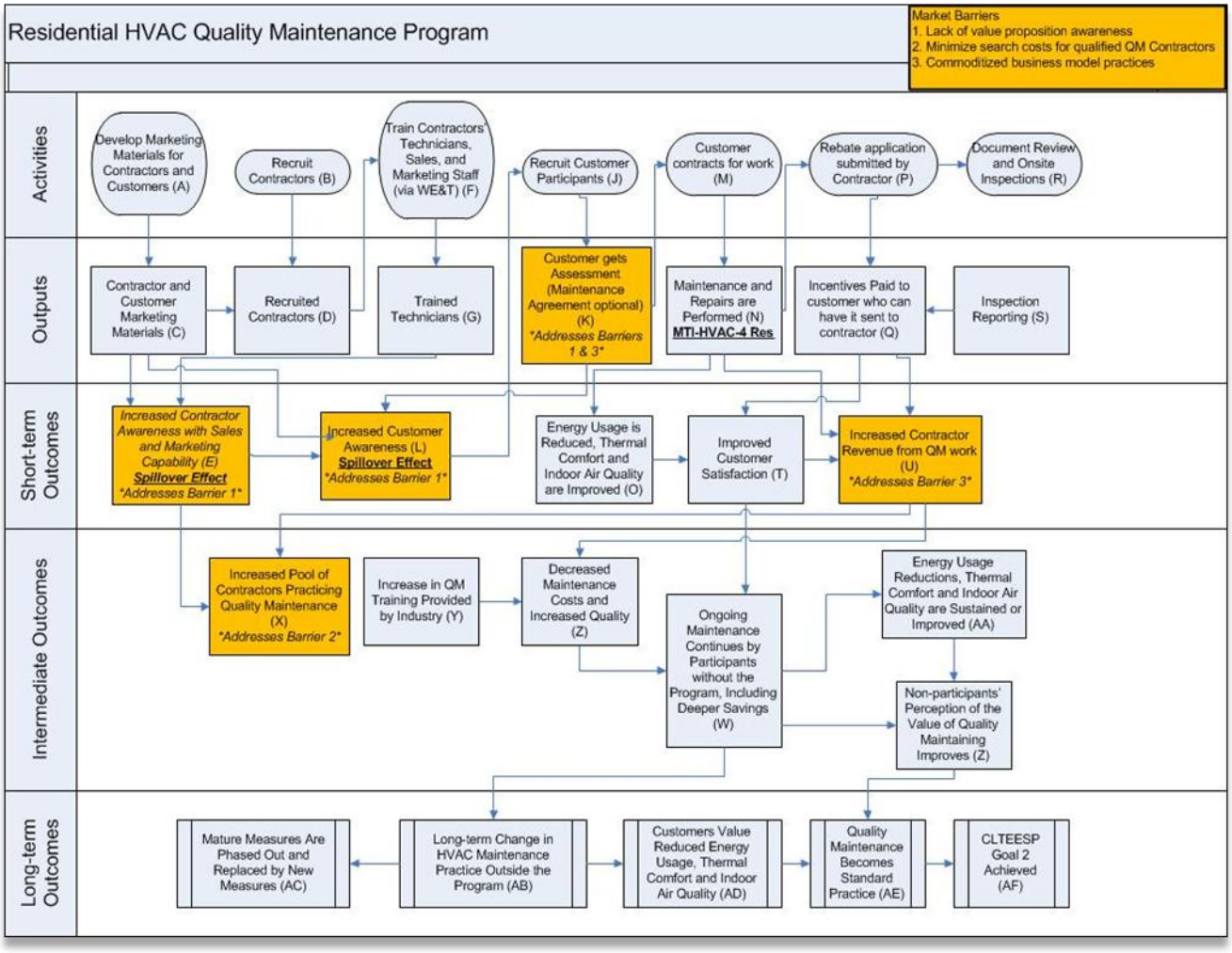
These barriers provide an important opportunity for energy efficiency programs to intervene in the market in a number of ways to facilitate high-quality work. The first is providing a definition of quality through the promotion of standards for installation and maintenance. Second is facilitating a business relationship between contractors and customers to promote high quality, and not just low price. Third, the program can build the skills of technicians who perform maintenance and installation so they are able to implement those services at a high level of quality.

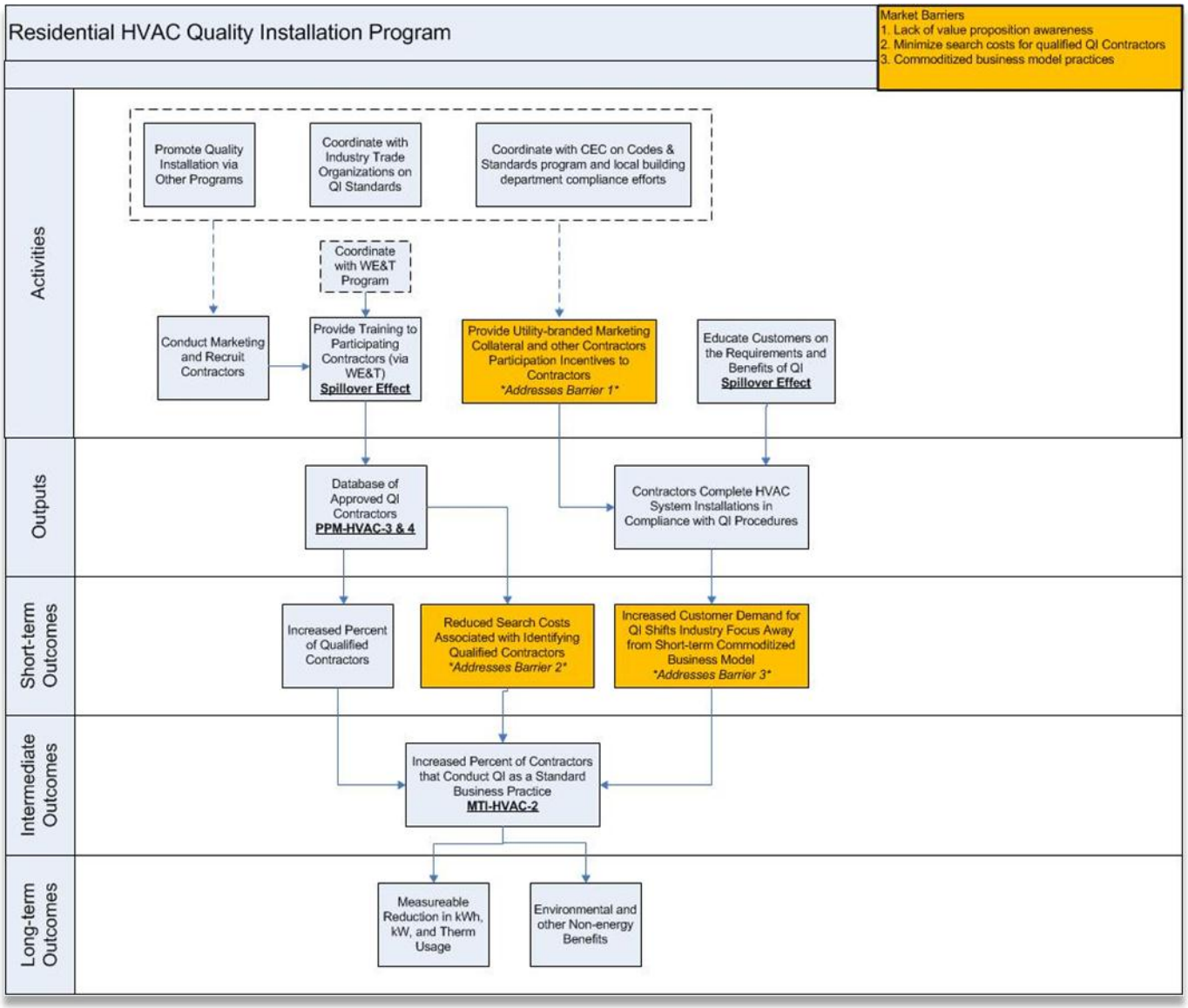
c) Description of the proposed intervention(s) and its/their intended results, including which barriers the intervention is intended to address:

By promoting industry standards for maintenance and installation, the program helps consumers know what the characteristics of a good contractor are. For maintenance, part of this standard is leads the customer and the contractor to define performance guidelines for thermal comfort, indoor air quality, and energy efficiency, helping make clear what the level of quality of work was after the fact. For installation, the standards provide clear performance characteristics through such elements as load calculations.
The programs facilitate the creation of an ongoing business relationship between the contractor and the customer. This provides an inducement to the contractors' firms to provide a high-quality service that will bring long-term value to the customer, and thus long-term value to the contractor, rather than rely on winning bids with a lowest price under the assumption that there would be no more business dealings with a customer and so high quality would bring a low return.

Finally, the programs build the skills of technicians. This enables continuing improvement in the quality of work over time. It also provides for spillover as those contractors and technicians can provide higher quality service to their customers even outside the program to reduce energy usage.

d) Program or market logic model that ensures a solid causal relationship between the proposed intervention(s) and its/their intended results:




Residential HVAC Quality Installation Program
Market Barriers
1. Lack of value proposition awareness
2. Minimize search costs for qualified QI Contractors
3. Commoditized business model practices
Activities
Promote Quality Installation via Other Programs
Coordinate with Industry Trade Organizations on QI Standards
Coordinate with CEC on Codes & Standards program and local building department compliance efforts
Coordinate with WE&T Program
Conduct Marketing and Recruit Contractors
Provide Training to Participating Contractors (via WE&T)
Spillover Effect
Provide Utility-branded Marketing Collateral and other Contractors Participation Incentives to Contractors
Addresses Barrier 1
Educate Customers on the Requirements and Benefits of QI
Spillover Effect
Outputs
Database of Approved QI Contractors
PPM-HVAC-3 & 4
Contractors Complete HVAC System Installations in Compliance with QI Procedures
Short-term Outcomes
Increased Percent of Qualified Contractors
Reduced Search Costs Associated with Identifying Qualified Contractors
Addresses Barrier 2
Increased Customer Demand for QI Shifts Industry Focus Away from Short-term Commoditized Business Model
Addresses Barrier 3
Intermediate Outcomes
Increased Percent of Contractors that Conduct QI as a Standard Business Practice
MTI-HVAC-2
Long-term Outcomes
Measureable Reduction in kWh, kW, and Therm Usage
Environmental and other Non-energy Benefits

1. **Program Name**: RNC CA Advanced Homes Program (Manufactured Housing)
   Program ID#:
   Program Type: This is a core statewide program.

2. **Projected Program Budget Table**

Table 1[63]

Program #	Main Program Name /b-Programs	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						
	Core Program #1					
	Sub-Program #1					
	Sub-Program #2					
	Sub-Program #3					
	Sub-Program #4					
	Etc.					
	TOTAL:					

3. Projected Program Gross Impacts Table[64] – by calendar year

[63] 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.

[64] For all-electric IOUs, the therm column should include interactive effects.

