Application of Southern California Gas Company (U-904-G) for Approval of Natural Gas Energy Efficiency Programs and Budgets for Years 2009 through 2011

Application No. 08-07-022
Exhibit No.: _____

Chapter II

Supplemental Testimony

of

Athena Besa

Southern California Gas Company

Appendix B: Program Implementation Plans

Volume 1 of 4

IOU Core – Part 1

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

July 2, 2009

Southern California Gas Company

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Appendix B:

Southern California Gas Company

Program Implementation Plans

Southern California Gas Company

2009 – 2011 Energy Efficiency Programs

Program Implementation Plans

July 2, 2009

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I O U

Core

Programs

2009–2011 Energy Efficiency Programs
Statewide Residential Energy Efficiency
Program Implementation Plan

h1. Program Name: Residential Energy Efficiency Program
Program ID: TBD
Program Type: Statewide Core Program

2. Projected Program Budget Table

Table 1[1]

Program #	Main Program Name/Sub-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					
	SCG SW Residential Programs					
	#SW-ResA - Multifamily EE Rebates	$ 690,850	$ 1,096,234	$ 11,263,927	$ -	$ 13,051,011
	#SW-ResB - Home Efficiency Rebates	$ 2,711,079	$ 1,876,417	$ 96,439,525	$ -	$101,027,021
	#SW-ResC - Home Efficiency Energy Survey	$ 228,310	$ 275,802	$ 1,974,000	$ -	$ 2,478,112
	TOTAL:	**$ 3,630,239**	**$ 3,248,454**	**$ 109,677,452**	**$ -**	**$116,556,144**

These budget numbers are presented in Appendix C: Energy Division Tables, Graphs & Pie Charts: Table 7.1 - 2009 - 2011 IOU Strategic Planning Program Budget.

3. Projected Program Gross Impacts Table

Table 2

Program #	Main Program Name/Sub-Programs	2009-2011 Three-Year EE Program Gross kWh Savings	2009-2011 Three-Year EE Program Gross kW Savings	2009-2011 Three-Year EE Program Gross Therm Savings
	Market Sector Programs			
	SCG SW Residential Programs			
	#SW-ResA - Multifamily EE Rebates	22,395	13	4,086,945
	#SW-ResB - Home Efficiency Rebates	4,726,560	2,564	8,859,020
	#SW-ResC - Home Efficiency Energy Survey	0	0	0
	TOTAL:	**4,748,956**	**2,577**	**12,945,965**

These savings values are presented in Appendix C: Energy Division Tables, Graphs & Pie Charts: Table 7.2 - IOU 2009 - 2011 Program Savings Estimates.

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

2009–2011 Energy Efficiency Programs
Statewide Residential Energy Efficiency
Program Implementation Plan

4. Program Description

a) Describe program

The State of California has set ambitious goals of reaching all 13 million existing homes with comprehensive energy efficiency improvements by 2020. To achieve significant progress toward this goal, programmatic efforts must be more integrated, coordinated and scaled significantly over the next 11 years. To work towards this goal California's Investor Owned Utilities (IOUs) will work more closely with Publicly Owned Utilities (POUs), water agencies, and other organizations across the state. The IOUs will continue in the 2009 – 2011 program cycle to offer comprehensive activities to reach across California's diverse population, climate zones and socio-economic classes to tap the economic potential available while advancing the initiatives of California's Long Term Energy Efficiency Plan[2] (Strategic Plan).

The Residential Energy Efficiency Program (REEP) is designed to offer and promote specific and comprehensive energy solutions within the residential market sector. The Residential portfolio employs various strategies and tactics to overcome market barriers and to deliver programs and services aligned to support the Strategic Plan by encouraging adoption of economically viable energy efficiency technologies, practices, and services. The ultimate focus of the program is:

- To facilitate, sustain, and transform the long-term delivery and adoption of energy-efficient products and services for single and multi-family dwellings.
- To cultivate, promote and sustain lasting energy-efficient behaviors by residential customers through a collaborative statewide education and outreach mechanism.
- To meet consumers' energy efficiency adoption preferences through a range of offerings including single-measure incentives and more comprehensive approaches.

The 2009-2011 REEP is designed to begin the shift towards comprehensive energy efficiency changes in homes that are the goal of the Strategic Plan. It does this through a multi-pronged, comprehensive set of offerings that capture much of the current potential for single-measure savings while building the framework for the longer term need for more costly changes in building envelopes, HVAC systems, and occupant behavior patterns.

The current system of upstream and midstream rebates is the most efficient and effective method for widely installing most forms of energy efficient equipment into the building stock because it minimizes overhead costs of the program while allowing access to vast swaths of the market. Simultaneously, local programs that focus on comprehensive change within the home are being continued and piloted, with growth planned as more is learned about the requirements for success. These are described further in section 6. These two major program approaches are not inconsistent, but rather mutually supportive of achieving the largest total of cost-effective short and long-term energy savings.

To date, the California investor-owned utilities (IOUs) have offered a number of residential existing-building subprograms that are in various stages of maturity and availability across the state, including Home Energy Efficiency Survey, Appliance Recycling, Home Energy

[2] Strategic Plan refers to the CPUC's Long Term Energy Efficiency Strategic Plan, as adopted on September 18, 2008, located at www.CaliforniaEnergyEfficiency.com.

Efficiency Rebates, and Multifamily Energy Efficiency Rebates. In addition, a variety of efforts focused on lighting, HVAC, and appliances. For 2009-2011 and beyond the IOUs will continue to integrate and coordinate all subprograms to increase comprehensiveness of measure delivery. Beginning in 2009 the IOUs will further expand integration efforts to include consumer electronics, workforce education and training, marketing education and outreach, low income programs and demand side management integration.

The IOUs will employ multiple strategies and tactics that integrate, leverage and build upon existing delivery channels and customer relationships such as: direct install, upstream, midstream and downstream mass market channels and web-based tools in order to surmount market barriers. Market transformation and direct energy savings and demand reductions will be achieved through a series of sub-programs that are described in detail in separate Program Implementation Plans (PIPs) and are summarized below.

Residential Lighting Incentive Program for Basic CFLs
The Residential Lighting Incentive Program for Basic CFLs provides customers with incentives in the form of discounts that greatly reduce the cost of energy-efficient lighting products. It introduces energy-efficient lighting products to the market and strives to influence future purchasing behaviors of customers. More than 370 retailers at over 2,700 store locations are expected to participate.

Advanced Consumer Lighting
The Advanced Consumer Lighting program, likewise, provides customers with incentives in the form of discounts that greatly reduce the cost of energy-efficient lighting products, and introduces energy-efficient lighting products to the market and strives to influence future purchasing behaviors of customers. A broad array of product types, models, and technologies are available for this program's incentives. Typical technologies include specialty CFLs, LEDs, cold cathode, and high-efficiency incandescent (HEI). In addition, the IOUs will collaborate on a statewide Lighting Market Transformation program strategy.

Home Energy Efficiency Rebates
The Home Energy Efficiency Rebate (HEER) Program is a continuation of the existing HEER program. In accordance with the Strategic Plan, this program advances comprehensive energy efficiency measures, including: whole house solutions, plug load efficiency, performance standards, and integration opportunities with local government and DSM.

HEER meets the need of consumers either in need of a single measure or multiple devices by encouraging the adoption of energy-efficient choices when purchasing and installing household appliances, equipment and other eligible measures. It does this by offering customers educational materials on energy efficiency options and on rebate and other incentive offerings. In addition to influencing efficient purchases, the program educates customers on how to use products correctly and guides customers to explore other demand-side management opportunities, including Demand Response (DR), as appropriate. In addition to an on-line rebate application process, the program offers immediate (point-of-sale, or POS) rebates for many measures at the retailer’s cash register.

Appliance Recycling Program

The Appliance Recycling Program (ARP) is a continuation of the existing ARP. The program picks up operable but inefficient appliances from residential dwellings and businesses and prevents their continued operation by recycling them in an environmentally safe manner. In accordance with the Strategic Plan, this program advances several comprehensive energy efficiency measures including: whole house solutions, plug load efficiency, performance standards, local government and DSM integration opportunities. ARP produces cost-effective energy savings and peak reduction in residential and non-residential market sectors.

Business and Consumer Electronics

The Business and Consumer Electronics Program (BCEP) is a new addition to the 2009 - 2011 residential energy efficiency portfolio. The BCEP provides midstream incentives to retailers to increase the stocking and promotion of high-efficient electronic products including computers, computer monitors, cable and satellite set-top boxes, televisions, smart power strips and additional business and consumer electronics as they become available to the market. The program continues to expand the POS rebate delivery method and provides field support services to update marketing materials in retail stores and support education to the retailer sales force. The BCEP includes a linkage to an online information system designed to identify the most energy-efficient and environmentally friendly products available in the market for multiple categories, including televisions, appliances, and computers.

This program supports the Strategic Plan by motivating retailers to stock more efficient products which, in turn, can drive manufacturers toward the development and introduction of more efficient products into the market. Since the midstream incentives are offered on measures that have been identified as "plug load" products, BCEP addresses the "plug load" efficiency strategy identified in the Strategic Plan.

Home Energy Efficiency Surveys

The Home Energy Efficiency Survey (HEES) Program is a continuation of the existing HEES Program. In accordance with goals of the Strategic Plan, the HEES Program will work towards advancing whole-house energy solutions. HEES will also pursue innovative initiatives to reverse the growth of plug load energy consumption though behavioral solutions, and, as warranted, DSM integration opportunities. The HEES Program is used to reach out to customers in multiple languages through different delivery channels to perform a variety of energy surveys. The program provides survey results to enable participants to understand how their energy use varies throughout the year and how their household compares with similar households. This multi-language approach enhances the program's ability to reach California's diverse culture and provides efficiency recommendations based on a stand alone and whole-house system approach. Additionally, HEES provides information and referrals to other energy efficiency programs, water conservation efforts, demand response and low-income programs, as applicable.

Multifamily Energy Efficiency Rebates

The Multifamily Energy Efficiency Rebate (MFEER) Program is a continuance of the existing Residential Multifamily Energy Efficiency Rebate Program. The program promotes energy efficiency and provides equipment rebates to owners and tenants of multifamily

properties, including residential apartment buildings, condominium complexes, and mobile home parks.

b) List measures:

Heating and Cooling	Lighting
Electric storage water heaters	T5 or T8 Lamps w/electronic ballasts
Central system natural gas water heaters	Exterior CFL fixtures (ENERGY STAR Qualified)
Natural gas water heater and/or boiler controllers	
Natural gas storage water heater	Screw-in CFLs (ENERGY STAR Qualified)
Tankless water heaters	Screw-in CFL Reflector bulbs (ENERGY STAR Qualified)
Attic and/or wall insulation	Interior CFL Fixtures (ENERGY STAR Qualified)
Whole House Fans	Bare Spiral CFLs > 30 Watts
	Specialty and high performance CFLs
	CFLs of advanced quality (Super CFLs)
Central natural gas furnace	Exterior and interior fluorescent fixtures
Room air conditioners (ENERGY STAR® Qualified)	Night lights (including LED)
	Interior screw-in LEDs for task, accent, and area lighting
Package terminal air conditioners & heat pumps	Interior hardwired LED fixtures
Appliances	Exterior LEDs
Refrigerators (ENERGY STAR® Qualified)	LED holiday lights
Freezers	Other variations of fluorescent lighting such as cold cathode and induction
High efficiency Dishwasher	Screw-in halogen lights (early compliance with codes for 2011 and beyond)
High-efficiency Clothes Washer	Floor lamps
Pools and Spas	Torchieres
Two Speed Pool Pumps and Motors	LED night lights
Electronics	LED holiday lights
>ENERGY STAR® Televisions	Occupancy sensors
LCD monitors	Photocells
ENERGY STAR 4.0® Qualified Computers	Table/desk lamps
Other incentives	Exit Signs
Shower Heads	
Faucet Aerators	
Cold Water Laundry Detergent (CWLD)	

c) List non-incentive customer services:

Non-incentive customer services consist of energy surveys offered through the HEES program and significant advertising and promotional activities to increase customer participation. Details of this and other non-incentive customer services are provided within the sub-program descriptions.