Table 2

Program #	Program Name / Sub-Programs	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 Programs				
	Core Program #1			
	Sub-Program #1			
	Sub-Program #2			
	Sub-Program #3			
	Sub-Program #4			
	Etc.			
	TOTAL:			

4. Program Description

a) Describe program

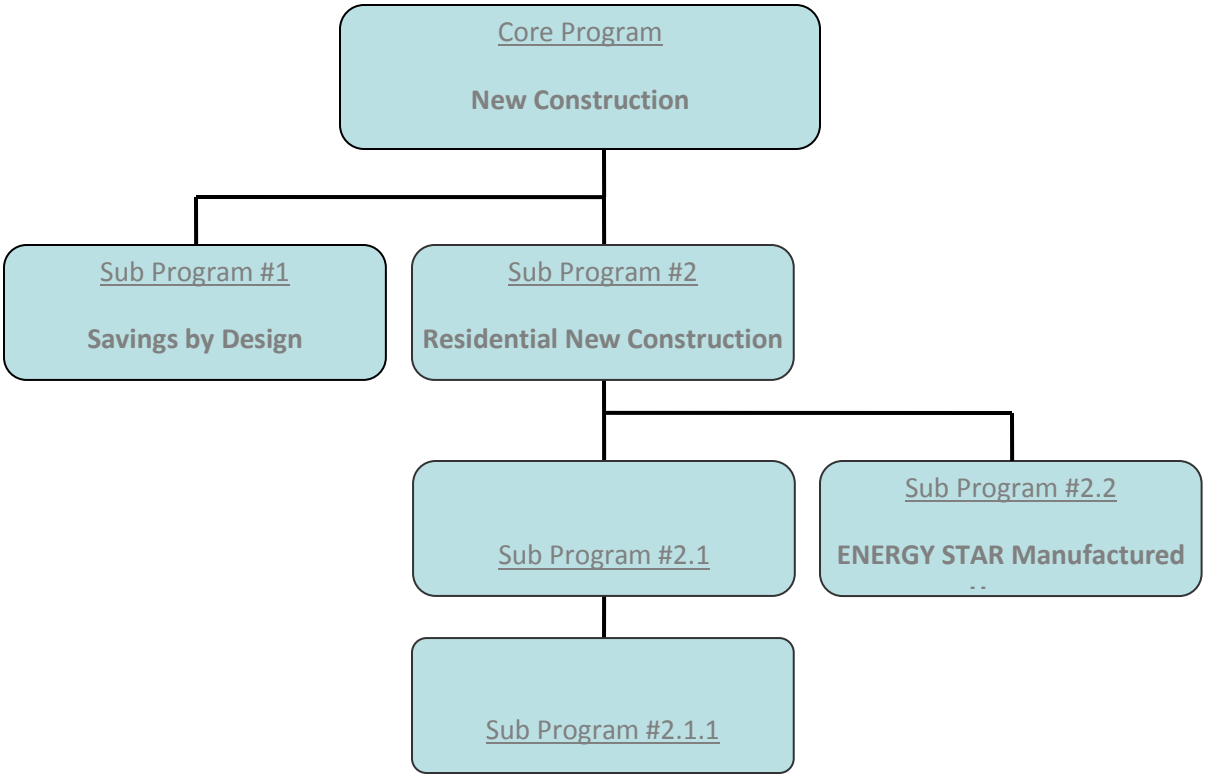
The California Advanced Homes Program (CAHP) is part of the statewide Residential New Construction (RNC) program offering. The RNC program is itself one half of the New Construction core offering. CAHP encourages single and multi-family builders of all production volumes to construct homes that exceed California's Title 24 energy efficiency standards by a minimum of 15 percent. Through this plan, multi-family and single-family projects are approached identically for program purposes except where explicitly noted. The ENERGY STAR Manufactured Homes program addresses new factory-built housing. The structure of the relevant New Construction program elements is as follows:

New Construction Program (Core)

1. Non-residential New Construction Sub-Program (Savings by Design)
2. Residential New Construction Sub-Program
    - 2.1 Single-family/Multi-family Sub-Program (California Advanced Homes)
        - 2.1.1 Zero Net Energy Homes Sub Program
    - 2.2 Manufactured Homes Sub-Program

For the convenience of the reader, two other programs relevant to New Construction are also called out:

1. Sustainable Communities Program (Name / location differs by IOU) (Third party) Covering Master-planned communities, mixed-use projects, campuses, and commercial projects pursuing advanced energy efficiency and green targets.
2. Partnership Programs (Core)
    a. Strategic Planning Sub-Program (ICLEI-ILG-LGC) Covering



The goal of energy efficient Residential New Construction (RNC) will be achieved through a combination of incentives, technical education, design assistance, and verification. CAHP supports the ambitious goals of the California Long-Term Energy Efficiency Strategic Plan (CLTEESP), and works in close coordination with the Zero Net Energy Homes sub-element. Together these elements seek to raise plug load efficiency, focus on whole-house solutions, drive occupant behavior through in-home monitoring and visual display tools, and leverage market demand for green building standards. CAHP is also coordinated with demand response programs, Emerging Technology, and the New Solar Homes Partnership. In fully aligning itself with the CEESP, as modified by Decision 09-09-047, the CAHP targets an interim goal of 50 percent of RNC to be 20% better than the 2008 Title 24 Standards by 2011, and 10% of RNC to be 40% better than the 2008 Title 24 Standards by 2011, and a final goal of 100 percent of residential new construction to be net zero by 2020.

As explored in greater detail below, CAHP will work closely together with the Zero-Net Energy Homes (ZNEH) sub-element to adopt the following strategies toward achieving CLTEESP goals. As program technologies and approaches are developed and demonstrated in ZNEH, they will be incorporated into the California Advanced Homes Program. The lead program is listed in parentheses after each strategy.

- Raise plug load efficiency, (ZNEH)
- Promote Whole House solutions, with a particular focus on zero peak homes as an interim step toward zero net homes, (CAHP)

- Encourage In-home Monitoring and visual display tools, (ZNEH)
- Encourage incorporation of Green Building Standards (ZNEH)
- Coordinate CAHP with demand response programs. (CAHP)

Specific strategies for achieving net zero homes will be reviewed in more detail below. Moreover, as outlined above, where strategies enter the market more rapidly than anticipated, they will be rolled into the core CAHP.

b) List measures

CAHP Program measures, known savings. All IOUs.[65]

- Whole House Incentive
- Dishwashers
- Aerators/Showerheads
- Clothes washers (Water-agency Partnership)[66]
- Dryers
- Interior Lighting
- Refrigerators

Pending Program Measures, savings/incentive TBD. IOU-dependent[67]

- Programmable Communicating Thermostat (deemed, delivers DR measure)
- Refrigerant Charge Adjustment (deemed, delivers Comp HVAC measure)[68]
- In-Home Display (deemed, delivers AMI measure)
    - Specifications, incentive levels, TBD
- Whole House Fan (savings TBD)
- Demand Re-circulation DHW systems (savings TBD)
    - Increase in electric pumping, decrease in heating therms, water usage
- IOU team will evaluate future emerging technologies for inclusion as they become market-ready.

[65] Savings per appliance will be consistent across all IOUs.

[66] Program intent (with regulatory approval) is to maintain IOU funding for appliances regardless of water agency contribution. Since incentive dollars are coming from different sources, there is no double-dipping. However, customer's cost will decrease in IMC calculation. Nevertheless, even in worst case if IMC goes negative, which seems unlikely, clothes washers are small budget and savings measure relative to total RNC program and will have minimal impact on TRC. Future water-energy pilot results may also provide additional cold water savings to augment therm savings.

[67] Since funding is coming from other sources (AMI, Comp HVAC, DR), incentives in this group will be deemed rather than calculated. The intent however, is to maintain consistency in deemed amount across IOUs. Other measures, such as whole-house fans and demand recirculation systems need additional research to determine savings.

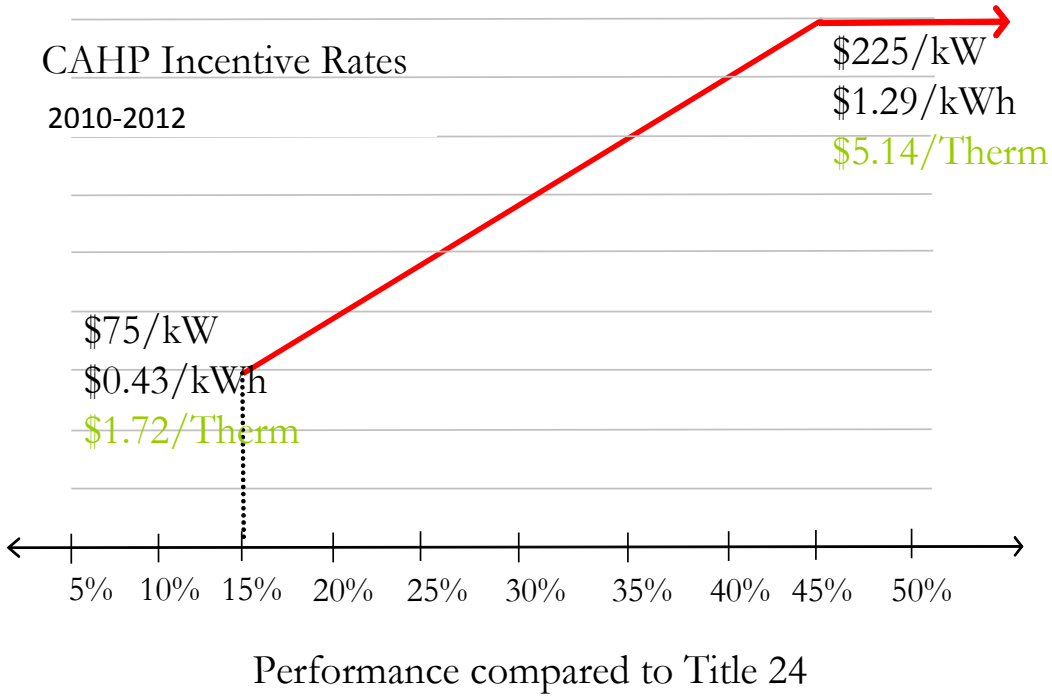
[68] T24 requires CIL or RCA in prescriptive path. If used for compliance, measure ineligible

Incentive Structure

The pay-for-performance incentive structure for the 2010 - 12 CAHP will change from the current deemed structure of three tiers (15 percent, 20 percent, and 35 percent). Under the current deemed program, builders receive the same incentive regardless of how much energy the project saves. By definition, a deemed incentive rewards the same, so overcompensates those who save the least, and under-rewards those who save the most. Since the deemed amount is an average across a wide variety of climate zones, those in the mildest zones are paid more per kWh than those in hotter areas. This effectively shortchanges those whose homes have the highest performance. It also tends to discourage participation in hotter areas (for example, climate zone 15, Palm Springs) where costs are in fact higher for achieving the same level of energy performance.