5. Program Rationale and Expected Outcome

a) Quantitative Baseline and Market Transformation Information:

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

Market transformation is embraced as an ideal end state resulting from the collective efforts of the energy efficiency field, but differing understandings of both the MT process and the successful end state have not yet converged. The CPUC defines the end state of MT as "Long-lasting sustainable changes in the structure or functioning of a market achieved by reducing barriers to the adoption of energy efficiency measures to the point where further publicly-funded intervention is no longer appropriate in that specific market."[3] 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[4].

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[5]. Markets are social institutions[6], 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[7] 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[8]. According to York[9], "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."

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[3] California Public Utilities Commission Decision, D.98-04-063, Appendix A.
[4] California Public Utilities Commission (2008) *California Long Term Energy Efficiency Strategic Plan,* p. 5. Available at http://www.californiaenergyefficiency.com/docs/EEStrategicPlan.pdf
[5] 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
[6] 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/
[7] 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.
[8] 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.*
[9] York, D., (1999). "A Discussion and Critique of Market Transformation", Energy Center of Wisconsin. Available at http://www.ecw.org/ecwresults/186-1.pdf.

The question of what constitutes successful transformation is controversial because of a Catch-22: Market transformation is deemed successful when the changed market is self-sustaining, but that determination cannot be made until after program interventions are ended. Often, however, the need for immediate energy and demand savings or immediate carbon-emissions reductions will mean that program interventions may need to continue, which would interfere with the evaluation of whether MT is self-sustaining. Market transformation success has also been defined in terms of higher sales of efficient measures than would have otherwise occurred against a baseline absent of program interventions. The real world, however, provides no such control condition. Evaluators must estimate these baselines from quantitative factors such as past market sales that may be sparse and/or inaccurate - particularly for new products. Evaluations must also defer to expert judgments on what these baselines may have been as well as on the degree of successful market transformation[10]. 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[11], 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[12]. 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[13]. 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.)[14]" The Strategic Plan recognizes that regulatory policies are not yet in place to support the success of market transformation efforts[15], 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.

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[10] 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

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

[12] Example in bottom chart of this graphic from NYTimes: http://www.nytimes.com/imagepages/2008/02/10/opinion/10op.graphic.ready.html

[13] Sebold et al (2001) p. 6-5,

[14] 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.

[15] CPUC (2008) Strategic Plan, p. 5.

Above all else, the hallmark of a successful market transformation program is in the coordination of efforts across many stakeholders. The most successful MT programs have involved multiple organizations, providing overlapping market interventions[16]. 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[17] 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.

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

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

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

Over the past several years a good baseline of market saturation has been established in the California Lighting and Appliance Saturation Study (CLASS). The original study was completed in 2000 and then updated in 2005. The overarching goal for these studies is to provide efficiency levels of appliances in order to understand future energy savings potential

[16] Nadel, Thorne, Saches, Prindle & Elliot (2003).
[17] Peloza & York, (1999).

and past accomplishments in the residential sector. The IOUs propose that the values in these studies and the data made available in the on-line "California Residential Efficiency Saturation Tool" be used as the basis for the metric for EE in the residential sector. Specifically it is proposed that a new California Lighting and Appliance Saturation study be conducted in 2010 to estimate again the efficiency levels for key measures. A comparison could then be made to the previous baseline studies of 2000 and 2005 and a determination made if a trend is taking place that indicates that more energy efficient solutions are being installed in residential households.

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

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

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

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

Table 3

Metric A	Metric B	Metric C
Energy efficiency saturation of	Ratio of survey	Behaviors of Residential

the following appliances as measured by the CLASS on-site survey.	participants that seek/consider EE when making purchase decisions.	sector as gauged based on a scale developed to measure (EE/green) behaviors.

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

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

b) Market Transformation Information

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

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

Table 4

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

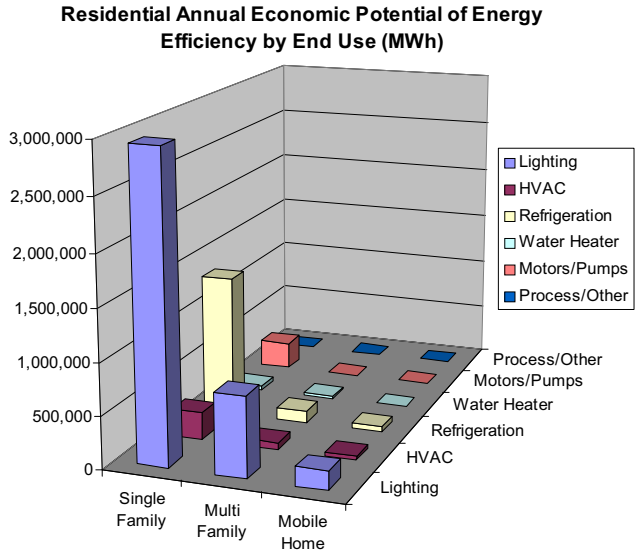
b) Program Design to Overcome Barriers:

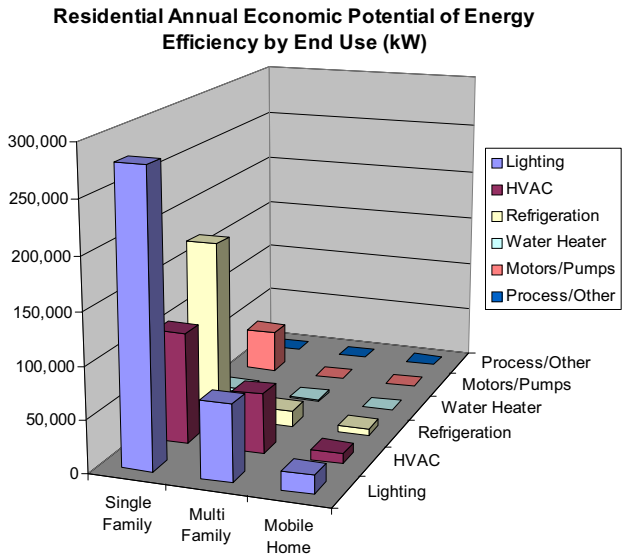
The residential customer base of all California IOUs constitutes one of the largest and most challenging groups of electricity, gas, and water consumers in the nation due to its diversity, complexity, and size. The residential energy efficiency portfolio of California IOUs has been developed to deliver a wide array of programs and services to increase awareness of energy efficiency, to provide relevant energy-efficient solutions, and to advance the policy ideals of the Big Bold Energy Efficiency Strategies (BBEES), the Strategic Plan, and the California Energy Action Plan (EAP) for the benefit of all customers.

The approach to the residential portfolio aims to advance energy efficiency through the modification of consumer behaviors and attitudes towards EE through education and reinforcement. The following figures represent the accepted annual economic potential of residential electricity consumption.

2009–2011 Energy Efficiency Programs
Statewide Residential Energy Efficiency
Program Implementation Plan

Electric Economic Potential by End Use and Residential Segment[1]





[1] Economic potential refers to the technical potential of those energy conservation measures that are cost-effective when compared to supply-side alternatives. This chart is based on data extracted from multiple utility specific MS Excel workbooks that are referenced in appendices G, H, and I of the California Energy Efficiency Potential Study by Itron (May 24, 2006)

As evident in the figures above the prominent economic opportunities for the residential sector lie in the following areas: lighting, refrigeration, HVAC and motors and pumps. In terms of economic potential, consumer awareness, and motivating factors, the Residential market sector - defined as living quarters and energy-consuming devices of private households - differs from that of the Commercial, Industrial, and Agricultural sectors of the energy efficiency portfolio. The factors which influence or inhibit private citizens to respond to energy efficiency are broad and distinct. The residential sector is highly fragmented and diverse in terms of geography, consumption patterns, and demographics. Furthermore, the influences of legislative actions, policies, standards, and technologies have significant impacts on the delivery of residential programs. The REEP offered herein for this market segment is a product of the careful consideration of each of these factors and the realities of energy consumption by Californians, and results in a comprehensive, nimble and cost-effective portfolio for the 2009-2011 program cycle. In addition, this plan outlines the broad strategies and tactics that will advance the long-term policy goals of California and the United States.

Residential programs encounter many barriers to the adoption of energy efficiency measures, including:

- Evolutions in consumer use patterns
- The upfront cost of measures
- Lack of consumer awareness

[1] Economic potential refers to the technical potential of those energy conservation measures that are cost-effective when compared to supply-side alternatives. This chart is based on data extracted from multiple utility specific MS Excel workbooks that are referenced in appendices G, H, and I of the California Energy Efficiency Potential Study by Itron (May 24, 2006)

- Incentives split between property owners and tenants
- Manufacturer and upstream market resistance
- The level of disruption necessary during the installation or retrofit of occupied dwellings (switching costs)
- Lack of a qualified supply of technologies and trained installers in the market
- Vintage cycles and unwillingness to replace working equipment
- Perceived uncertainty of savings
- Lack of enforcement for measures installed, and
- General indifference to energy efficiency.

In addition, some groups are particularly difficult to reach due to barriers such as language and income.

These factors contribute to a reliance on customer incentives, customer awareness, and outreach campaigns to create demand for new programs plus an increasing reliance on studies and research into emerging technologies

In view of the overall uniqueness, size, and diversity of the sector, California IOUs approach residential market segments as broad groups within the Residential portfolio along the lines of EE potential available. As such, the approach to the residential market is not program-specific. Instead, it is a combination of delivery and market-based activities to target the principal barriers to adoption in key sectors. Segmentation in this manner is warranted due to the scope and breadth of uses, barriers, and influential stakeholders.

These aggregate segments combine to enable the portfolio to reap the economic potential of cost-effective technologies and measures in the present, while moving towards the goals and objectives outlined in Strategic Plan. The objectives of the Residential EE portfolio are:

- To capture cost-effective energy savings and demand response opportunities for the benefit of all Californians.
- To encourage residential consumers across California to consider “energy efficiency first” in their daily lives.
- To promote support of and compliance with more stringent appliance and building standards.
- To move the residential market towards coordinated demand-side management, including self-generation and a "smart meter" initiative.
- To promote the adoption of comprehensive residential retrofits.
- To encourage, adopt, and integrate promising emerging technologies.
- To develop public awareness and to promote effective decision making to create a widespread demand for high efficient measures.
- To contribute to the ultimate transformation of energy consumption patterns.

c) <u>Quantitative Program Targets</u>:

Reference appropriate sections within sub programs for Quantitative Program Targets table.

d) Advancing Strategic Plan goals and objectives:

The REEP will work with businesses and industry to achieve the aspirational Strategic Plan goals for the residential and residential low income sectors by implementing the support and infrastructure needed to serve as many households as feasible.

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

- Goal 1: *Home buyers, owners and renovators will implement a whole-house approach to energy consumption that will guide their purchase and use of existing homes, home equipment (e.g. HVAC systems), household appliances, lighting, and "plug load" amenities*.

  To address this goal, the IOUs present a comprehensive portfolio of solutions developed to reach energy consumers across California's diverse climates, cultures, and demographic segments. These offerings range from informational and home surveys to an assortment of single-measure approaches to comprehensive residential solutions.

  Home Energy Efficiency Surveys (HEES) are an important component of broader IOU efforts to raise awareness for steps that everyday Californians can begin to take on the path to more sustainable living. HEES provides opportunities for residents to assess the energy impact of their dwelling spaces, appliances and plug load devices. HEES programs, coupled with broader marketing efforts, are designed to move consumers from awareness towards attitude changes and action.

  Single-measure approaches provide the greatest level of participation in ways that are most relevant to consumers through a range of mass market approaches. These approaches include upstream, downstream and point-of-sale activities through popular programs such as Home Energy Efficiency Rebates (HEER), the Business and Consumer Electronics Program (BCEP), lighting programs and Appliance Recycling Programs (ARP). By reaching great numbers of Californians in mass, program activities of this type are designed to be transformational.

  Statewide comprehensive approaches for energy efficiency also include the multifamily market. Comprehensive solutions are also reached for residents through their combination of elements from programs such as HEER, ARP, BCEP and lighting programs in ways and over time periods that are most meaningful and attainable to them. In addition, IOUs are piloting several truly comprehensive "home performance" approaches to one-stop energy efficiency. As packaged comprehensive solutions are new, these particular efforts are reflected within individual IOU local or third party program elements.

  Combined, each of these programmatic efforts not only will continue to deliver marked energy savings to reach viable economic potential, but continue to move energy efficiency programs towards more bundled solutions in ways that are most relevant to Californians.

- Goal 2: *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 energy demand.*

  To address growing plug loads within California and to align with the objectives of the Strategic Plan, IOUs have developed the Business and Consumer Electronics Program. For 2009-2011, the BCEP will incorporate new measures that yield demonstrated energy savings and several that can enhance consumers' abilities to manage their energy use through home energy management systems and/or AMI-enabled technologies.

  The BCEP will be operated in close collaboration with the HEER program, market actors, and Emerging Technology programs, as appropriate, to assist in introducing efficiency technologies and tools that will enable Californians to better manage their energy consumption.

- Goal 3: *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*.

  After many successful years of demonstrated results in managing Upstream Lighting programs, for 2009-2011 the IOUs offer several additions to the residential lighting portfolio. In recognition of the success of standard CFL measures in delivering energy savings and demand reductions to Californians, IOUs present the Advanced Lighting Program for 2009-2011 in response to the need to continue the penetration of increasingly more complex lighting solutions. Refer to the Advanced Lighting Program sub program element for details on this new initiative.

  In addition, to specifically address the need for beyond compact-fluorescent measures, the IOUs have devised a Lighting Market Transformation (LMT) program strategy. The LMT strategy is an effort devised specifically to address the objectives of the Strategic Plan and will advocate and promote the development of ultra-high efficiency lighting technologies. This effort will work in close collaboration with IOU lighting technologies programs, codes and standards efforts and other market forces. The LMT program strategy is not a part of the IOU Residential portfolio: however, its efforts will directly influence the implementation of the Basic CFL and Advanced Lighting programs. Reference the LMT program narrative for specific details.

6. Program Implementation

SoCalGas will offer three Residential sub-programs: Home Energy Efficiency Rebates, Home Energy Efficiency Surveys, and Multifamily Energy Efficiency Rebates. SoCalGas will not offer the other Statewide sub-programs because those excluded are targeted primarily towards electric customers. The sub-PIPs for the programs not offered have been removed from this PIP.

a. Statewide IOU Coordination:

The Residential program portfolio includes an array of programs and services. Detailed descriptions of each supporting program are presented in the accompanying narratives and will not be repeated here. Rather, this document discusses several key components of the tactical approaches to implementing the proposed Residential portfolio. Additional items presented related to program implementation are: incentives, customer awareness and marketing, third party roles and responsibilities, cross cutting activities, DSM integration, and non-energy activities.

In order to address the diversity and breadth of the residential sector, the Residential portfolio employs a variety of tactical approaches to overcome barriers, tap available economic potential, and maximize EE benefits, including upstream, midstream, downstream, direct install, and outreach campaigns. The particular approaches have been planned to make the most of each program. Refer to the program details provided with each sub program PIP for additional information.

In addition to the economic potential of available resources, technologies, and approaches, many other market factors have significant influence on the delivery of the portfolio, including: California's Big Bold Energy Efficiency Strategies, the California Long Term Energy Efficiency Strategic Plan, California's Energy Action Plan, Low Income Energy Efficiency Programs, Integrated Demand Side Management, Assembly Bill AB32 (on greenhouse gas reductions), Emerging Technologies, Public Interest Energy Research, and Codes and Standards. Each of these factors, in addition to state and federal legislative activities, influences the goals, baselines, strategy, and composition of the Residential market sector plan. The discussion that follows briefly describes how the policy influences affect California IOUs' approach to providing energy efficiency and lists several programs within the portfolio that target this issue.

The REEP is part of the solution to meeting the goals of the Strategic Plan. Any major new effort by the IOUs, including REEP, must also be designed with careful consideration of the results of statewide potential studies and with evidence to demonstrate the value of the approach.

The 2009-2011 Residential program offerings are more comprehensive, integrated, and complete than ever. The REEP is the result of a calculated process to consider the factors that influence energy efficiency and deliver a cost-efficient portfolio. In addition, the Residential portfolio strives to ensure the maximum participation of customers throughout California. Through the California IOUs' portfolio approach, individual consumers have an opportunity to become aware of and make informed decisions about energy consumption in their homes. Indeed, the Residential EE portfolio offers a resource or solution applicable to each and every private dwelling within each IOU's service territory.

The design of programs within the portfolio has been closely coordinated with each utility's marketing unit to target various residential customer groups and drive the adoption of energy efficiency and the eventual transformation of energy use. Furthermore, the approach uses a comprehensive and integrated approach to Marketing,

Education, and Outreach to modify consumer behaviors towards EE which not only can feed market demand for efficient products and services, but can also provide a reinforcing conduit for other DSM programs[2].

Much care has been taken in the design of programs to maximize the economic potential through achievable measures, and the portfolio was developed employing recent energy efficiency potential information developed by studies funded by California ratepayers[3]. By continuing to tap large segments of economic potential through lighting and appliance recycling programs in the short term, the Residential portfolio simultaneously proposes calculated movements towards California's mid- and long-term policy goals through increased comprehensiveness in program design, implementation of viable technological advancements, supporting through incentives and cross-partnership campaigns, and additional training of resources to enhance the supply of qualified technicians and contractors.

In the near term, activities outlined are expected to position the portfolio for future growth through:

- Introduction of emergent technologies (such as LED & specialty lighting, consumer electronics) into the portfolio.
- Use of new technologies in delivery of programs (such as the Appliance Recycling and HEER programs).
- Use of mass marketing and other outreach campaigns and educational efforts to motivate consumer attitude shifts.

These near-term actions are expected to set the foundation for mid-term EE portfolios by advancing the market transformation of economically viable technologies while building a comprehensive array of measures and resources. These activities are intended to contribute to the long-term evolution in energy efficiency throughout California. The approach to addressing the complexity and diversity of residential market segments is an effective platform from which to tackle the technical challenges faced, the policy requirements in place, and the economic realities throughout the sector. Refer to the appropriate Program Implementation Plans for more details about each program.

Building consumer awareness and ultimately a broad and self-sustainable demand for residential EE is not only dependent upon the technologies and incentive structures enacted, but also on the effectiveness of outreach campaigns. The Residential portfolio recognizes and addresses the diversity of the residential sector from the program statement and rationale through strategy and marketing.

As presented in the respective sub-program elements, marketing, education, and outreach facets of the Residential portfolio will be implemented with specific segments of the residential market in mind. Portfolio deployment will include identification and prioritization of key customer action opportunities, as well as marketing tactics to address

[2] Other DSM programs include DR, CSI, SmartConnect and Electric Transportation. SCE's portfolio actively works to integrate all programs and initiatives where it is feasible to do so. Reference respective filings, testimony and program implementation plans for additional details.
[3] Largely refers to the 2006 EE Potential study (Itron).

the deployment of economically efficient technologies. These actions will affect consumer attitudes and behaviors while simultaneously developing market supplies towards ultimate market transformation. The residential and IOU local government partnership programs will join efforts to provide coordinated outreach programs and increase the impact of outreach and awareness events.

This portfolio will conduct or promote outreach events that are applicable to the residential market. Where possible, all other energy efficiency, demand response, solar initiative, and low income programs will be promoted and integrated. In addition, REEP is ideally positioned to educate and inform consumers about the deployment and benefits of smart meters as they become a reality within California's residences. Combined, these offerings provide residential users with a diverse array of choices that will help them save money on their utility bills and reduce their impact on the environment with no loss to their health, safety, or comfort[4].

In addition to advancing the initiatives of California's BBEES and Energy Action Plan, as advocated through the Strategic Plan, the Residential portfolio actively seeks to capture available opportunities through integrating applicable demand-side management schemes, incorporating the latest research through programs such as those in new construction portfolios. This portfolio will support educationally focused efforts to enhance public understanding of AB 32 by relating the carbon reduction effects of energy efficiency programs to program participants. Refer to sub-program descriptions of program interactions for detail.

In addition, the Residential portfolio offers several comprehensive and integrative EE, CSI, and green building programs for home audits. All programs offering lighting measures will be compliant with AB1109[5]. The portfolio also offers several rate assistance programs for income-qualified individuals. The 2009 - 2011 portfolio is more comprehensive than ever through offering several integrative programs that provide customers ways to not only lower their electricity use, but to lower their consumption of gas and water as well. The REEP sub-programs offer details about relevant program interactions, as appropriate.

This program was developed as a collaborative effort among California's IOUs and the CPUCs Energy Division. As stated in the Strategic Plan, the coordination of demand-side management programs is necessary to increase the penetration of energy efficiency and to avoid lost opportunities. Through a tactical approach to customer outreach and marketing, the possibilities to create awareness and educate consumers about other programs will be maximized. This approach will create additional energy savings through inter-program referral and data sharing, and bundling of DSM solutions across energy efficiency, demand response (DR), the California Solar Initiative (CSI), smart meters, and other IDSM initiatives[6]. The statewide residential energy efficiency programs

[4] Refer to the respective program implementation plans for complete details.
[5] California Assembly Bill 1109 (the Huffman Bill) (August 31, 2007). [http://info.sen.ca.gov/pub/07-08/bill/asm/ab_1101-1150/ab_1109_bill_20070717_amended_sen_v94.pdf]
[6] IDSM includes: energy efficiency, demand side self-generation and demand response, but also includes solar hot water, water efficiency, greenhouse gas reduction and towards objectives towards zero net energy building.

will incorporate Integrated DSM opportunities as available. Several IOUs will implement directed IDSM efforts through pilot programs and benchmarking efforts within their portfolios. For example, SDG&E's local portfolio will offer a Comprehensive Home Performance Program aligned with the overall concept of IDSM. For details on this and other specific IDSM efforts, refer to appropriate sub-programs and local PIPs.

a. Program delivery and coordination:

i. **Emerging Technologies program**

As stated in the Strategic Plan, the long-term EE vision of California can only be attained through the long-term and continuous development and verification of new technologies and their acceptance into the market. The achievement of long-term goals requires new technology as well as information, training and market development to maximize the EE benefits of cutting-edge technologies. In recognition of the importance of emerging technologies, the Residential portfolio will include several programs that will be particularly active in integrating emerging technologies: Home Energy Efficiency Rebates, Business and Consumer Electronics (including Plug Load efficiency) and Residential Advanced Lighting Program. In addition, portfolio staff actively works to incorporate promising research and analyses from PIER projects into the EE portfolio. Sub program PIPs offer details on how these activities are coordinated and delivered.

ii. **Codes and Standards program**

The Strategic Plan's Strategy 1-5, Improve coordination of energy codes and standards with utility programs, describes the specific actions that the codes and standards program will employ to address Residential Portfolio program needs. On an ongoing basis, C&S staff communicates with program managers regarding potential adoptions of new standards. Depending on the opportunity, program managers may decide to provide incentives in advance of the effective dates of new standards in order to prepare the market. Sub program PIPs offer details on how activities are coordinated with Codes and Standards efforts.

iii. **WE&T efforts**

IOU residential EE programs are not directly linked to or directly fund Workforce Education and Training (WE&T) efforts, per se, however WE&T efforts do create a pathway to improved delivery and realization of DSM opportunities, which include Energy Efficiency. Reference sub-program PIPs for specifics on sub-program interactions with WE&T.

iv. **Program-specific marketing and outreach efforts (provide budget)**

Refer to the budget table within subprograms.

v. **Non-energy activities of program**

Non energy activities of this program include: Home Energy Efficiency Surveys, Workforce Education and Training outreach efforts, and statewide marketing and outreach efforts such as "Flex Your Power". Details of non-energy activities are provided within the sub program.

vi. **Non-IOU Programs**

This joint IOU residential offering is a major advocate of DOE initiatives, which include a partnership in ENERGY STAR®. The ENERGY STAR partnership provides instant brand awareness of, and lends credibility to programmatic efforts. The IOU residential portfolio is also closely coordinated with the Council for Energy Efficiency (CEE) and the American Council for an Energy Efficient Economy (ACEEE). California's IOUs will continue to seek and entertain ideas and influences from other organizations, utilities and resources throughout the program cycle to avoid lost opportunities and incorporate best practices.

vii. **CEC work on PIER**

Through joint IOU efforts to advocate the development and adoption of promising technologies, residential program staff works through statewide IOU Emerging Technologies efforts to influence the strategies and approaches for research and development that can improve future program delivery. Reference the joint IOU Emerging Technologies program implementation plan for insight into efforts such as PIER.

viii. **CEC work on codes and standards**

Through joint IOU efforts to advocate the development and adoption of advanced codes and standards, residential program staffs work through statewide IOU Codes and Standards programs to influence the strategies for research that can influence future program design and delivery. Reference the joint IOU Codes and Standards program implementation plan for insight into these efforts, and sub program PIPs for specific details, as appropriate.

ix. **Non-utility market initiatives**

As a partner in the Department of Energy's ENERGY STAR initiative, the residential portfolio benefits from – but does not directly contribute to - statewide marketing and outreach efforts such as "Flex Your Power". Refer to the joint Marketing, Education and Outreach program implementation plan for greater details on these efforts. Refer to the joint Workforce, Education and Outreach program implementation plan for greater details on these efforts. In 2009-2011 the utilities will work with local and statewide retailers, manufacturers, and contractors to encourage end-use marketing of the utilities statewide residential programs and services.

b. <u>Best Practices:</u>

California's Energy Action Plan (EAP) requires a decrease in per capita electricity use through increased energy conservation and efficiency measures[7]. The EAP requires that energy efficiency receive the first loading order in terms of adding energy generation resources. Through incentives, education, and outreach programs, the Residential EE portfolio has contributed to the increased growth and penetration of energy-efficient products into the marketplace as well as building a supply of qualified contractors and suppliers to support new market demands.