The proposed approach is closely modeled on the calculated whole building approach used by the Savings By Design program. In this approach, the incentive rate per unit of energy ($/kW, $/kWh or $/Therm) is a function of the percentage by which the project exceeds code. Therefore, a kWh at 15% better than code is worth only $0.43, but a kWh at 35% better than code is worth $1.00 to the builder. Multiply this increase in rate by the absolute increase in units of energy saved as performance margins increase, and the result is an arithmetic progression.

The 2013 - 20142calculated approach will be as follows:



The peak demand incentive rate is also variable, rising from $75/kW at 15% to $225/kW at 45%.

Moreover, because of the challenges faced by builders in adopting the new energy code requirements, the statewide IOU team has adopted the 10% rate to ease the transition to the new code for builders and to compensate for the abandonment of stand-alone prescriptive measures, discussed in more detail below. The IOUs assert that the special rate shall only be offered for a limited time, the five months from August 1, 2009 until December 31, 2010 for those projects subject to the 2008 Title 24 code. It will not be available after January 1, 2010.[69]

This approach rewards builders for achieving higher levels of energy efficiency and avoids the "clustering" problem in tiered programs. A tiered approach discourages builders from achieving incremental performance if they are unable to reach the next higher tier. In line with the elements of the strategic plan, the new approach rewards builders for undertaking whole house solutions where the entire structure can be considered as an integrated system.

Moreover, while executing a net zero home remains a financial and technical challenge, a zero peak home is well within the reach of existing technologies and is particularly appealing to a utility with summer capacity issues. To that end, CAHP has elected to focus on zero peak homes as a bridging strategy to net zero homes, which is another reason to include in its calculated approach a substantial incentive for peak kW reduction.

Analysis leading to calculated approach

While the need to move to a calculated approach was clear, setting the rates requires additional analysis. Efforts are currently under way to make appropriate software modifications to support incentive calculations over the range of efficiency improvements and climate zones. The goal of the incentives is to cover approximately 50% or more of project IMC at 20% better than 2008 Title 24, although it is difficult to set one set of rates that works perfectly for all climate zones and building designs, which will be aligned with the IOUs' overall push to drive projects to higher levels of code performance.

Confidence that incentives will move the market

The statewide team has a high degree of confidence that the revised program design is sufficient to realize substantial market movement toward the 50% penetration goal. As discussed above, incentives alone are not enough to move the market. While more dollars are always preferred by any target industry, it has been the experience of the Southern California utilities that while incentives get one to the table with decision makers, it is the design, technical, and marketing support that makes the sale.

It is the belief of the IOUs that the proposed combination of performance-based incentives, marketing kickers for targeted zero net energy, renewable, and marketing elements, sales agent training, technical support, coordinated delivery through trade allies and ongoing cultivation of

[69] Because of the anticipated delay of the launch of the full 2010 - 2012 CAHP until 1 Jan 2010, an accommodation for projects reaching 10% < 2008 T24 will be made within the existing 2006-2008 deemed approach. The amount for this and the timing is TBD by the statewide team.

builder relationships provide an integrated solution to the priority market barriers (discussed below) builders face in delivering more efficient homes.

Regarding the goal to achieve 50% penetration in the entire California market to '35% below 2005 T24' by 2011, the IOUs make the following assumptions.

- 2008 code is 15% more stringent than 2005 code
- 2011 code will be implemented in 2011.
- 2011 code will be 15% more stringent than 2008 code.
- The goal of 50% of market to 35% < T24 is essentially an area function where A (area) = penetration (50% of market) x performance (35% < T24). That is, getting 25% of the market to 70% <T24 represents an equivalent amount of savings.
- Code compliance is at 70%.
- IOUs will claim the full 30% delta between standard practice and code, in addition to the traditional above-code performance achieved by participating builders.
- IOUs use 70% compliance in 2005 as benchmark against which to demonstrate results.

In the following analysis, the 70% compliance rate is unimproved over time [c], and similarly, IOU participant penetration holds steady at 10% [g]. Both are likely to increase as a result of planned activities in CAHP or in codes and standards; in fact statewide penetration rates for CAHP are closer to 12% and are increasing. Similarly, project marginal performance [h] remains at 15%, although the entire incentive design is intended to increase marginal performance.

Code	Rate > 2005 [b]	Compliance [c]	BMrk Performance [b*c=d]	Non-Participant Penetration [e]	NP Performance [d*e=f]	Participant Penetration [g]	Participant %<T24 [h]	Partic. Performance [(h+b-c)*g +d*g =i]	Total [i+f]
Title 24 2005	100%	70%	70.0%	90%	63.0%	10%	15%	11.5%	74.5%
Title 24 2008	115%	70%	80.5%	90%	72.5%	10%	15%	14.1%	86.5%
Title 24 2011	130%	70%	91.0%	90%	81.9%	10%	15%	16.6%	98.5%
CLTEESP 50%	135%	70%	92.8%						
CLTEESP 100%	135%	70%	94.5%						

In this simplified analysis, it is assumed that non-participants are building only code-minimum homes. At 70% compliance, the CLTEESP target at 35% better than 2005 code has a benchmark performance target [d] of 92.8% of minimal T24 2005 compliance. Put another way, with 70% compliance as the baseline, improving compliance to 7.2% *worse* than 2005 code is equivalent to getting half the homes to 35% better than 2005 code. Getting 100% of new construction to 35% better is equivalent to performance of 94.5% of 2005 code, or 5.5% *worse* than a 2005 minimum.

When the 2011 code goes into effect, the IOUs will exceed the equivalent industry-wide performance of 100% of homes to 35% better than 2005 code benchmark [d] of 94.5% with a total industry-wide [i+f] performance (participant and non-participant) of 98.5% compliance with 2005 code.

Without the 2011 code change occurring in 2011, a market penetration rate of 21% is required to achieve the target industry-wide performance of 94.5% of 2005 code.
If 2011 code does not go into effect in 2011, and the utilities are not allowed to claim for purposes of reaching the 50% target using the compliance rate (whatever it may be), the goal of 50% of homes to 35% < T24 2005 would require a penetration rate of 50% to a performance level of 20% better than 2008 code, which is outside the experience and reasonable expectation of the statewide IOUs.

How program supports CEC's New Solar Homes Partnership, Tier II

CAHP supports the revised NSHP Tier II (30% < T24 2008) and the goals of the CEC in six ways.

1) The IOUs are committed to partnering with the NSHP to streamline the solar application process and to make referrals between NSHP and CAHP. Indeed, the goals of zero peak and ZENH appear impossible without the significant presence of solar.
2) The IOUs will leverage CEC NSHP material, marketing, and event support for opening events for those projects that commit to the platinum level: 100% penetration at the Tier II EE performance (30%).
3) The design of the graduated, performance-based incentive will tend to drive projects to the higher end of the performance curve, consistent with CEC goals.
4) The kicker for peak kW reduction by solar equipment, will also reward projects that pursue efficiency before adding solar, and rather than a pass-fail approach, provide the greatest reward to those who achieve the highest efficiency.
5) The threshold efficiency (15%) is consistent with the Tier I minimum, and the top end (45%) was selected to support the CEC's desire to project out three code-cycles (Tier III) into the future.
6) The IOUs will provide a $1,000 per single-family unit and $200 per multi-family unit for projects that meet the NSHP Tier II requirement AND participate in the NSHP to entice builders to reach for Tier II.

However, the fact remains that the program design does not provide anything "special" for projects that get to 30%. This is consistent with the CEC's incentive design, which provides no more PV incentive for a home that gets to 30% < T24 than to 15%. The IOUs support the goals of the NSHP and the marketing synergies of PV and EE remain one of our best strategies for moving the market. Nevertheless, the IOUs position is that if 30% < T24 is very good, 31% is better, and 32% more so.

Prescriptive Measures

For those prescriptive measures that the current performance software cannot model (e.g. appliances, lighting, etc.), the builder will be paid at the same rate as the overall home achieves on the incentive scale. As an example, a typical qualifying refrigerator saves 58 kWh, and 0.0099 kW. If the home reached performance of 35 percent, that refrigerator is worth $59.73. However, should the home only achieve the 10 percent performance level, that dishwasher is worth only $17.32.

Incentive per refrigerator

% < T24	kWh	$/kWh	kW	$/kW	Total
35%	58	$1.00	0.0099	$ 175	$ 59.73
10%	58	$0.29	0.0099	$ 50	$ 17.32

See complete list under 4 Program Description, b) List measures, above.

N.B. prescriptive measures may not be used to improve the marginal performance of the home as a whole.

The statewide team has elected to eliminate prescriptive incentives (lighting, appliances) as stand-alone measures separate from overall building performance. This is to encourage more builders to adopt a whole-building approach, and to provide the right price signals to builders to encourage higher levels of performance. However, prescriptive measures such as refrigerant charge and airflow (RCA) and programmable communicating thermostats (PCTs), and In-Home Displays (IHDs) will continue to be paid at the deemed rates of their originating program, in large part because the funding for these items is coming from another program's budget.

As part of the effort to address plug loads, ZNEH is exploring such technologies as master plug shut-off switches (smart outlets that shut off when they detect only parasitic loads). Additionally, and as part of the coordinated demand side management (DSM) approach recommended by the CLTEESP, CAHP will reward builders for installing demand response offerings such as PCTs and A/C Cycling controllers. CAHP will deliver demand response measures paid for by the demand response programs. CAHP intends to reward builders for these items based on a deemed amount rather than a performance-based incentive.

CAHP will work with their AMI metering infrastructure teams to test and develop in-home displays to both drive plug load usage down and give customers both financial and social reasons to conserve energy.[70] In addition to financial savings, the rationale is that customers will gain social status and personal satisfaction by being the most conserving, much as Prius current owners compete to outperform each other and the EPA's expected miles per gallon.

[70] To the extent possible, CAHP intends to leverage AMI funding to incent IHDs in new construction projects. However, AMI has its own schedule and its own priorities for research projects. If DR/AMI is not ready for AMI-integrated IHDs, the ZNEH program through its demonstration projects, working in concert with ET, seeks to demonstrate simpler IHD technologies perhaps without the full capabilities of an AMI-integrated device. As these technologies mature into the marketplace, the statewide IOUs will consider adopt them as additional measures into the core CAHP.

Energy savings will be modeled based on the entire package of optimized energy efficiency solutions and will influence the project at the design stage when changes to specifications are most cost-effective.

In addition to the direct energy savings incentives, builders will be eligible for Performance Bonus Incentives when they use any of the program elements listed in the following table. Each Performance Bonus is discrete and independent of the other program elements.

Program Criterion	**Percentage Added to Overall Incentive**
• ENERGY STAR® Home	10 percent (fixed)
• Green Home	Independent, third-party, transparent verification provider will be retained to verify green building elements have been installed (similar to HERS registry function). The IOUs will establish a minimum threshold for participation and set an incentive equal to 5% of the total, rising proportionally for higher levels of green performance.
• Compact Home	Percentage by which home < Climate Zone Sq Ft Average for new construction, by building type. Minimum threshold of 10%<CZ average, updated annually. There will be separate baselines for SF and MF homes.
• kW Reduction (Zero Peak Home)	The same $/kW rate for each peak kW reduction due to on-site photovoltaic system

The program will coordinate with the statewide Codes & Standards team to ensure that the impacts of any code changes are incorporated into program design and implementation and will also tie into the CLTEESP Codes and Standards Strategy and support the zero net energy goals.