As stated in the Strategic Plan, eligible consumers who wish to participate in LIEE programs will be encouraged to do so, and will be provided the chance to participate in all cost-

[7] EAP http://docs.cpuc.ca.gov/published/Report/28715.htm

effective EE measures by 2020. LIEE is an income-qualified program that provides services and/or measures designed to assist low-income households conserve energy and reduce their electricity costs. The Residential portfolio has taken several steps towards fully integrating LIEE programs through a series of cross-marketing programs to ensure that low-income customers contacted through all program delivery channels are made aware of the California Alternate Rates for Energy (CARE) and Family Electric Rate Assistance (FERA) Programs. CARE provides a 20% discount on electric bills for qualifying customers, and FERA allows qualifying households with three or more persons to receive Tier 3 electrical services at Tier 2 rates. Primarily, the integration of LIEE into Residential EE will continue to rely upon cross-marketing efforts so that one program will funnel participants towards the other. For example, LIEE participants will be referred for home energy audits, and CARE customers will be encouraged to take advantage of other LIEE programs when completing surveys.

c. Innovation:

California's IOUs have coordinated efforts in the past, yet a key aspect of innovation associated with this application is in the depth of more comprehensive coordination of statewide IOU delivery channels and incentive levels offered. This deepened coordination can positively influence negotiations with program participants (i.e. retailers and manufacturers) and improve market availability of improved products.

Reference individual sub program implementation plans for specific details of innovative efforts undertaken.

d. Integrated/coordinated Demand Side Management:

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.

e. Integration across resource types

As available, the IOUs bundle service offerings across resource types including; electric, gas and water. As possible, these offerings are packaged to streamline service offerings from a customer's perspective. Reference appropriate sub programs within the residential offerings for specifics on integration across resource types.

f. Pilots:

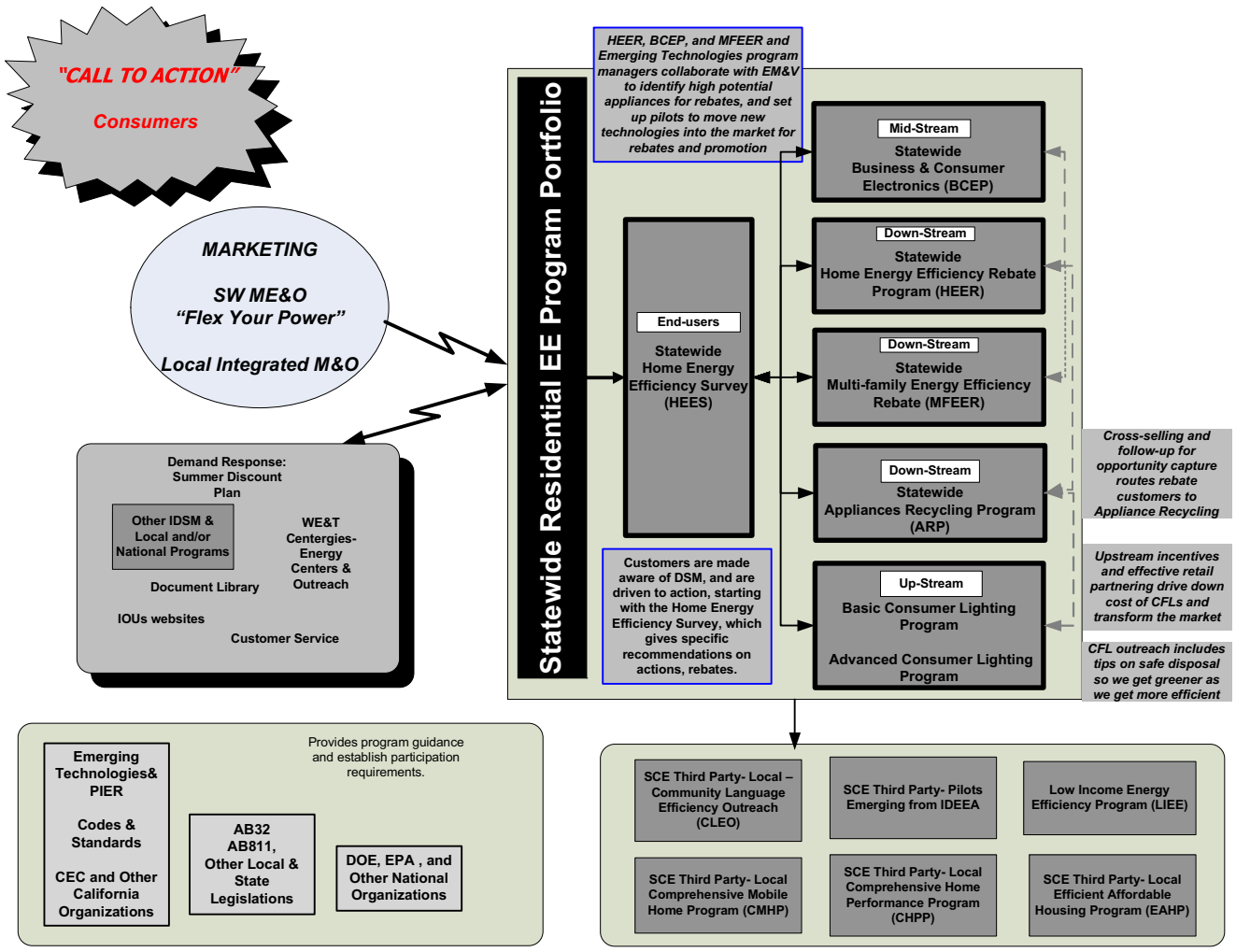
Joint IOU efforts include an Emerging Technologies offering, an element of which includes a pilot program offering named TRIO. For details on innovative approaches external to the residential portfolio offering, refer to the statewide Emerging Technologies program implementation plan.

g. EM&V:

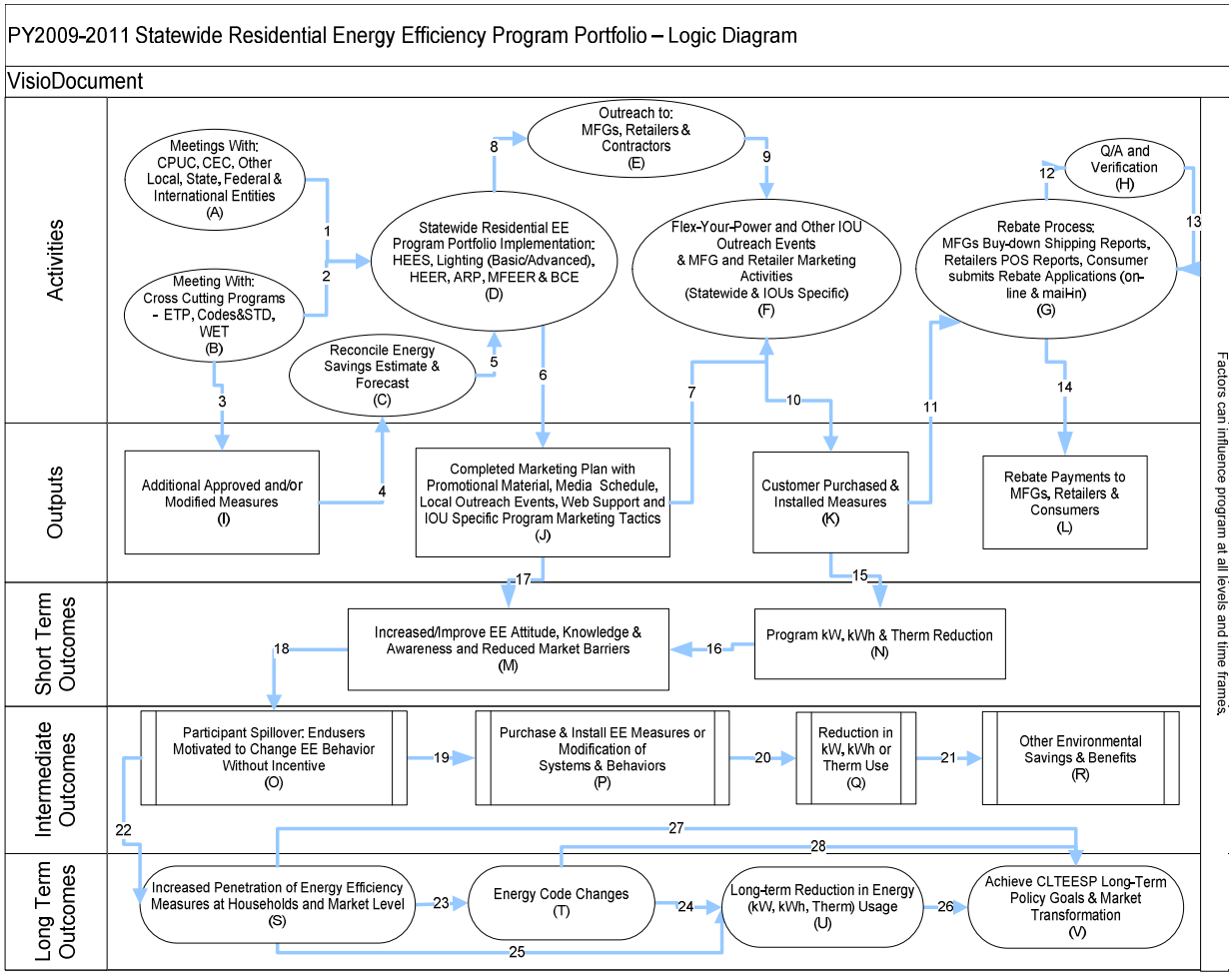
The utilities are proposing to work with the Energy Division to develop and submit a comprehensive EM&V Plan for 2009-2011 after the program implementation plans are filed. This will include process evaluations and other program-specific studies within the context of broader utility and Energy Division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

2009–2011 Energy Efficiency Programs
Statewide Residential Energy Efficiency
Program Implementation Plan

7. Diagram of Program:



8. Program Logic Model:



2009–2011 Energy Efficiency Programs
Statewide Residential Energy Efficiency
Program Implementation Plan

1. **Program Name:** Home Energy Efficiency Rebate Program (HEER)
   Program ID: TBD
   Program Type: Statewide Core Program

2. Projected Program Budget Table

Table 1[25]

Program #	Main Program Name / Sub-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					
	Etc.					
	TOTAL:					

3. Projected Program Gross Impacts Table

Table 2

Program #	Program Name / Sub-Programs	2009 - 2011 Three-Year EE Program Gross kWh Savings	2009 - 2011 Three-Year EE Program Gross kW Savings	2009 - 2011 Three-Year EE Program Gross Therm Savings
Market Sector Programs				
	Core Program #1			
	Sub-Program #1			
	Sub-Program #2			
	Etc.			
	TOTAL:			

4. Program Description

a) Describe program

[25] 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.

2009–2011 Energy Efficiency Programs
Statewide Residential Energy Efficiency
Program Implementation Plan

The Home Energy Efficiency Rebate (HEER) program is a continuation of the existing program within the IOUs' residential energy efficiency portfolios, and a statewide program. Although SCE, SoCalGas, PG&E and SDG&E share similar program theory, design and goals, there may be slight variation in each IOU's implementation and local logistics.

The HEER program is designed to be part of the CLTEESP solution. In accordance with the CLTEESP, this program advances comprehensive energy efficiency measures, including; whole house solutions, plug load efficiency, performance standards, local government, and DSM integration opportunities. By offering customers educational materials on energy efficiency options and rebate/incentive offerings, HEER encourages customers to make energy efficient choices when purchasing and installing household appliances and equipment measures. In addition to influencing efficient purchases, the program educates customers on how to use products correctly. For many measures, the program offers immediate rebates at the point-of-sale (POS) in addition to an on-line/mail-in rebate application process.

The program is designed for flexibility, efficiency and cost effectiveness. It offers agreed upon statewide measures with coordinated implementation, and is designed to be able to segregate offerings, and add new measures tailored to specific market opportunities that may emerge. The measures that will be offered through the program will carry over from the 2006-2008 program cycle, with additional measures offered in the 2009-2011 cycle that will further support savings in natural gas, water, and electricity use.

The program targets owners and renters of single family residences as well as apartments, townhomes, condominiums, and mobile homes, in parallel to the operation of the Multifamily Energy Efficiency Rebate (MFEER) program, by encouraging participants to install energy efficient products. This downstream implementation strategy will also include coordinated statewide elements as well as elements specially targeted to the customers in each utility's service area.

HEER has a multi-pronged strategy. In addition to customer incentives, the program will consist of energy efficiency audits, education, and marketing and outreach efforts designed to encourage greater participation by single family customers. The program will also leverage relationships with trade allies, manufacturers, retailers, and distributors to deliver information, measures, and incentives. The program will use strategies such as point-of-sale (POS) rebates, online/mail-in applications, and targeted promotional campaigns to become more effective in reaching the correct customers in the residential sector. Program campaign elements include:

- Statewide rebate promotions,
- Online/mail-in application processing,
- In-store point-of-sale instant rebate option,
- A whole house approach offering products that address all types of energy use,
- Home energy audits,
- Energy efficiency customer education and outreach,

- And other residential EE programs such as upstream lighting or mid-stream Business and Consumer Electronic Program (BCEP).

The Statewide program involves the traditional application process for customers who purchase product from retailers not participating in point-of-sales (POS), or customers not targeted through a tailored campaign. Residents will be offered downstream deemed rebates for the installation of energy efficient products that meet or exceed predetermined specifications.

The high brand recognition afforded to Energy Star provides leverage in motivating additional retailers at all levels to actively participate and support energy efficiency through HEER. This also allows customers easy access to purchase qualified appliances and equipment, and to receive timely information to assist in the selection process.

Program Integration: The program will be implemented in close association with other residential energy efficiency programs. 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 HEER Program also works with the Appliance Recycling Program (ARP) and Home Energy Efficiency Survey Program (HEES) to provide a convenient in-home energy audit as well as a method to retire old refrigerators. HEER also encourages residential customers to reduce their use of natural gas through rebates for replacing less efficient gas-fired equipment with new energy-efficient equipment and to upgrading their building envelopes.

Support for LIEE and Non-LIEE qualifying low income families: The HEER program collaborate with the Low Income Energy Efficiency (LIEE) Program by providing customers with information and marketing material on SoCalGas's low income programs. One outstanding issue is how to target low-income customers that do not qualify for LIEE program assistance. The IOUs look forward to working with Energy Division to address this problem.

See section 6 for more specific information regarding the implementation of the program.

b) List measures:

Table 4A - HEER Measures to support whole House performance:

Measures List:		
	Clothes Washer	Cool Roof
Water Heater	E-Star standard (1.72 MEF / 8.0 WF)	
gas ef>=0.62	tier II	Shower Heads
electric	tier III	Thermostatic Low Flow Restrictive Valve
solar		Low Flow - Self Install EE Kit
tankless ef>=0.82	Furnace	

Measures List:		
	Clothes Washer	Cool Roof
tankless ef>=0.90	90 AFUE	Faucet Aerators
	92 AFUE	Faucet Aerators Self Install EE Kit
Insulation	94 AFUE	
attic		
wall	Room Air Conditioners	
insulated sliding		
	Pool Pump	
Refrigerator	two speed	
ENERGY STAR®	variable speed	
CEE Tier 1	contractor rebate	
CEE Tiers 2 & 3		
	Whole House Fan	
Dishwasher		
E-Star standard (.65 EF)	Ducted Evaporative Coolers	
tier II , tier III		

c) List non-incentive customer services

HEER will include a retail management component to support retailers in training staff about energy efficiency and in providing collaterals/educational materials to promote rebates for qualified products. Customers and trade professionals are encouraged to take advantage of free classes offered by training centers located in each utility's service area. In addition, through a variety of marketing and promotional materials, energy audits, and online resources, customers will be educated. Specifically, there will be significant education, outreach, and web tools initiatives.

For energy efficiency to achieve full effectiveness throughout the state there must be a coordination of the many messages and resources available to participants.
When energy efficiency messages are properly timed and coordinated, their effectiveness is multiplied. The messages will be dovetailed with product seasonality already established by retailers and manufacturers.

HEER will provide information directly to utility customers using a variety of methods including the IOU websites, call centers, bill inserts, direct mail, and email campaigns. Utility websites will provide supplemental information, including updates on available funding levels and printable forms. Forms that can be completed online are being considered for development. Customers requiring in-depth information can also call their utility's program manager to receive assistance and detailed program information.

The program will also coordinate with manufacturers, retailers, distributors, contractors, community based organizations (CBOs), and other interested parties to increase awareness of the utility rebate program, other related opportunities, and encouraging customers to purchase qualifying products.

5. Program Rationale and Expected Outcome

The HEER program is designed to promote energy efficiency by encouraging installation of more efficient Energy Star qualified appliances in the household. To be comprehensive, a list of varied measures is offered for the customers to pick-from. The HEER program collaborates with other residential program in the portfolio such as Appliance Recycling Program (ARP), Home Energy Efficiency Survey (HEES), and Multifamily Energy Efficient Rebate Program (MFEER) and others.

a) Quantitative Baseline and Market Transformation Information

Table 3

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

Refer to the overarching PIP section

b) Market Transformation Information

Table 4

	Internal Market Transformation Planning Estimates		
Market Sector and Segment	2009	2010	2011
Metric A			
Metric B			
Metric C			
Metric D			

Refer to the overarching PIP section

c) Program Design to Overcome Barriers:

Diversity of California Households: The residential customer base of all California IOUs constitutes one of the largest and most challenging groups of electricity, gas, and water consumers in the nation due to its diversity, complexity, and size. Due to the multiple levels of homeownership and dwelling type, the residential customer base is not likely to respond to a "one size fits all" approach. The customer socio-economic characteristics within these defined sub-groupings will vary significantly based on income and educational level, geographic location, and lifestyle choices. Customer behavior and lifestyle

perspectives in terms of energy efficiency and the environment are also strongly influenced by the level of home ownership and dwelling type.

Diversity in EE Awareness, Knowledge and Attitude: In terms of economic potential, consumer awareness, and motivating factors, the Residential market sector differs from that of the Commercial, Industrial, and Agricultural sectors of the energy efficiency portfolio, and the factors which influence or inhibit private citizens to respond to energy efficiency are broad and distinct. Furthermore, the influences of legislative actions, policies, standards, and technologies have significant impacts on the delivery of residential programs.

Affordability of the EE Purchase: Given the diversity in economic background and circumstance, we must overlay the issue of ability to afford. In the case of a large appliance purchase such as refrigerator, there are household ill equipped to make the purchase regardless of the size of the rebate.

The residential energy efficiency portfolio of California IOUs has been developed to deliver a wide array of programs and services to increase awareness of energy efficiency, to provide relevant energy-efficient solutions, and to advance the policy ideals of the Big Bold Energy Efficiency Strategies (BBEES), the California Long Term Energy Efficiency Strategic Plan (CLTEESP), and the California Energy Action Plan (EAP) for the benefit of all customers.

HEER is designed to overcome a few of these barriers, including current inefficiencies in home appliances, the appliance replacement cycle, and the additional barriers to early retirement. The characteristics of the residential market segment and POS retailers provide additional challenges and opportunities.

Among residential customers, whether home owner or renter, almost every household's energy consumption is driven by standard appliances (e.g. refrigerator, stove top, microwave oven), and equipment (e.g. water heater, HVAC system, Laundry, Plug Load), as well as other appliances, such as televisions, personal computers, and central air conditioners (based on the 2003 California RASS report).

The standardization of household equipment within the residential segment offers a unique opportunity for change-outs at specified intervals within the product lifecycle in order to optimize energy savings. Customers typically consider replacement only when a piece of equipment fails. However, major home products such as water heaters, furnaces, and pool pumps have long life cycles and can easily become more costly to operate over the long term. This problem is further exacerbated by the fact that most contractors, distributors, and customers have adopted a "replacement on burnout" philosophy as their basic mode of operation.
An early retirement effort will provide an added benefit by influencing consumers to adopt energy efficiency behaviors contrary to their current lifestyle

Most residential customers tend to want minimal interference with their daily activities as a result of participating in energy efficiency activities. Program offerings that are transparent, user-friendly, and easy to implement will be most attractive to the residential customer. The HEER program strategies attempt to reduce the need for time-consuming research and to offer customers immediate cash savings via the POS instant rebate program.

The complexities of the residential market present some challenges as well as associated opportunities for program participation. Program participation challenges and opportunities for homeowners and renters include:

Challenges:

- Downturn in the housing market
- General downturn in the economy (less disposable income)
- Long-term payback for certain measures
- Limited cost-effective opportunities to generate therm savings
- Relationship between typical replacement behavior and appliance vintages
- Changes to codes and standards for certain appliances

Opportunities:

- Increase number of point-of-purchase retailers
- Customer profile research allows targeted communication
- Build on the "Green" message theme
- Website redesign to make more customer friendly
- Home energy upgrade financing
- Cross-promotion with external resources (e.g. Energy Star, Home Owners' Associations (HOAs), community based organizations (CBOs), contractors, retailers, etc.)

Working with POS retailers offers vast gains in IOUs' ability to reach a high volume cost effectively, but at a cost of some utility control (i.e., limited access to the end-users). The program participation challenges and opportunities for manufacturers, retailers, and consumers include:

Challenges:

- Retailers are reluctant to stock items not completely free to them
- Consumers have limited knowledge of breadth of products available
- Newer technologies (e.g., condensing water heaters and furnaces) are still relatively expensive

Opportunities:

- Build on the "Green" message theme
- Increase the number of POS retailers

The IOUs will continue to build on their existing external relationships (with retailers, customers and manufacturers) and resources in order to more effectively promote products and services, showcase their energy expertise, brand successes, and maintain a high level of customer satisfaction.

d) Quantitative Program Targets:

Table 5 – Program Activity Targets

Home Energy Efficiency Rebates	Program Target by 2009	Program Target by 2010	Program Target by 2011
TBD			

e) Advancing Strategic Plan goals and objectives:

HEER specifically addresses the CLTEESP strategy of helping consumers understand both the importance of and the opportunities for using energy efficiently through a variety of means including incentives and targeted information. Through a variety of incentives and offerings, the HEER Program supports the Commission's initiatives to provide attractive choices for customers to reduce their energy demand and consumption, improve their safety and comfort, and contribute to overall sustainability and a reduction in greenhouse gas emissions.

In accordance with the CLTEESP, 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. This program supports the CLTEESP by encouraging the adoption and market availability of more efficient products in California.

The program will help to achieve the following near-term strategic goals identified in Chapters 2 of the CLTEESP:

- 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.

- 2-3: Manage research into new/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.

- 2-5: Increase Title 24 compliance through specific measures leading to aggressive statewide enforcement. California IOUs will continue to work together to

incorporate program models that require proof of code compliance as a condition of receiving rebates.

Additionally, the installation of "Smart Meters" creates an opportunity to more effectively measure and monitor whole house and major "piece-meal" efficiency improvements. Customer access to this hourly billing data will help support longer-term behavioral strategies to reduce consumption as well. Moreover, the Smart Meter technology when combined with passive or automated enabling measures (e.g. In-Home Displays, programmable controllable thermostats, load control devices, etc.) will provide customers with energy management tools that capture actual savings as energy efficient measures are installed with the home. Placing these informational technologies within the home provides immediate feedback, enables a more accurate assessment of program impacts, and facilitates the development of future targeted efficiency strategies to a particular customer base. Despite the high potential for this implementation, a system wide implementation in California may not be completed until 2015 or beyond. Meanwhile, various tests are conducted to verify and validate the effectiveness of various automated AMI applications.