The California IOUs are working with the local water districts on water-energy pilots promoting water conservation in joint territory with water agencies. If the pilot is able to demonstrate meaningful embodied energy savings from water efficiency, CAHP will consider providing additional incentives for water efficiency. These incentives and our coordinated efforts with the water agencies reflect our commitment to an integrated approach both within and between different utilities.

IOUs are working with their Low Income Energy Efficiency (LIEE) programs to coordinate energy efficient new construction with low income housing development. Coordination activities include: (review with LIEE staff)

- Builders often set-aside a certain number of units for various income classifications to meet low and moderate income housing goals. Builders must meet state-mandated housing goals in the housing elements of local city and county strategic plans[71]
- For those units designated by the builder for low-income occupants, SDG&E's LIEE program will pay the full incremental cost of installing higher efficiency equipment (high Seasonal Energy Efficiency Rating (SEER) AC systems and refrigerators). LIEE will claim the energy savings from measures they funded.
- CAHP will pay the standard calculated incentives for all other measures in low-income units (e.g. improved duct work and windows). CAHP will claim the energy savings resulting from EE measures other than high SEER A/C and refrigerators.
- CAHP would treat market-rate units using the standard calculated approach and claim all energy savings.
- This collaboration will encourage the development of more below market rate low income units by developers, will increase participate in the New Construction program based on the combined higher incentives, and will benefit low income occupants over the life of the installed equipment.

The partnerships program will assist in gathering information to ensure that the units actually are occupied by low income qualified customers. Local governments typically track this information in order to show compliance with state mandates.

Zero Net Energy Homes (ZNEH)

The ZNEH sub-program recognizes that critical to achieving zero net new construction is the integration of DSM approaches and truly integrated design. This can only be done when the entire suite of DSM offerings is at the table (electric transportation, demand response, energy efficiency, smart meters, and distributed generation). These will be maximally effective when they are part of a truly integrated design.

To that end, ZNEH will help educate the industry on how to achieve energy efficient, green homes. To avoid inter-program competition, ZNEH will claim no energy savings of its own but will add value to the builder and the homebuyer. Pending future measurement and evaluation efforts to disaggregate its effects, all ZNEH projects will be routed through CAHP for incentives and energy and demand savings claims. More about the incentives for green elements is below.

The ZNEH sub-program will consist of a series of pilot projects, typically custom homes with motivated owners willing to pick up a substantial portion of the cost of additional features. The sub-program may, at its discretion, provide direct financial incentives over and above the standard CAHP offer, but only on a case-by-case basis. The Emerging Technology program may also fund the purchase, installation, and monitoring of candidate technologies. The ZNEH sub-program will provide its support in the form of soft-cost design support to help design teams meet their energy and environmental objectives. The sub-program works closely with home builders seeking assistance in the development of sustainable design and construction, green building practices and emerging technologies.

[71] See, http://www.hcd.ca.gov/hpd/hrc/plan/he/, accessed 25 Apr 08.

The ZNEH sub-program offers educational opportunities to builders, architects and other residential construction stakeholders seeking knowledge about emerging technologies and new home design. The program encourages single and multi-family architects and builders to design and construct dwelling units that exceed California's Title 24 standards, reduce greenhouse gas emissions, and provide a healthier and less resource-intensive environment. Such non-standard design elements may include optimization for solar orientation, design for comfort without traditional HVAC, or non-vapor compression cooling systems. It also is a priority goal of the sub-program to execute candidate technologies and integrated approaches to realize zero-peak homes, even if zero-net homes (site BTUs for both therms and kWhs) prove too costly.

- Design Assistance Options:
  - General Team Education: Give presentations, review rating system options, determine big picture green building goals.
  - Energy Efficiency/Green Building Recommendations: Project specific recommendations report highlighting ways to incorporate energy efficiency, healthy materials, and other green building features into the unique parameters of the project. Specific product recommendations will not be provided.
  - Energy Modeling Support: Provide support and recommendations for Title 24 energy performance modeling to estimate actual building usage and give the project credit for energy efficiency measures that are difficult or uncommon to model.
  - Plan and Specification Review: Provide comments on the construction documents at various stages to give feedback on clarity of green building specifications.
  - Green Feature Cost Assessment: Provide cost-benefit analyses or value engineering assistance to evaluate specific green building features under consideration for inclusion in the project.

Rating System Documentation Support: Assess and identify project credit/ certification goals, identify and assign rating system tasks to members of the design team, guide the team in system process and timing, assist team in understanding and/or documenting credit achievement. This aid will enhance - but not supplant - participants' efforts to pursue project spcifications, designs, calculations, modeling and other necessary services.

The minimum threshold for acceptance in the ZNEH sub-program will be a whole building performance of at least 45% over Title 24 standards. Projects must meet LEED for Homes (Silver) equivalent and/or qualify for a minimum of 100 points from Build It Green's Green Point Rated system. Energy savings will be evaluated based on the diversity of measures and the overall energy performance. The life cycle CO2 reductions and water savings will also be tracked.

ENERGY STAR Manufactured Homes

In addition to the performance approach cited above, CAHP will retain a deemed prescriptive approach for the manufactured home market segment. Homes will have the flexibility to include the entire ENERGY STAR package for manufactured housing or to incorporate elements within those standards, such as improved windows.

The ENERGY STAR Manufactured Homes Sub-program is designed to promote the construction of new manufactured homes in SDG&E's service territory that comply with ENERGY STAR®

energy efficiency standards. The program targets manufacturers, retailers, and homebuyers of new manufactured homes. The current baseline for manufactured homes is the Housing and Urban Development (HUD) standard specification. The program encourages manufacturers to install "right-size" heating, cooling, and ventilation equipment (HVAC), install high-efficiency HVAC equipment, and evaluate homes on a whole-building basis covering windows, insulation levels, and quality installation inspections. The program works in coordination with the ZNEH sub-program.

The program is a logical fit in SDG&E's Residential New Construction portfolio of programs and will be another market segment within the California New Homes Program (CAHP), alongside single family and multi-family dwellings. Likewise, the ZNEH element will also look to leverage consumer interest in green building in promoting zero peak homes and market transformation.

The objectives of the program are:

- To capture cost effective energy savings and demand reduction opportunities
- To move the industry toward coordinated demand side management (c-DSM), including self-generation
- To move the industry toward zero-net energy as identified in the BBEES and advanced in the CLTEESP
- To move the market segment from HUD compliant to ENERGY STAR and provide savings for customers purchasing energy efficient, manufactured homes

The program encourages manufacturers to:

- Install "right-size" heating, cooling, and ventilation equipment (HVAC)
- Install high-efficiency HVAC equipment
- Evaluate homes on a whole-building basis covering windows, insulation levels, and quality installation inspections

The program will also include an education and outreach component as a means to promote awareness of energy efficient practices in the construction of ENERGY STAR manufactured homes. All segments related to the sale and construction of a manufactured home, including retailers, customers, and manufacturers will be engaged. The marketing plan will also target new retailers to inform them of the program benefits and encourage their participation in the program.

Market actors include manufacturers, retailers and homebuyers. As the primary focus is on retailers, the program is considered a midstream program. Incentives will influence retailers and customers to promote ENERGY STAR qualified manufactured homes.

Program Criterion	**Incentive**
• Prescriptive elements, e.g. windows, additional insulation	TBD, deemed rather than calculated per CZ
• ENERGY STAR Manufactured Home – Gas Heat	$300/Home (total of prescriptive elements)

Program Criterion	Incentive
• ENERGY STAR Manufactured Home – Electric Heat	$600/Home (total of prescriptive elements)
• Zero-peak Home	$75 for each peak kW reduction due to on-site photovoltaic system

Financial incentives will take the form of fixed rebates (deemed) or may be calculated on a project by project basis.

As in CAHP, SDG&E will pursue zero-peak homes as a reasonable milestone on the way to achieving the CLTEESP's zero net energy homes. The addition of a zero- peak photovoltaic kicker is part of the effort toward achieving zero-peak homes.

Marketing efforts will target manufactured home retailers as well as customers.

Desired program outcomes are:

- To achieve short and long term energy savings and demand reduction in the most cost effective manner possible.
- To increase the penetration of ENERGY STAR manufactured homes within California, and to make ENERGY STAR the customer's preferred choice.
- To transform the marketplace by promoting ENERGY STAR qualified manufactured homes the new standard choice instead of homes that meet the existing HUD standards.
- To establish a strong working relationship with manufactured home retailers.

A finished project is defined as the completion and assembly of a manufactured home. The process of purchasing and installing an ENERGY STAR qualified home can be lengthy, so projects need to be monitored closely throughout the program cycle.

The program will include a quality assurance plan with a field inspection component to verify that the manufactured home(s) meets ENERGY STAR and program's requirements. The program will also have a mechanism to verify that the assembly of the home is in accordance with these standards. This will include ducting work and installation of end-use equipment (e.g., HVAC). Many ENERGY STAR components are assembled on-site and the compliance must be verified once assembled.

Customer information will be captured once a project is complete to allow SDG&E to integrate delivery of other program offerings to these customers as well as tracking any possible double-dipping. Information on parties receiving incentives will be tracked and reported.

<u>CAHP Incentive Rationale</u>

The program's most ambitious goal for the 2010 - 12 program cycle is to have 50 percent of the residential new construction market to 20% better than the 2008 Title 24 Standards by 2011 (interim goal).

Getting half of the market to 20 percent better than code exceeds the IOUs historical expectations for RNC. There are five new program incentive elements to move the industry toward this important goal. The new elements are as follows:

- The first program element is to lower the program's incentive cost-per-home in order to bring the program's cost-effectiveness into closer alignment with the portfolio at large, to budget for incentives necessary to reach 50 percent of the market, and to do so in ways that do not threaten the overall portfolio's total resource cost. The available project funding has increased, but additional performance is required to earn it. By paying for performance, the program rewards higher performing projects, pushing more savings among participants. By combining technical expertise with marketing support, successful participants will outsell non-participants, driving deeper market penetration as non-participants get on board.
- The second program element is to identify interim features of zero net energy homes. To that end, utilities will pursue zero peak homes as a reasonable milestone on the way to net zero homes. The addition of a peak kW incentive and a zero peak photovoltaic kicker are both efforts toward zero peak.
- The third program element is the recognition that the typical homebuyer is more interested in green features than energy efficiency per se. By tying energy efficiency specifically to green measures, the IOUs will effect deeper penetration into the market. Similarly, to the extent that CAHP can influence builders to design smaller homes, there are energy savings from reduced cooling volume, reduced lighting and likely, reduced plug load.
- The fourth program element is to encourage, wherever possible, the implementation of in-home displays or other devices that give homeowners the information and price signals they need to modify their behavior consistent with the needs of the utility and the state.