6. Program Implementation

a. Statewide IOU Coordination:
The incentive is offered at either mid-stream POS locations or downstream (on-line or mail-in applications). The program will be delivered through two major program strategies to achieve maximum energy savings:

- Midstream strategy aimed at retail stores and home improvement centers to increase stocking and sales of energy efficient appliances and equipment
- Downstream strategy based on customer education to create demand for higher efficiency appliances and products

A major implementation strategy for the program is to expand the POS rebate delivery method (sales made at the store location and online), streamline the rebate application payment process and integrate appliance incentives with appliance recycling opportunities. A market-based delivery method approach will be expanded to more retailers in each IOU's service area, and "instant rebates" at the cash register for refrigerators (if applicable within that IOU), room air conditioners, whole house fans, pool pumps, clothes washers, dishwashers and storage water heaters will be available. Retailers are key market actors in moving the energy-efficient appliance and equipment market, and they will be engaged in ways to maximize their participation.

Continuing and cultivating relationships with POS retailers is a powerful tool for making the program efficient. All California IOUs will continue to build upon their existing external relationships and resources in order to more effectively promote products and services, showcase our energy expertise, brand our successes, and maintain a high level of customer satisfaction. These relationships include the use of contractors for roofs, pumps, and evaporative coolers in previous program cycles, as well as HVAC contractors from other residential programs.

The continued use of Point of Sale retailers, as a point of distribution provides an excellent conduit for developing a "one-stop approach" for customers, as noted in the long term strategic plan. Participation by an increasing number of big box and mom and pop retailers in the program will provide the following benefits in support of this concept:

- an expanded network of customer convenience
- enhanced retail management support for energy efficiency
- the ability to co-market and brand with retailers
- expanded cooperation between utility, retailer and manufacturer to promote and stock high efficiency products
- information source for efficiency products

As noted previously, the national trend by big box retailers towards promoting "green" products within their stores creates an additional opportunity to reach the end users through a preferred method of communication— directly from the retailer. Beyond leveraging the ENERGY STAR brand, HEER will use its retail management support to develop bundled promotions, hosting events, staff training, and promotional campaigns with retailers as a means to directly influence consumer buying patterns for energy efficiency products.

Key external resource partners include:

- ENERGY STAR® (including co-branding opportunities)
- Flex Your Power
- Cities and counties
- Large employers with employee "green" campaigns
- Retailers
- HOAs, property management companies, and community associations
- Green-focused organizations and businesses
- Trade associations and contractors
- Statewide IOUs
- Various media channels
- Contractors

ENERGY STAR provides an important resource for the program. The current national trend toward promoting "green products" among big box, medium, and small retailers will allow IOUs to continue leveraging the ENERGY STAR brand at the retail level for qualified appliances and products. ENERGY STAR is a nationally recognized icon, with a high awareness value. Messages relating to energy savings with the correlation of the green initiative will be uniquely tailored to specific audiences. Collaborative relationships with consumer channels will help to facilitate and enhance consumer acceptance of energy efficiency products and services.

California IOUs require customer installation address and can face challenges in this delivery channel due to privacy concerns for store customers. IOUs offer additional incentives to customers to provide their addresses, and then inspect approximately 10% of the installations. Additional quality control activities include an extensive review of program records and a process evaluation.

For quality control, the HEER program has three levels of verifications:

- For selected installations (10%), the program verifies actual installation prior to issuing rebate checks,
- For record accuracy verification, SoCalGas performs separate random program record inspection against program guidelines to verify accuracy and completeness.
- As part of the M&E process evaluation, the program participants' satisfaction and AKA (awareness, knowledge and attitude) are separately assessed.

Measures List

	SCE	SDG&E	SoCalGas	PG&E
Water Heater				
gas	n/a	$30.00	$50.00	$30.00
electric	$30.00	$30.00	n/a	$30.00
solar	n/a	n/a	n/a	n/a
tankless ef>=0.82	n/a	n/a	150	n/a
tankless ef>=0.90	n/a	n/a	200	n/a
Mail-In	yes	yes	yes	yes
On-Line	yes	yes	yes	yes
Point of Sale	yes	yes	yes	no
Insulation				
attic	$0.15/sq ft	$0.15/sq ft	$0.30/sq ft	$0.15/sq ft
wall	$0.15/sq ft	$0.15/sq ft	$0.50/sq ft	$0.15/sq ft
insulated sliding (siding?)	n/a	n/a	n/a	n/a
Mail-In	yes	yes	yes	yes
On-Line	yes	yes	yes	yes
Point of Sale	n/a	n/a	n/a	n/a
Refrigerator				
ENERGY STAR	$ 50.00	$ 25.00	n/a	n/a
CEE Tier 1	n/a	n/a	n/a	n/a
CEE Tiers 2 & 3	n/a	n/a	n/a	n/a
Mail-In	yes	yes	n/a	yes
On-Line	yes	yes	n/a	n/a
Point of Sale	yes	yes	n/a	no
Refrigerator Recycling	$ 50.00	$ 50.00	n/a	$ 5.00

Mail-In	n/a	yes	n/a	yes
On-Line	n/a	yes	n/a	yes
Point of Sale	n/a	no	n/a	no
Dishwasher				
ENERGY STAR Standard	n/a	$ 30.00	$ 30.00	no
CEE Tier II	n/a	$ 30.00	$ 30.00	$ 30.00
CEE Tier III	n/a	$ 30.00	$ 30.00	$ 50.00
compact	n/a	n/a	n/a	n/a
Mail-In	n/a	yes	yes	yes
On-Line	n/a	yes	yes	yes
Point of Sale	n/a	yes	yes	no
Clothes Washer				
ENERGY STAR Standard	n/a	n/a	$ 35.00	
CEE Tier II	n/a	n/a	$ 35.00	$ 35.00
CEE Tier III	n/a	n/a	$ 35.00	$ 75.00
Mail-In	n/a	n/a	yes	yes
On-Line	n/a	n/a	yes	yes
Point of Sale	n/a	n/a	yes	no
Furnace				
90 AFUE	n/a	n/a	n/a	n/a
92 AFUE	n/a	$ 200.00	$ 200.00	$ 200.00
94 AFUE	n/a	$ 200.00	$ 200.00	$ 300.00
Mail-In	n/a	yes	yes	yes
On-Line	n/a	yes	yes	yes
Point of Sale	n/a		n/a	
Room Air Conditioners	$ 50.00	$ 50.00	n/a	$ 50.00
Mail-In	Yes	yes	n/a	yes
On-Line	Yes	yes	n/a	yes
Point of Sale	Yes	yes	n/a	no
Pool Pump				
two speed	$ 200.00	$ 200.00	n/a	$ 100.00
variable speed	$ 200.00	$ 200.00	n/a	$ 100.00
contractor rebate	$ 100.00	$ 100.00	n/a	$ 200.00
Mail-In	Yes	yes	n/a	yes
On-Line	Yes	yes	n/a	yes
Point of Sale	Yes	yes	n/a	no
Whole House Fan	$ 50.00	$ 50.00	n/a	$ 100.00

Mail-In	Yes	yes	n/a	yes
On-Line	Yes	yes	n/a	yes
Point of Sale	Yes	yes	n/a	no
Evap Coolers	$300-$600	n/a	n/a	n/a
Mail-In	Yes	n/a	n/a	n/a
On-Line	Yes	n/a	n/a	n/a
Point of Sale	n/a	n/a	n/a	n/a
Cool Roof	n/a	n/a	n/a	$0.10-$0.20/sq.ft.
Mail-In	n/a	n/a	n/a	yes
On-Line	n/a	n/a	n/a	yes
Point of Sale	n/a	n/a	n/a	n/a
Shower Heads				
Thermostatic Low Flow Restrictive Valve	n/a	$ 15.00	$ 15.00	$ 15.00
Low Flow - Self Install EE Kit	n/a	$ -	$ -	$ -
Mail-In	n/a	n/a	n/a	n/a
On-Line	n/a	n/a	n/a	n/a
Point of Sale	n/a	yes	yes	yes
Faucet Aerators				
Faucet Aerators Self Install EE Kit	n/a	$ -	$ -	$ -
Mail-In	n/a	n/a	n/a	n/a
On-Line	n/a	n/a	n/a	n/a
Point of Sale	n/a	yes	n/a	yes
Cold Water Laundry Detergent (CWLD)	n/a	$.028/load	$.028/load	n/a
Mail-In	n/a	n/a	n/a	n/a
On-Line	n/a	n/a	n/a	n/a
Point of Sale	n/a	yes	yes	yes

All IOUs will develop an integrated marketing plan for all Californians by conducting statewide segmentation research, including Low Income Energy Efficiency (LIEE) and other hard- to-reach groups, on interests, awareness, and attitudes/perceptions related to energy efficiency and climate change messaging. IOUs will develop targeted and highly relevant energy efficiency and DSM marketing messages to incite behavioral change/action. Create partnerships with private industry and businesses to help motivate consumer and business sector action.

Each IOU also seeks to integrate its LIEE program into HEER by providing customers with information and marketing material on LIEE, California Alternate Rates for Energy (CARE) and Family Electric Rate Assistance (FERA) rate discount programs. The

integration strategy with LIEE and HEER is designed to ensure potentially eligible low-income residential customers are aware of the availability of low-cost energy efficient services and appliances through LIEE. The goal is to inform residential customers of income qualified programs before they expend their limited incomes on appliances that are available through LIEE at no cost. In turn, IOUs seek to make low-income customers aware of rebates available for appliances not offered through LIEE.

Retail relationships will be facilitated by website enhancements to increase the ease of point of entry access for customers, enabling them to readily find information about efficient products and services, identify participating retailers in their neighborhood, and complete on-line sign-ups to receive notification about special efficiency offerings, rebates or incentives.

The utilities will explore options for providing alternative strategies to marketing the programs in constrained areas. One such approach may be a neighborhood-based marketing campaign targeting older master-planned communities 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 dealing in volume, this effort would offer low-cost measures that are proven energy savers to a large number of program participants. In addition to delivering energy savings, this approach would support the advancement of local community and city goals related to energy efficiency, as well as benefiting many neighborhood and socio-economic groups.

Often, customers are not aware of the true savings potential nor are they familiar with energy savings products not associated with appliances. To introduce customers to energy savings, a "starter kit" will be distributed to customers providing information on comprehensive simple methods of saving water, gas, and electricity. By providing the tools necessary to begin saving gas, electricity and water, the goal of the HEER program is to enhance participation in the program and include other customer segments that may have been excluded due to the high costs of appliance products. This will allow HEER to grow as a comprehensive, inclusive residential program and maximize potential savings. HEER participants will also be educated about additional opportunities for energy efficiency beyond the measures they are adopting, if applicable.

Web tool applications can also assist customers with their energy management, capture actual savings as energy efficient measures are installed, conduct comparative analysis, and track their “carbon footprint.” These informational technologies inside the home provide immediate feedback, enable a more accurate assessment of program impacts, and allow the customer the ability to quickly and easily make energy efficiency decisions.

The advent of advanced metering infrastructure will provide additional opportunities of educating customers regarding their energy usage. The IOUs will explore these opportunities as the technology is developed and deployed to residential customers.

Each IOU will develop a detailed marketing implementation plan with tasks and milestones to be developed once the program is approved. IOUs will collaborate with other agencies and market players to ensure that program offerings are consistent with proposed changes to codes and standards.

In anticipation of changing minimum standards on product specification, incentive levels are adjusted to entice early retirement of products before the new codes take effect. The programs will continue to support the Department of Energy's national ENERGY STAR program and Consortium for Energy Efficiency.

HEER program managers hope to explore the possibility of partnering with local governments to provide additional incentives for bundling measures. The IOUs may be able to continue offering incentives for individual members while encouraging the local governments to provide additional incentives that would be offered when measures are combined, pursuant to AB 811.

All IOUs will coordinate with other IOUs and, if needed, applicable POUs (e.g., SMUD, LADWP), to maintain statewide consistency of rebate programs and incentive levels while attempting to simplify customer requirements and procedures internally. Rebate offerings are consistent as possible, and program changes are discussed at the state-wide level.

SoCalGas plans to modify existing rebate levels to both attic and wall insulation measure during the 2009 – 11 program cycle. Insulation is one of the most cost effective measures in the residential program providing significant energy savings; it is anticipated the higher rebate levels will stimulate a greater number of installations. Also given the current state of the economy, this rebate level increase will help offset the cost to the customer while providing for both greater energy savings and higher levels of comfort to conditioned living space.