Finally, times are particularly difficult in the building industry and expedited action is expected from the building community and other partners. Our intention in offering a short term reduction in entry performance from 15 percent to 10 percent above code compliance is to allow first time participants to test the waters at reduced risk.

c) List non-incentive customer services
   - Technical support to Energy Analysts and Design Teams[72]
   - Economic modeling/measure selection support to builder/construction managers
   - Marketing support to builders (sales agent training, marketing materials)
   - DSM coordination (PV, DR, AMI, ET) for builders to maximize demand-side reductions.

[72] There is a desire by the IOUs to explore a variety of forms of design assistance, including design team incentives tied to home performance, peak kW reduction, design optimization services by implementation staff, and funded/hosted charrettes/workshops for design teams.

5. Program Rationale and Expected Outcome[73]

a) Quantitative Baseline and Market Transformation Information:

Refer to the overarching PIP section

b) Market Transformation Information

Refer to the overarching PIP section

c) Program Design to Overcome Barriers:

Priority Barrier: Building Industry

Effective July 1, 2009, California's Title 24 standards will be revised and updated. Overall, residential baseline energy performance for heating, cooling, and hot water will be increased by approximately 15 percent, which implies marked increase in production costs for builders at a time when the industry and the economy at large are experiencing significant challenges.

Priority Barrier: Homebuyers

The energy used in the average home produces roughly twice the greenhouse gas emissions as the average automobile. In fact, 16 percent of U.S. greenhouse gas emissions result from the generation of energy used in houses nationwide (U.S. EPA). However, there is little consumer awareness of the impact their homes have on the environment. CAHP is working with IOU marketing efforts, statewide partners (e.g. Flex Your Power), ENERGY STAR campaigns, and builder's own messaging to increase consumer awareness of this idea. Moreover, there is scant evidence that energy efficiency drives decision- making among homebuyers, whose access to capital is more difficult in a constrained capital market.

Manufactured Housing: a potential opportunity

The current decline in the housing industry, the high cost of residential housing, and increasing customer awareness of energy efficiency all make this a good time to address this underserved market segment. The manufactured housing industry is somewhat counter-cyclical to the site-built home market. As buyers are priced out of site-built homes, manufactured housing has become an affordable alternative.

Historically, manufactured housing has been considered a lost opportunity. However, as SCE found in the 2006-08 IDEEA program, there is significant interest among manufacturers in promoting the ENERGY STAR brand. Manufacturers recognize that ENERGY STAR manufactured homes address both the high cost of purchasing a traditional new home and the high cost of energy bills. However, without IOU intervention in the market, retailers are not pushing ENERGY STAR homes and there is not enough demand for manufacturers to justify building them.

[73] To be provided for each program and sub-program in Appendix H.

Overcoming Market Failure: CAHP

In a buyer's market, builders are looking to differentiate themselves from competition. This presents a opportunity for CAHP to assist builders in overcoming cost barriers, minimizing lost opportunities, and working collaboratively to meet the state's and Investor-owned Utilities' goals for the reduction of green house gas emissions and utility source demand.

The residential new construction market without IOU intervention is a lost opportunity for long-term energy savings. However, with IOU intervention in the form of incentives and design support, the new construction market is well placed to demonstrate innovative approaches and cost-effective energy savings technologies.

Overcoming Market Failure: Manufactured Housing

The program provides an incentive to manufactured home retailers when they sell a manufactured home that meets or exceeds the current ENERGY STAR standards. These standards extend to the ducting and installation guidelines for heating/cooling equipment, water heating technologies, water saving devices, and home appliances. Customers may also receive incentives for purchasing an ENERGY STAR manufactured home. The incentives may be paid directly to the customer after successful construction, assembly, and inspection of the home site.

Manufactured homes have a higher potential for market transformation than the site-built industry, due to factory standardization, and the fact that eight manufacturers control 98%[74] of the manufactured housing market

Current Program Baseline: Manufactured Housing:

The construction of manufactured homes that meet ENERGY STAR program standards, as opposed to the less stringent HUD standards, will result in demand reduction, energy savings, and the reduction of greenhouse gas emissions.

The energy savings will result from a combination of improved envelope efficiency (thermal and air tightness), use of high efficiency equipment, and the proper sizing (downsizing) of the cooling equipment. Production of every ENERGY STAR manufactured home built in each IOU territory will be tracked and reported.

Participating ENERGY STAR qualified manufactured homes will generate energy savings and demand reduction. In addition to leveraging retailers of manufactured homes, the program will leverage the partnership program to reach out to local governments where the homes will be built.

This program is a statewide program among all the IOUs. In doing so, the joint program has the potential to provide better service to the builder at reduced cost.

[74] "Synopsis of manufacturer market share and status", Manufactured Research Association, communication, October 2007

d) Quantitative Program Targets:

Table 5 (Goals and # of Homes are specific to each IOU)

Program Name	Program Target by 2010	Program Target by 2011	Program Target by 2012
	TBD		

* To be determined by IOU's after acceptance of program

e) Advancing Strategic Plan goals and objectives:

Since its inception in 2002, CAHP has had a substantial impact on the homebuilding market. There is a significant opportunity to continue to influence builders, architects and other players in the residential new construction industry.

The New Construction Program is designed to enable the achievement of several goals and strategies identified in the CEESP. The Strategic Plan envisions a transformation of the core residential sector to ultra-high levels of energy efficiency, resulting in Zero Net Energy (ZNE) new construction standards by 2020. It spells out several goals and strategies to address energy reduction in residential new construction.

- **Goal #1**: New Construction will deliver "zero net energy" (ZNE) performance for all new single and multi family homes by 2020.
  - By 2011, 50% of New Homes will exceed 2008 Title 24 energy efficiency standards by 20%; 10% will surpass 2008 Title 24 standards by 40% (Strategy 1-1, as modified by Decision 09-09-047)

- **Goal #2:** Home buyers, owners and renovators will implement a whole house approach to energy consumption that will guide their purchase and use of existing and new homes, home equipment household appliances, and plug load amenities

- **Goal #3**: Plug load will grow at a slower rate and then decline through technological innovation spurred by market transformation and customer demand for energy efficient products.

The goal of energy efficient Residential New Construction will be achieved through a combination of incentives, technical education, design assistance, and verification. CAHP supports the ambitious goals of CEESP, and works in close coordination with the Zero Net Energy Homes sub-element. Together these elements seek to raise plug load efficiency, focus on whole-house solutions, drive occupant behavior through in-home monitoring and visual display tools, and leverage market demand for green building standards. CAHP is also coordinated with demand response programs, Emerging Technology, and the New Solar Homes Partnership. In fully aligning itself with the CEESP, as modified by Decision 09-09-047, the CAHP targets an interim goal of 50 percent of RNC to be 20% better than the 2008 Title 24 Standards by 2011, and 10% of RNC to be

40% better than the 2008 Title 24 Standards by 2011, and a final goal of 100 percent of residential new construction to be net zero by 2020.

The ZNEH Sub Program is designed primarily with the focus of accelerating the achievement of the ZNE goals envisioned by the Strategic Plan. The purpose of ZNEH Case Studies is to examine a wide array of energy saving technologies, accelerate the market acceptance of new and emerging technologies, explore new solutions, and encourage distinctive approaches in demonstration projects. Each being distinctive, the case studies will be positioned to highlight the underutilized potential of sustainability in residential new construction, in a range of market segments and climate zones. The utilities will seek to integrate R&D ideas from Emerging Technologies, PIER, LBNL and other agencies to further assist the projects in advancing sustainability and achieving very high levels of energy efficiency.

The minimum threshold for acceptance in the ZNEH Case Study program will be a whole building performance of at least 45% over Title 24 standards. Projects must meet LEED for Homes (Silver) equivalent and/or qualify for a minimum of 100 points from Build It Green's Green Point Rated system. Financial incentives and marketing support offered for the case study projects will be significantly higher than those offered under CAHP. By providing strong encouragement for builders to move up on the energy efficiency scale with financial and non-financial incentives, the ZNEH Sub Program is uniquely positioned to support the CEESP goal of Zero Net Energy by 2020.

CAHP will work closely with builders who seek assistance in the development of sustainable design and construction, green building practices and emerging technologies through the Zero Net Energy Homes Program (ZNEH). The ZNEH Program is the place to demonstrate innovative technologies and to help drive the market for energy efficiency through the adoption and marketing of green standards. Given consumer's interest in green, and the market's failure to drive energy efficiency sales, marketing the green features (one of which is EE) is the best way to increase consumer demand for more efficient homes. Moreover, the 15% threshold for participation aligns well with existing green building certification programs such as ConSol's California Green Builder and Build it Green's GreenPont Rated Programs.

7) Program Implementation:

a. <u>Statewide IOU Coordination</u>:
Given the success of the collaborative process that led to the production of this PIP, the statewide RNC team plans to meet on at least a quarterly basis going forward, in order to review progress toward the goals and make any corrections need to achieve them.

i. Program name: The single-family and multi-family program will be implemented under the common name of California Advanced Home Program. The zero peak pilots will be referred to as Zero Net Energy Homes, although the details differ somewhat by utility. Factory-built housing will be referred to as ENERGY STAR Manufactured Homes.

ii. Program delivery mechanisms: Sempra and PG&E deliver the program primarily through in-house Account Executives with some outside technical support for specific

analysis or niche markets (cf. PG&E, multi-family). SDG&E leverages third-party implementers and in-house account executives.

Incentive levels: The IOUs have agreed upon a common incentive methodology that will be implemented throughout the service territories.

iii. Marketing and outreach plans, e.g. research, target audience, collateral, delivery mechanisms.

CAHP offers financial incentives, training opportunities, technical support, and marketing resources to single-family and multi-family residential builders who construct homes that exceed California's energy efficiency standards for new construction. All types of residential builders are welcome to participate.[75] For the multi-family segment of the program, qualifying homes include condominiums, town homes, apartment buildings, and mixed-use projects.

There will be closer coordination of marketing efforts to synergize wherever possible. While each utility would like to leverage on their strengths and existing relationships within their service territories, certain marketing elements can be launched on a common platform. A common web site will be created to provide builder information that will be commonly disseminated. Training and education is an area where pooling of resources is possible to reduce cost and increase participation.

The IOUs plan to be actively engaged in the development and implementation of joint marketing, education and training efforts as described in detail in the common section of this PIP.

In 2013 - 2014, the program will expand its builder/contractor education and training certification courses to increase overall awareness and understanding of the California Advanced Home Program and service offerings. We will continue to strengthen our delivery channels of information by providing relevant information and support materials, reaching target audiences in key decision-making phases. The IOUs' innovative communication tools will include: trade advertising, account representative meetings/presentations, targeted customer mailings, shows/event sponsorships, trade organization affiliations, webcasts, email blast, builder award recognition, customer success stories and public relations campaigns. All materials and communications will also be made available in electronic file formats so information can be forwarded to customers immediately via the internet.

Additionally, CAHP will leverage its stellar relationships in partnering with trade organizations and other groups actively promoting the benefits of green, sustainable building practices. Such organizations include: CEC, FYP, NAHB, CBIA, BIASC, AIA, USGBC, ULI, LABC, California Manufactured Housing Institute, Build It Green, IES, AEE, IHACHI, PHCC and others. Through an innovative, coordinated approach, we will

[75] As discussed above, manufactured housing is not subject to Title 24 and uses the national HUD baseline.

maximize outreach opportunities which keep energy efficiency and CAHP's program benefits top-of-mind and maximize program participation.

Marketing materials and other collaterals will be enhanced to communicate more effectively with savvy builders. CAHP marketing efforts will be enhanced by leveraging IOU market studies and builder focus groups identifying consumers' decision triggers and the effect of GHG labeling on purchase decisions. The IOUs will pursue additional sources of research to determine the most cost-effective ways builders can meet program requirements; the results will be incorporated into marketing materials and /or communicated to builders as part of the design assistance recommendations. Participant recognition (plaques, feature presentations, etc.) has proven to be an effective tool in encouraging builder involvement, and will continue to remain as part of the overall marketing tools.

Given consumers' interest in going green and the market's deficiency in driving energy efficiency sales, marketing the green features (one of which is EE) is the best way to increase consumer demand for more efficient homes. To that end, CAHP will help educate the industry on how to achieve energy efficient, green homes.

To increase participation in programs and the general understanding of sustainability, greater emphasis will be placed on education and outreach.

The precipitous decline in the building industry offers a great opportunity to improve education and training. Through their Education & Training programs offered at ERC, CTAC, and PEC, the statewide new construction team will work to expand the course offerings, web cast seminars, and cost-benefit effectiveness training classes, thermal by-pass checklists compliance training, cost comparison of alternative measures, etc. In order to meet or exceed increased energy savings goals in an extremely difficult residential construction market, the IOUs will utilize a broad range of marketing tactics and communications tools working in concert to expand program awareness and participation.

The IOUs will diligently explore other means of encouraging builder participation in the program.

- Developing a list of resources and contractors that could be used by builders
- Information on comparative costs and energy savings of alternative measures
- Exploring financing arrangements (green mortgages, energy efficient mortgages, etc.), in consultation with the other IOUs and financial institutions
- Expedited permitting for high efficiency buildings
- Working with Municipalities to develop educational channels for codes and standards.

iv. IOU program interactions with CEC, ARB, Air Quality Management Districts, local government programs, other government programs as applicable

The plan addresses above, in the Incentive Rationale section, the ways CAHP is responding to current code changes and how it anticipates leading code toward requiring demand performance, in-home displays, on-site generation, square footage reductions, and green elements.

CAHP is particularly interested in promoting integrated thermal hot water system designs to displace therm demand with on-site renewable sources. In addition to cold water savings from embedded energy and the energy to heat water, longer term there may be GHG reductions that accrue either to the builder, the homeowner, or the utility associated with each demand side reduction as a result of AB 32 and pending national CO_2 legislation.

CAHP prides itself on its established close relationships and memberships with other groups involved with the building industry. These relationships make it possible to provide comprehensive services to our customers. Thus, CAHP will continue to seek out and coordinate synergies with, but not limited to, the following groups:

- California Energy Commission (CEC)
- New Solar Homes Partnership (NSHP)
- Environmental Protection Agency (EPA)
- California IOUs
- California Building Industry Association (CBIA)
- Green Building Consultants (i.e. Build it Green, California Green Builder, Global Green)
- National Association of Homebuilders (NAHB)
- Rater Organizations (e.g. ResNet, CalCerts, CHEERS)

The California Building Industry Association (CBIA) and the California Energy Commission (CEC) continue to seek out partnerships and opportunities with the utilities to help educate builders and other industry participants in order to promote energy efficiency in new construction.

Since 2002, CAHP has partnered with the EPA in promoting ENERGY STAR New Homes and has won ENERGY STAR Achievement awards for the last five consecutive years.

CAHP will continue its commitment to the Environmental Protection Agency's (EPA) ENERGY STAR program and will strive to support, partner and contribute to the success of the ENERGY STAR Homes label and branding. Numerous surveys and studies continue to show the ENERGY STAR label represents greater value to consumers and the environmental stewardship it represents.

The program will continue to offer comprehensive training courses and educational seminars relevant to building energy efficiency and green measures into new construction projects including Title 24 code training and ENERGY STAR requirements.

In response to builder requests, CAHP will offer a new training workshop for 2010 - 12 designed for builders' sales agents. Sales agents have direct contact with the homebuyer and have the greatest impact on selling homes. In order to help promote

ENERGY STAR developments, CAHP will teach sales agents about energy efficiency. Topics will include what qualifies as an ENERGY STAR home and what is 'green'.

Other activities will include attendance at building industry trade conferences/outreach events and any necessary contractor/builder field visits. The target audience consists of builders, developers, energy consultants, architects, and other industry professionals.

Finally, SDG&E is pursuing partnership efforts with local government entities who are looking to display leadership in the carbon arena by expediting plan check, waiving permit fees, or allowing builders to pay impact fees on the back end (instead of up-front) in exchange for higher levels of home performance documented by our program.

v. Similar IOU and POU programs

The statewide team will reach out to leading POU programs, such as those at SMUD to learn from their experience how best to deliver energy efficient homes.

In addition, the IOUs will work closely with the existing home remodeling programs (Home Performance with Energy Star and the Comprehensive Mobile Home Program) to maintain a two-way communication of best practices and lessons learned between the new and existing sectors.

b. Program delivery and coordination:

i. Emerging Technologies program

Emerging technologies will chiefly be handled within the ZNEH program. The IOUs are looking to partner with our ET and PIER-funded Testing Facilities to pilot zero-net energy approaches. However, the proposed incentive approach allows the IOUs the flexibility to include both deemed and calculated energy savings from new technologies as they become market ready.

The utilities will seek to integrate R&D ideas from Emerging Technologies, PIER, LBNL and other avenues to further assist the projects to advance sustainability and achieve very high levels of energy efficiency.

ii. Codes and Standards program

See C&S PIP for more information. C&S is looking to draft pre-approved “drop-in” legislation that can be used by local municipalities looking to create reach codes. Such activities would all be eligible for utility incentives since IOUs are playing such a critical role in drafting the language.

iii. WE&T efforts

The RNC team is seeking ongoing support from the three energy and training centers for classes relevant to the building industry and training the next generation of trade allies, builders, contractors, and the like.

iv. Program-specific marketing and outreach efforts
TBD

v. Non-energy activities of program

Where applicable, the ZNEH sub-program will seek to identify new types of water savings technologies opportunities; CAHP will leverage local water agency incentives in the core CAHP to save cold and hot water.

vi. Non-IOU Programs
See item v. above on water-agency partnering efforts. There may also be opportunities to partner with local AQMDs and County Integrated Waste Management Boards to encourage material recycling in ZENH and green programs.

vi. CEC work on EPIC
See note on Emerging Technology above.

vii. CEC work on codes and standards
The IOUs will continue to support code development work with the CEC and to test candidate technologies in the new construction programs.

viii. Non-utility market initiatives
The homebuilding industry is facing some of the worst times in its history.[76] In fact, new residential single-family housing permits have declined by 37.1 percent relative from 2006 and multi-family permits have declined by 21.2 percent.[77] As a result, builders are building fewer homes and releasing them more slowly to the market. The significant costs associated with carrying inventory coupled with declining prices of houses has created additional resistance in a building industry already averse to additional construction costs. In addition, the industry is consolidating operations and eliminating staff to reduce overhead costs and avoid bankruptcy.

The industry faces the burden of stringent California Title 24 building code standards. The CEC will institute a new code in 2009 and 2011, and on a three year schedule thereafter. Each code is approximately 15% more stringent than the last, increasing costs and requiring additional efforts on the part of the builder. In California, homes built to current Title 24 standards are 35 percent more energy-efficient[78] than homes

[76]Alan N. Nevin, CBIA Chief Economist and Principal, Market Pointe Realty Advisors, California Builder Magazine, January/February 2008
[77] California Industry Research Board (CIRB) Report, January 24, 2008

built to the federal government's standards. In addition, reducing greenhouse gas emissions will become mandatory, due to the adoption of AB 32 (Global Warming Solutions Act). Builders confirm that growing consumer awareness of "green" concerns will lead to greater demand for these advanced homes and builders will adapt to meet these demands at the least possible cost.

Population growth drives the economy and "California's population is expected to keep growing by 500,000 a year for the next three decades. That means California needs between 220,000 and 240,000 new homes and apartments every year to keep pace with the state's population growth."[79] The year 2007 saw only 112,000 new units permitted. The 2008 forecast is for only 87,000.

As alluded to above, buyers are increasingly asking for green and energy efficiency and would pay more (up to $11,000) for such features.[80] For the first time, a majority of respondents in the National Association of Home Builders' survey are asking for efficiency first, likely in response to rising energy prices economy-wide. Paradoxically, a majority of the same respondents also requested higher ceilings, more square footage, and were willing to trade a larger home for a longer commute, reflecting a soft commitment to green.

Differences in Program Implementation

This section highlights the major areas where individual IOUs implementation of the program will differ from that of the others. While the incentive structure and other elements of the program will remain synchronized with the statewide nature of the program, each IOUs will leverage its unique strengths and structural differences to enhance the effectiveness of execution. This section highlights some of those differences.

The program will be implemented by direct contact with the market actors: builders, architects, civil and mechanical engineers, energy analysts, home energy rating system (HERS) providers, HERS raters and other participants. Through design assistance and coordination with the builders and their consultants and contractors, projects will be evaluated for optimal approaches to increase energy savings and demonstrate green building concepts.

The program will target the residential design and construction teams, architects, energy analysts, HERS raters, trade contractors, and builders. The target segment is low-rise and high-rise residential new construction with participation being open to all residential new construction including custom homes, single-family production housing, condominiums, town homes and rental apartments

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[78] Ray Becker, Chairman, CBIA, Southern California Builder Magazine Vol. 25. CAHP's internal research has shown typical 2005 T24 performance is 20% above IECC 2006.
[79] Wes Keusder, Former Chairman, CBIA, Southern California Builder Magazine Vol. 24
[80] Jan Dimeo, Builder. http://www.builderonline.com/business/surveys-reveal-home-buyer-wishes-for-energy-efficiency-and-beyond.aspx. Accessed 14 Mar 08

Builders may qualify to participate under one of the two subprogram categories: California Advanced Homes Program (CAHP) or the Zero Net Energy Home (ZNEH). As explained in detail in the common section of this PIP, through financial incentives, design assistance, education and training, the IOUs will aggressively support high performance single family and multifamily building designs that exceed Title 24 standards in an overall performance design of 15% or greater. Energy savings and incentives will be based upon a sliding scale from 15% to 45% reduction in energy usage from Title 24 budget. Program focus will be on increasing the participation to a 35% threshold. The sliding scale incentive structure was discussed in detail under the common section of this PIP.

The Sempra Energy Utilities and PG&E deliver the California Advanced Home Program in their service territories through a team of experienced account executives. Project qualification will be conducted through internal project review by program management staff, or if necessary, using external consultants.

SDG&E Residential New Construction program management teams have extensive experience in designing and implementing successful offerings to the industry as demonstrated by the 2002-2005 *California ENERGY STAR® New Homes* programs and the 2006-2008 *Advanced Home* program. Recognized as an outstanding energy efficiency resource, this team has the ability to successfully work closely with other local, regional, statewide and national stakeholders to ensure the widest opportunities for potential program participants.

SDG&E will deliver the ZNEH sub program through the same account executive and program management staff as the CAHP. Through case studies and demonstration projects, the utilities will examine a wide array of energy saving technologies, accelerate the market acceptance of new and emerging technologies, explore new solutions, and encourage distinctive approaches in demonstration projects. Participating builders will be encouraged to integrate environmentalism, economics, and social equity, while integrating landscape into the built environment for human interaction. Each being distinctive, these case studies will be positioned to highlight the underutilized potential of sustainability in residential new construction. The utilities will seek to integrate R&D ideas from Emerging Technologies, PIER, LBNL and other avenues to further assist the projects to advance sustainability and achieve very high levels of energy efficiency.

Design assistance for interested builders will be offered through various mechanisms. Design Team Charrettes that will include the architect, energy analyst, civil and mechanical engineers, HVAC contractors and the builder will allow a review of the product and recommendations that will increase the sustainability and energy efficiency of the product. Education and training will be offered through utility training programs (offered frequently at the ERC) that have been extremely successful in the past. SDG&E also intends to offer a structured Design Team Incentive to encourage architects and design engineers to enhance building performance through innovative approaches. Details of the Design Team Incentive are currently under development, and may range from $250 to $2000 depending on the number of residences in a project.

In recognition of the increased societal movement towards sustainability, and in line with the other IOUs, SDG&E will offer additional financial incentives beyond direct Therm incentives to projects that achieve a green building certification, perform building commissioning during design and

construction, and establish and follow a building measurement and verification plan after occupancy. The USGBC *LEED* program, Build It Green's *GreenPoint Rated* program, and *California Green Builder* represent just a few of the rating systems that will be considered for the incentive. Many credits are available in *LEED-H* for energy efficiency, especially the incorporation of renewable energy. Renewable energy is a significant component to the state's goals of achieving zero net energy in the new construction market by 2020. Building commissioning incentives ensure that the as-designed building becomes the as-built building.

The minimum threshold for acceptance in the ZNEH sub program will be a whole building performance of at least 45% over Title 24 standards. Projects must meet LEED for Homes (Silver) equivalent and/or qualify for a minimum of 100 points from Build It Green's Green Point Rated system. Energy savings will be evaluated based on the diversity of measures and the overall energy performance. The life cycle CO2 reductions and water savings will be tracked. A broad based support, including outside expertise, education, resources, public recognition, marketing support, design and financial assistance will be offered to qualified builders. The program will explore and encourage the incorporation of innovative measures, such as: Passive Solar, Active Solar (solar water heating), Photovoltaics, Sustainable Urbanism, Smart Growth, Innovative Environmentally Sensitive Building Design, Ecological Design, Innovative Thermal Comfort Solutions, Day Lighting, Carbon Sequestration, Water Recovery and Zero Peak Design. Financial incentives and marketing support offered for the Case Study projects will be significantly higher than those offered under CAHP. However, due to the "show case quality requirements", the number of projects enlisted for case studies is likely to be limited to no more than ten per year per utility.

In addition, the following two new construction programs will be supported through Third Party participation (see separate PIP on Third Party programs):

California Sustainability Alliance. Managed by Navigant Consulting, Inc.
Innovative cross-cutting market transformation, marketing and outreach programs that targets comprehensive sustainability. The program includes energy efficiency, water efficiency, renewable energy, waste management, transportation management, smart growth/land use best practices, and climate action delivered in a single program under the broad umbrella of sustainability. The program will seek to inform the utility as to potential opportunities for future program design that may be available.

HERS Rater Training Advancement Program. Managed by Conservation Services Group.
This program targets training to certified new construction Home Energy Rating System (HERS) raters and Energy Analysts to improve the consistency of ratings and expand the reach of existing programs. Program team members CalCERTS and CHEERS have direct contact with raters, allowing for reduced marketing costs and improved penetration. Conservation Services Group will utilize classroom training and an on-line learning management system (LMS), which includes an assessment test and customizable learning units.

c. Best practices

The residential new construction team will gather information and past experience in successful low energy and zero net energy existing projects to evaluate best practices. This information will be used to develop pilot projects that will demonstrate low energy homes and include home performance monitoring.

Several recommendations were made in the Cadmus Report that evaluated the communication plans, program elements, and services offered by IOUs residential new construction programs. These recommendations have been carefully studied and incorporated into the CAHP program design.

Program Components:

- Institute more continuity in program offerings: The program name, incentive structure and several elements of execution will be developed on a statewide basis, ensuring consistency across all the utilities and continuation into the future.
- Leverage ENERGY STAR AND LEED: The CAHP incentive mechanism incorporates a Performance Bonus element for ENERGY STAR.
    - SDG&E has made LEED certification as one of the requirements for participation in the ZNEH sub program.
- Continue to offer prescriptive options: The CAHP incentive mechanism is based on a sliding scale; however, the Performance Bonus element emphasizes prescriptive elements that are not included in the Title 24 base.
- Enhance demonstration / case study component: The case study component is an integral and crucial element of the ZNEH sub program. The IOUs will strive to show case these homes as reaching far beyond the minimum energy efficiency requirements and serving as the "model homes of the future".

Processes:

- Improve marketing materials and improve participant recognition: As explained in the Marketing, Education and Outreach section of this PIP, marketing materials and other collaterals will continue to be enhanced to communicate more effectively with savvy builders. Participant recognition (plaques, feature presentations, etc.) has proven to be an effective tool in encouraging builder involvement, and will continue to remain as part of the overall marketing tools.
    - In 2008, SDG&E redesigned marketing collaterals to be more informative and professional in appearance.
- Enhance AE's role in recruiting and marketing: Working closely with the project management teams, they would enhance their role in identifying and developing the ZNEH case study homes. Joint presentations with home builders will improve builder understanding of the purpose and expectations for the case studies.
    - The SDG&E teams now consist of seasoned account executives and are effective.

Program Services: Incentives

- In accord with Cadmus recommendations, the CAHP incentives have been fully revamped to be more meaningful and effective for the builders as well as the utilities. Additional incentives under consideration include a Design Team Incentive, more flexible incentives for ZNEH case study projects, and other financial support enumerated earlier are all designed to enhance builder participation in the program and deliberate movement towards the upper end of the energy efficiency scale.

Program Services: Training

- Taking advantage of the slow down in the industry, the utilities intend to ramp up the training for builders and other industry participants. Training is an area where significant synergies can be extracted and the IOUs will participate in developing and implementing common training modules and web based training tools. Training will focus particularly on cost/benefit evaluation of energy efficiency improvements and thermal bypass checklist compliance.

Program Services: Information, Communication and resources

- A web based incentive calculation tool is currently being evaluated by the IOUs. This tool is intended to assist builders in comparing costs and energy savings of alternative measures and arriving at the most optimal approach for the builder.
- A suggestion was made to create a hotline for builder questions. Since the IOUs deliver CAHP through a team of account executives/field staff who serve as the focal points of contact for the builders, the utilities do not feel it is necessary to provide hot lines for builders to reach. If this becomes a necessity, the utilities will reevaluate the need and provide communication points as appropriate.
- Currently, the technical staff provides preliminary evaluation, engineering review and recommendations for builders to move up on the efficiency scale. It is expected that builders will utilize the services of qualified Energy Analysts and designers in arriving at the final set of measures that should be included. The Design Team Incentive under consideration by the utilities will enable the builders in utilizing the services of qualified engineers that will complement the engineering staff review.
- The IOUs plan to implement an enhanced set of communication tools that will serve to educate builders and enhance participation. As explained earlier, our communication tools will include: trade advertising, account representative meetings/presentations, targeted customer mailings, shows/event sponsorships, trade organization affiliations, webcasts, email blast, builder award recognition, customer success stories and public relations campaigns; all materials and communications will be made available in electronic file formats.

- Innovation:

  The sliding scale incentive calculations, ZNEH Case Study projects, and the IOU joint marketing efforts represent significant departure from past practices and reflect innovative approaches to new construction energy efficiency.

The incentive design is based on a whole building performance. It appropriately rewards higher levels of building performance and is likely to motivate builders to move towards higher efficiency buildings. This approach offers the builder adequate flexibility to choose the optimal combination of design features. It also enables the utilities to work together and support new construction projects with fuel neutrality.

By focusing on efficiencies beyond Title 24 + 35%, and encouraging Zero Net Energy homes for showcasing, the IOUs hope to generate sufficient enthusiasm in the market place for very high efficiency homes. Wherever possible, the California utilities will continue to extract synergies in marketing and program design by developing a truly statewide program with common features and coordinated efforts.

- Integrated / coordinated Demand Side Management:

  The ZNEH case studies offer a great opportunity for savvy builders to demonstrate their commitment towards a truly integrated approach to DSM options. With design assistance and incentives from the utility, custom home builders are uniquely positioned to leverage the various tools available at their disposal. The program management teams will educate and strongly advocate these builders to serve as model designers and be recognized and rewarded in the builder community. Case study homes offer an excellent opportunity for builders to install not just energy saving measures, but also renewable energy, in-home display, solar roofs, innovative water saving technologies and other state-of-the art appliances to demonstrate how sustainable design could be achieved.

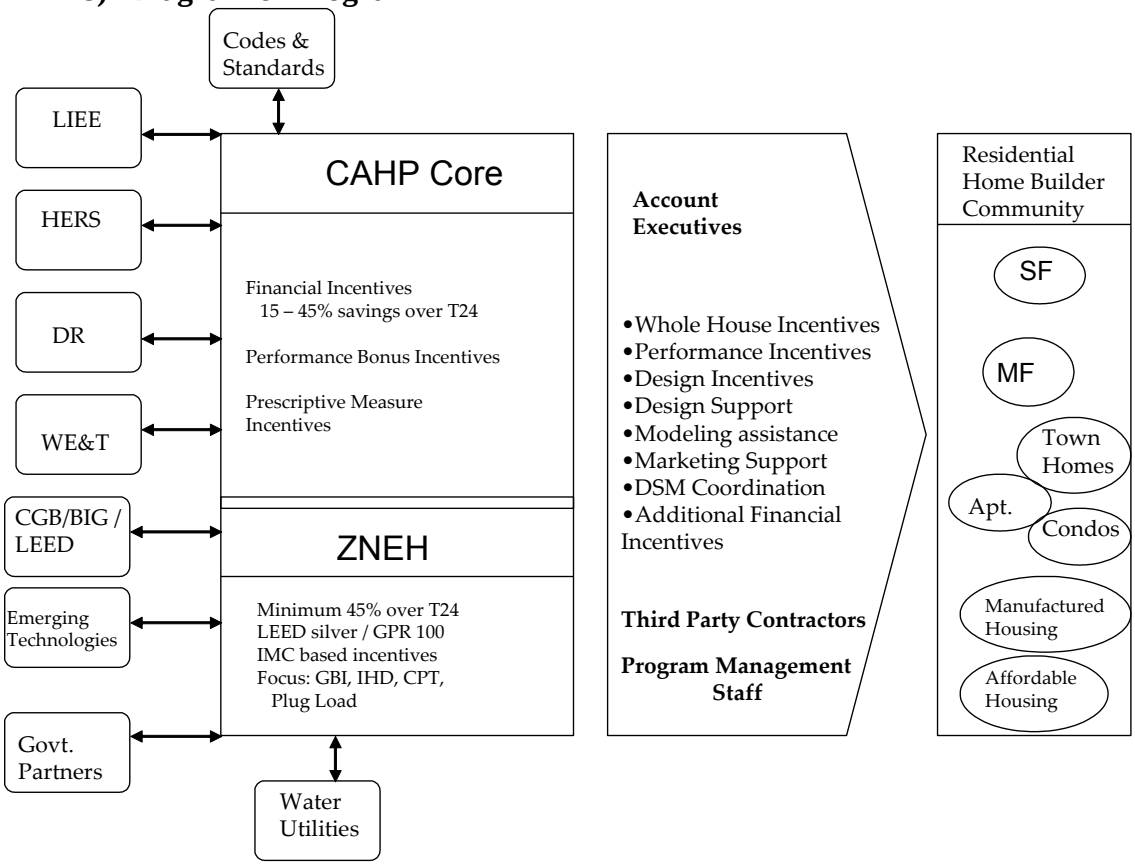
f) Integration across resource types (energy, water, air quality, etc):
As discussed above, the program is looking to partner with relevant stakeholders to identify water, air quality, and waste-diversion opportunities.

g) Pilots: Please describe any pilot projects that are part of this program

As discussed above, the ZENH sub-program is a pilot to test emerging technologies and the viability of zero peak and zero-net homes under actual operating conditions.

h) EM&V: The utilities are proposing to work with the Energy Division to develop and submit a comprehensive EM&V Plan for 2013 - 2014 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.

8) Diagram of Program



9) Program Logic Model: Provide a program logic model including sub-programs.

Table X: CAHP & ZNEH Logic Model

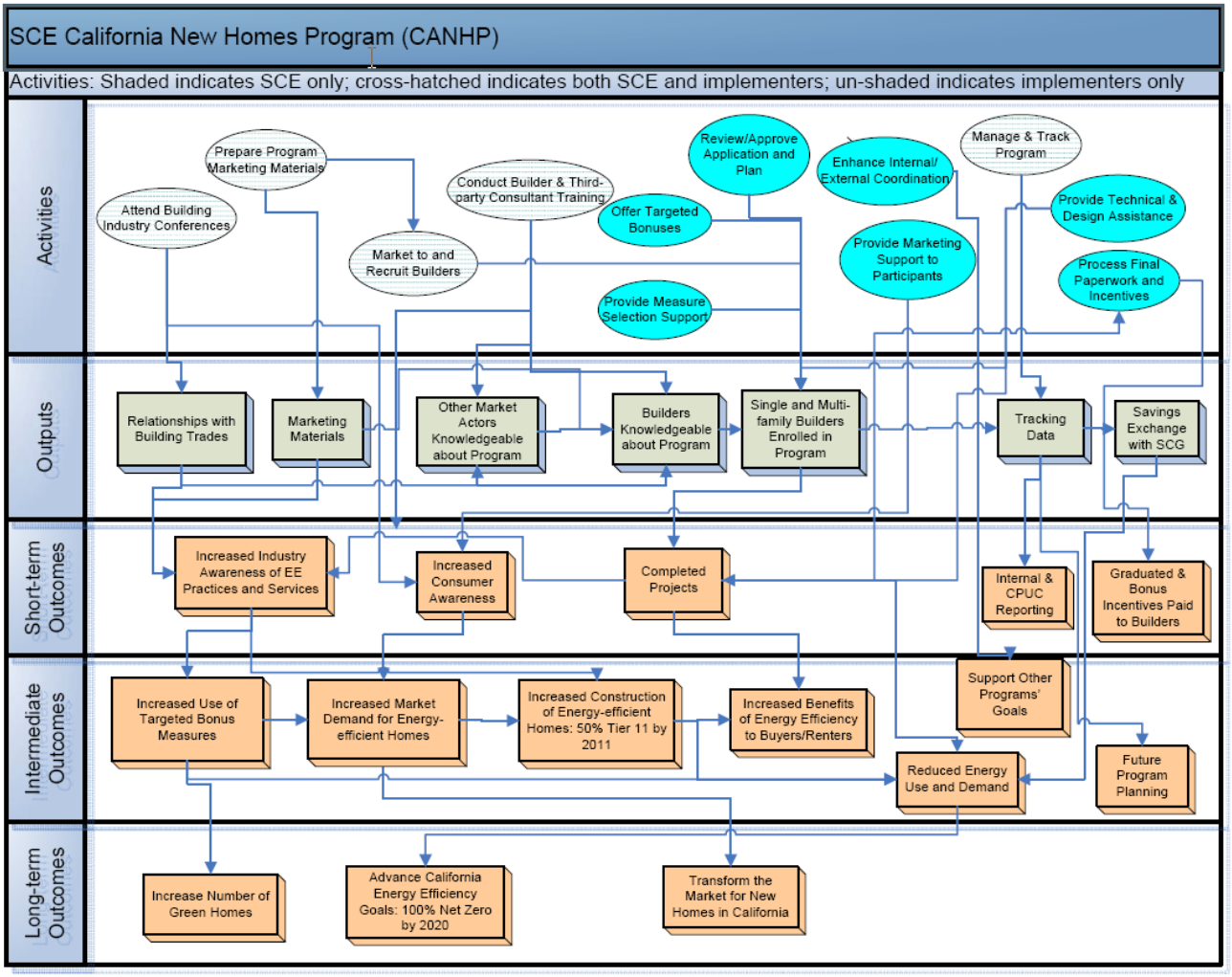
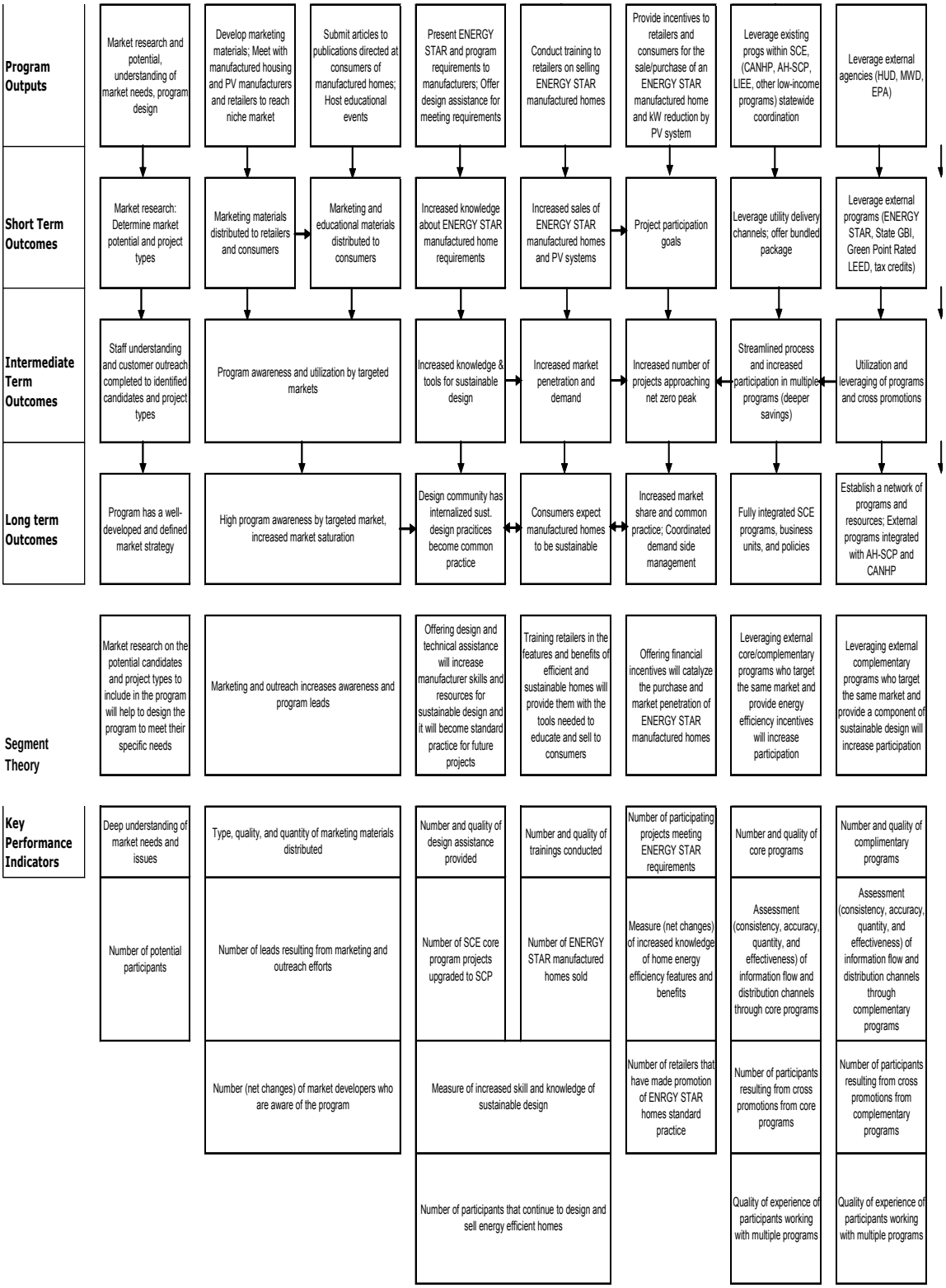


Table XI: Manufactured Housing Logic Model



Appendix 1
Energy Division Program Adjustment Requests
Implemented by IOUs

Program Name: **Statewide New Construction Program**
Program Number:
Sub-program Name: **Residential New Construction ("California Advanced Homes")**

Source of Request (ED Staff Name)	PIP Section	Modified Content	Justification	Budget Impact (Yes/No: Explain)	Savings Impact (Yes/No: Explain)
Cathy Fogel (Not certain, but she is lead for RNC)	6. Program Implementation, a) Statewide IOU Coordination; iii: Incentive levels	Delete Kicker for Solar Thermal equipment per ED direction	Pacific Gas and Electric Company, Southern California Edison Company, San Diego Gas & Electric Company, and Southern California Gas Company shall coordinate their CAHP performance bonus for solar hot water with the Energy Division's proposed CSI Thermal Energy program, authorized by AB 1470; (D. 09-09-047, OP 24c, page 376) "Coordinate" and eliminate are not synonymous.	No additional dollars have been added or subtracted; However, dropping the kicker makes more dollars available for other marketing/ kickers	No