SoCalGas has about 85% of the water heating market within its service territory under regulation by the SCAQMD's . The passage of the SCAQMD's low NOx burner requirement for water heaters has increased the cost of higher efficient units which is not reflected in the National DEER table. SoCalGas will be increasing the rebate level of storage water heater, $\geq$ .62EF, in the 2009-11 program cycle to minimize the lost opportunity for the installation of higher efficient units. SoCalGas also plans to carry over rebate offerings for high efficiency tankless water heaters, not offered within the SDG&E and PG&E, offered under a pilot program in 2007 – 08 . Modifications have been made to the tankless water heater program on efficiency qualifications to align with the CEE's Water Heater Initiative. In addition, negotiations with retailers in regards to incentives are conducted as a team, in order to leverage participation from a state-wide level and benefit all California customers. EE working groups as well as research on new technologies are comprised of representatives from each utility. This team approach allows us to share best practices, and available data to create the most cost-effective program model. IOUs also collaborate on Multi-family rebate programs (MFEER) and

Business and Consumer Electronics Program (BCEP) (please refer to separate residential PIPs)

b. Program delivery and coordination:

The HEER program, as part of overarching residential portfolio, will offer integration with HEES, ARP, MFEER, CHHP, and other relevant residential programs. In order to have maximum energy savings and cost effectiveness, the HEER Program must be rooted in marketing and education that encourages end-users to adopt multiple broad-based energy efficient measures to reduce their household usage.

Rebates for energy efficient appliances will be targeted to the end-user primarily via an application (either online or mail-in) or point of sale (POS). The POS method offers instant incentive discounts directly through the retailer at the point of purchase for selected energy efficient products and services. The customer participates without having to complete and mail a rebate application. HEER will continue to collaborate with IOUs throughout the state to ensure program consistency, increase number of participating retailers, add plug load efficiency measures to its portfolio, incorporate more user-friendly website features and explore ways to offer rebates through the online purchases of qualified products within each California IOU's service territory.

Key program administration support will be provided for the following activities:

- Contractor solicitation and screening will include screening interviews for prospective participants to determine their level of program interest and commitment to training.
- Technical training will introduce the basic concepts of energy efficient home repair and renovation practices.
- Marketing and sales training includes training on program marketing concepts, team building, quality control, job estimation and sales prospecting
- Field monitoring and business planning support will include on-site field training and technical support to assist contractors in developing proposals, addressing customer issues, and using home diagnostic tools.
- Public education and marketing support will include information and training on working with the utility and other market key influencers.
- Rebate and incentives administration/accounting discusses how program administrator will track and manage incentive process.
- Quality assurance monitoring addresses and describes quality assurance protocols including random site visits.
- Data tracking, analysis, and reporting reviews and discusses program data collection requirements, for performance tracking purposes.

HEER will feature a collaborative, educational approach with retailers, distributors, contractors, manufacturers and selected customers to ensure that early retirements are presented as a cost-effective and viable alternative for home products that have an extended life cycle. This well-orchestrated approach is intended to make the energy efficient choice

attractive to the customer and beneficial to all market participants. The success of any early replacement campaign will therefore require specialized training that shows contractors and distributors how to identify early retirement opportunities, how to sell and promote energy efficiency to prospective customers, and how they can significantly improve their profitability.

The CLTEESP calls for increasingly tightened energy efficiency standards for housing and residential appliances and to push for adoption of more environmentally friendly household appliances. Consumers may still be less inclined to move up the energy efficiency ladder to purchase products that, in spite of providing a higher level of energy savings, require a higher level of "out of pocket" expense. ENERGY STAR is keenly aware of these trends and is currently evaluating a "tiered rating system" to help identify ENERGY STAR rated appliances and products that exceed its baseline and meet the efficiency program guidelines for incentives.

The HEER staff will continue to work closely with ENERGY STAR as it reviews the feasibility of using a tiered rating system and evaluates the potential impact on current utility sponsored residential rebate programs. The HEER will also utilize its on-going education of retail management to help the sales staff and customers understand the longer term benefits of selecting high efficiency appliances.

i. Emerging Technologies program

The program will manage/coordinate the research for innovative methods to improve energy efficiency in existing homes. This research, in accordance with the CLTEESP, will be conducted based upon best practices, technologies, consumer market intelligence, and EM&V studies.

ii. Codes and Standards program

HEER will be coordinated with the Codes & Standards program to ensure that the impacts of any code changes are incorporated into program design and implementation and to add additional measures to the program.

iii. WE&T efforts

HEER will work with Energy Centers to design and develop training curriculums appropriate for retailers and contracts to develop skills and knowledge. In addition, HEER will work with the training staff to identify necessary training to support Workforce of the future.

iv. Program-specific marketing and outreach efforts (provide budget)

HEER will coordinate marketing efforts with manufacturers, distributors, retailers, contractors, and other energy efficiency and demand response market players and influencers to achieve the desired levels of customer awareness and participation within

the program. All IOUs are linking their Home Energy Efficiency Surveys and their Appliance Recycling Rebate Program (please reference the separate PIPs for more information) to leverage programs across the utility and capitalize on the synergy of these offerings.

All IOUs will continue to strengthen the connection between program incentives. For example, collaborative marketing and implementation efforts will be made to link program rebates with rebates from SDG&E's third party Appliance Recycling Program when customers purchase ENERGY STAR® refrigerators and room air conditioners. PG&E is also widening its collaborative marketing and implementation effort to link Appliance Recycling Program rebates with customer purchases of ENERGY STAR® refrigerators from appliance retailers. This particular program strategy simultaneously provides a convenient means of properly and permanently retiring replaced units. A similar effort will be undertaken with SDG&E's third-party residential HVAC program for new and existing cooling systems. The integration with these and other DSM programs as well as the Energy Leader Partnerships will result in increased awareness and adoption of efficient measures throughout each IOU's service area while creating permanent and verifiable long-term energy savings.

IOUs will work together to develop an integrated marketing plan for all Californians by conducting statewide segmentation research, including LIEE and other hard to reach groups, on interests, awareness, and attitudes/perceptions related to energy efficiency and climate change messaging. IOUs will develop targeted and highly relevant energy efficiency and DSM marketing messages to incite behavior change/action; create partnerships with private industry and businesses to help motivate consumer and business sector action; and use social marketing techniques to build awareness and change consumer attitudes and perceptions.

v. Non-energy activities of program

HEER will support training and marketing activities for participating retailers to support the program.

vi. Non-IOU Programs

HEER will continue to work with various manufacturers, retailers, ENERGY STAR and appropriate DOE activities to support the program.

vii. CEC work on PIER & Emerging Technology Program

HEER will work with the statewide Emerging Technology Program, CEC and PIER to take advantage of all new emerging technologies activities. HEER is committed to a timely and sensible program adoption for all cost effective measures discovered by these organizations. In some cases, additional pilots may be required to test certain parameters of these new applications.

viii. CEC work on codes and standards

As part of the ENERGY STAR movement, the HEER program works closely with the codes and standards groups. We are committed to continue this effort.

ix. Non-utility market initiatives

It is possible for the participating retailers to initiate co-marketing activities with the manufacturers. At this time, the IOUs are not aware of any planned activities.

c. Best Practices:

California IOUs conducted several focus groups and market research studies, as well as process evaluations, to ensure that program logic and design is consistent with market best practice, and to leverage existing relationships with program partners. In addition, program literature and energy savings benefits will target program partners in ways specific to their interaction with customers.

In a systematic approach the program will achieve energy savings through the proposed measures, while addressing market barriers specific to each end-use technology. HEER will offer other technologies as they become available in the 2009-11 program timeframe.

The Program will maximize opportunities through IDSM. The IDSM approach will create additional energy savings and integration through inter-program referral and data sharing, and bundling of DSM solutions across energy efficiency, demand response, California Solar Initiative, smart meters (AMI) and other IDSM offerings.

d. Innovation:

The program's traditional framework incorporates innovative approaches to address opportunities in the midstream and downstream markets. The Point-of-Sale (POS) program element provides maximum ease for customers' participation, while offering an immediate rebate at the retailer's register. In an effort to take advantage of on-line sales of appliances and equipment, the POS program element definition will be expanded to include retailer and manufacturer sales made online through their respective websites.

In alignment with the CLTEESP, the HEER program will research new and/or advanced cost-effective innovations, and behavioral attributes to reduce energy use in existing homes, AMI-based monitoring and display tools, by coordinating with emerging technology, codes and standards, and marketing and outreach.

There are several significant enhancements to the 2009-2011 program years:

- Expanding POS rebate delivery method to include additional measures such as Cold Water Laundry Detergent (CWLD). This method offers instant rebates for

selected energy efficient products. The customer participates without having to complete and mail a rebate application.

- Expanding the POS retailer relationship to include sales made at the retail store location and at the retail store website.
- Linking incentives to recycling opportunities through the purchase of new energy efficient appliances. The program seeks to accelerate the increase in market share by facilitating consumer purchase of new units and the removal of old, inefficient units. The program simultaneously provides a convenient means of properly and permanently retiring the replaced units. Increased retailer interest is expected as a result.
- Continued enhancements to the electronic rebate application to improve the rebate payment process for customers using the direct customer rebate payment method.

The program expands the proportion of installed energy-efficient equipment in homes and small businesses wider and faster than would take place otherwise.

e. Integrated/coordinated Demand Side Management:

Not applicable for SoCalGas.

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

In an effort to provide comprehensive program offerings, SoCalGas successfully collaborated with Burbank Water and Power to enable customers served by the local electric municipality to receive a comprehensive HEES report. Prior to this collaborative effort, SoCalGas customers located in within the municipalities electric and water service territory were only provided gas saving recommendations and rebate offerings. This HEES joint effort now provides gas, electric, and water savings recommendations through on-line and in home audits with the installation of limited energy saving measures and gas and electric rebate offerings. This program model has been received as an ideal IOU/POU collaboration and working with the Southern California Public Power Authority, SoCalGas will look to the other number of municipalities, such as LADWP, Pasadena, Azusa and Glendale, that intertwine within the SoCalGas and SCE service territory to adopt this model within those service territories.

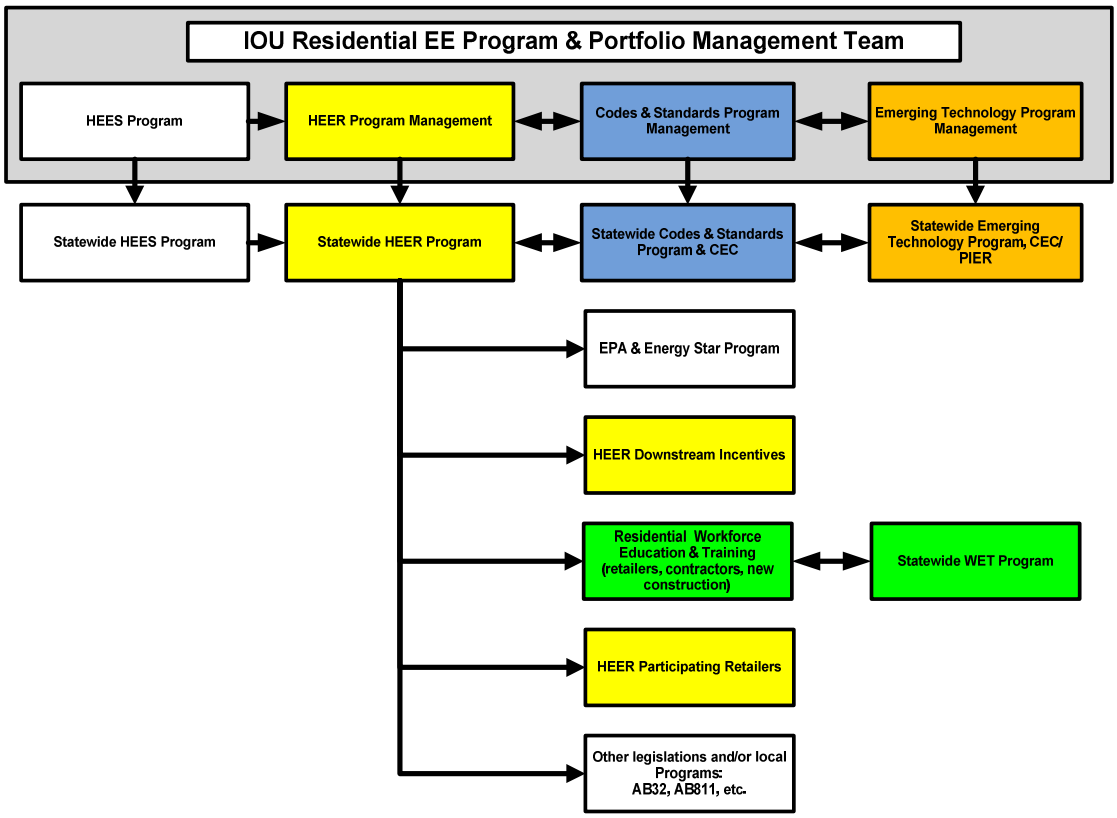
g. Pilots:

SoCalGas will be jointly offering a Home Performance Pilot Program with SCE as the lead utility. SCE implemented a Home Performance contractor training program in the 2006-08 program cycle and has looked to SoCalGas to collaborate in the implementation of its proposed 2009-11 program to enable a comprehensive offering of gas, electric, and water saving measures within the program as well as continued contractor training. SoCalGas is currently conducting a field study to evaluate the effectiveness of this program and the potential for gas energy savings derived from a Whole House Program concept within the initial phase of this program. Upon evaluation of the findings, SoCalGas will reassess the program's performance and adjust program participation accordingly.

h. EM&V:

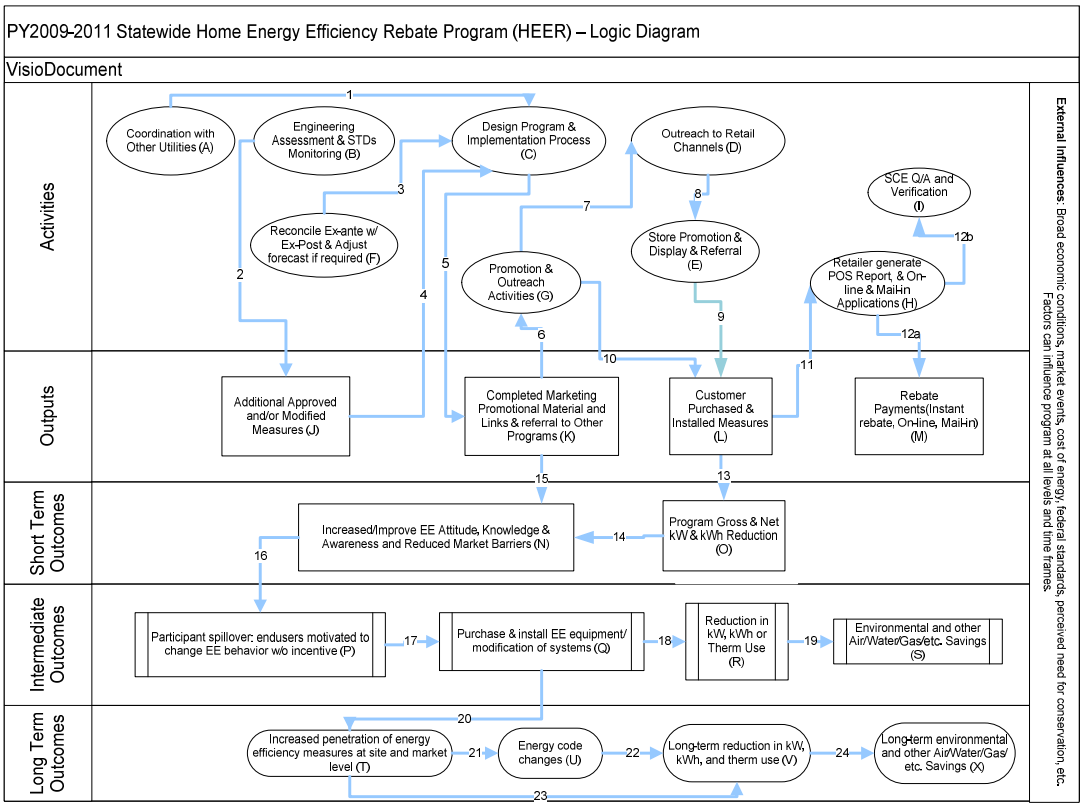
The utilities are proposing to work with the Energy Division to develop and submit a comprehensive EM&V Plan for 2009-2011 after the program implementation plans are filed. This will include process evaluations and other program-specific studies within the context of broader utility and Energy Division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

7. HEER Program Interaction Diagram:



2009–2011 Energy Efficiency Programs
Statewide Residential Program
Program Implementation Plan

Program Logic Model: HEER



2009–2011 Energy Efficiency Programs
Statewide Residential Program
Program Implementation Plan

1. **Program Name:** Home Energy Efficiency Survey Program (HEES)
   Program ID: TBD
   Program Type: Statewide Core Program

2. Projected Program Budget Table

Table 1[1]

Program #	Main Program Name / Sub-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					
	TOTAL:					

3. Projected Program Gross Impacts Table – by calendar year

Table 2

Program #	Program Name / Sub-Programs	2009 - 2011 Three-Year EE Program Gross kWh Savings	2009 - 2011 Three-Year EE Program Gross kW Savings	2009 - 2011 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			
	TOTAL:			

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

2009–2011 Energy Efficiency Programs
Statewide Residential Program
Program Implementation Plan

4. Program Description

a. Describe program:

The Home Energy Efficiency Survey (HEES) Sub-Program is a statewide residential audit program that provides residential customers the opportunity to participate in a mail-in, online, and in-home energy analysis of their home. The primary intent of the program is to increase the residential adoption of energy efficiency, water conservation practices, and "green" technology opportunities. The surveys are available in multiple languages to meet the needs of hard-to-reach customers. The program is intended to inform participants of opportunities to save money and provide information regarding resources to execute the recommendations.

HEES is a resource for prompting integration and participation in other residential energy efficiency programs such as the Whole House Performance Program, the Manufactured Housing Program, the Residential Common Facilities Program, and the Single-Family & Multi-family Energy Efficiency Retrofit Programs.

b. List measures

HEES is an audit program, and as such does not offer any measure rebates.

c. List non-incentive customer services

Online Interactive

The interactive online survey is easily accessible via the SoCalGas and joint utility companies' websites. The feature allows customers to obtain immediate results by answering specific questions regarding their home energy appliances and usage patterns. This online home energy survey offers two options to the customers. It is available in the short and extended versions. It only takes a few minutes to complete and provides an analysis of energy use in their home as well as energy-saving recommendations. The on-line tool, along with the other survey options, provides customers the opportunity to change input variables and provide updates
on energy efficiency improvements to the home for a follow up analysis. In addition, promotions may be offered to increase customer participation.

Mail-In

Participating customers receive a survey either through direct mail, from SoCalGas and joint utility company's statewide contractor, or by printing a hardcopy from either Utility's website. Customers will mail completed surveys to a statewide mail-in survey contractor for processing. Once received, surveys are analyzed against customer billing data to produce an energy analysis report containing customized results. SoCalGas and the joint utility company will provide integrated customer billing data which will include natural gas and electric energy savings recommendations to improve the effectiveness of the reporting. Reports include 1) an end-use breakdown of natural gas and electricity, 2) monthly usage trend graph, and 3) a set of recommendations, with corresponding estimated savings that are appropriate for each customer based on Utility input and customer survey responses. Additionally, reports include information on energy

efficiency products and services, rebate programs, and other energy-related information to encourage adoption of energy efficiency measures identified through the energy survey.

In-Home Survey

Customers in SoCalGas service territory may participate in this program component by contacting the statewide contractor. This approach provides customers, particularly hard-to-reach customers who do not respond to Internet and mail-in survey options, with a more personalized, face-to-face energy survey option. A specially trained energy auditor inspects the home and can provide the customer with immediate answers to basic questions, as well as specific recommendations on how customers can save energy and manage cost based on their home and lifestyle. In addition, promotions may be offered to increase customer participation, such as,
the replacement of low-flow showerheads and aerators to help reduce both natural gas and water consumption.

5. Program Rationale and Expected Outcome

a) Quantitative Baseline and Market Transformation Information:

Table 3

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

Refer to the overarching PIP section

b) Market Transformation Information

Table 4

	Internal Market Transformation Planning Estimates		
Market Sector and Segment	2009	2010	2011
Metric A			
Metric B			
Metric C			
Metric D			

Refer to the overarching PIP section

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 energy efficiency information
- Lack of awareness of specific measures and practices, and
- Inability to read or understand information when it is provided only in English.

To overcome these barriers, the HEES 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 HEES Program, first to generate awareness of the program, and second - and more important - to encourage completion of a survey. A statewide marketing campaign will be used to reduce overall implementation costs and to ensure uniformity throughout the state of California. In a further effort to reduce costs, the HEES Program will also partner with local municipalities and water agencies. Partnering with other entities will lower costs with cost sharing initiatives and will increase program awareness and effectiveness.

Statewide delivery mechanisms continue to include the Online and Mail-In Surveys. The individual utilities may also provide In-Home and Telephone surveys, if they feel these types of survey are warranted. Online and Mail-in surveys will be coordinated with a statewide emphasis. Each survey will be provided in multiple languages to bridge language barriers among California's diverse population. For all types of surveys, whether offered statewide or not, substantially the same questions and recommendations will be provided to ensure consistency statewide.

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 encourages the customer to make the greater commitment to participate in HEES. Without the commitment to change, either behaviorally or with material changes, there is no viable incentive to complete the survey. While the HEES report and action plan should result in changes in customer utilization, it can not be considered a conclusion of the process. Rather, once customers have been engaged by HEES, companies will motivate them to achieve even greater conservation savings through additional education on-line, by e-mail, by mail, by telephone, through community based organizations, and through any other appropriate mechanism.

d) Quantitative Program Targets:

Table 5b

SoCalGas	Program Target by 2009	Program Target by 2010	Program Target by 2011
On Line Survey	5,000	5,000	5,000
Mail In Survey	5,000	5,000	5,000
In Home Survey	5,500	5,500	5,500
Telephone Survey	n/a	n/a	n/a

e) Advancing Strategic Plan goals and objectives:

The HEES program will advance the strategic plan goals and objectives of the California Long Term Energy Efficiency Strategic Plan (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 HEES Program will plan to deliver a new HEES Report which will strive to implement decision triggers and call to action to support advancement of whole-house energy solutions. The reports will also pursue initiatives to reverse the growth of plug load energy consumption through behavioral 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 HEES Program will seek partnerships with local water agencies, municipals and other key stakeholders to develop and implement a comprehensive plan to promote water conservation. Further integration strategies will also include DSM (CSI, SDP, Peak Demand, etc), LIEE and 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 - For IOUs offering In-home surveys, the HEES In-home survey team will be comprised of contracted (and in some cases utility staff) workforce and will be trained in areas of energy conservation and technologies towards increased knowledge based of demand-side management and energy efficiency. A comprehensive training curriculum will be implemented to formalize the knowledge base of the survey workforce. This strategy falls in line with a goal of the Workforce Education and Training Strategic Plan intended to ensure that minority, low income and disadvantaged individuals fully participate in training and education programs at all levels of the demand-side management and the energy efficiency.

6. Program Implementation

a. Statewide IOU Coordination:

Utility companies participating in the statewide HEES program may provide incentives to residential customers who complete the surveys online in order to increase customer response rates to solicitation materials. In addition, the utility companies will increase program visibility and accessibility through leveraging of existing rebate programs with marketing partnerships. Details on any pilot marketing promotion will be reported in each utility's quarterly reports to the Commission.

The program will continue to work closely with statewide programs to maximize program efficiency. Its current design incorporates cross marketing of other information, service, and rebate programs to include statewide marketing and outreach programs.

Because of its comprehensive approach, the HEES program can effectively target customers while communicating and cross-selling other energy efficiency programs and services. All three survey channels will be coordinated with the other residential energy efficiency programs offered by the utility companies participating in the statewide program. Customized messages on energy efficiency programs, rebates, promotional webpage, and links will be added to specific energy efficiency recommendations made in the final survey reports. Once customers complete the surveys, reports sent back to the customers include information on the customers' home energy use, available energy efficiency products, services, and information on rebate programs offered by the IOUs and partnering Municipalities.

SoCalGas will work in partnership with SCE and Burbank Water and Power to offer common customers a single survey, covering both natural gas and electric energy savings information.

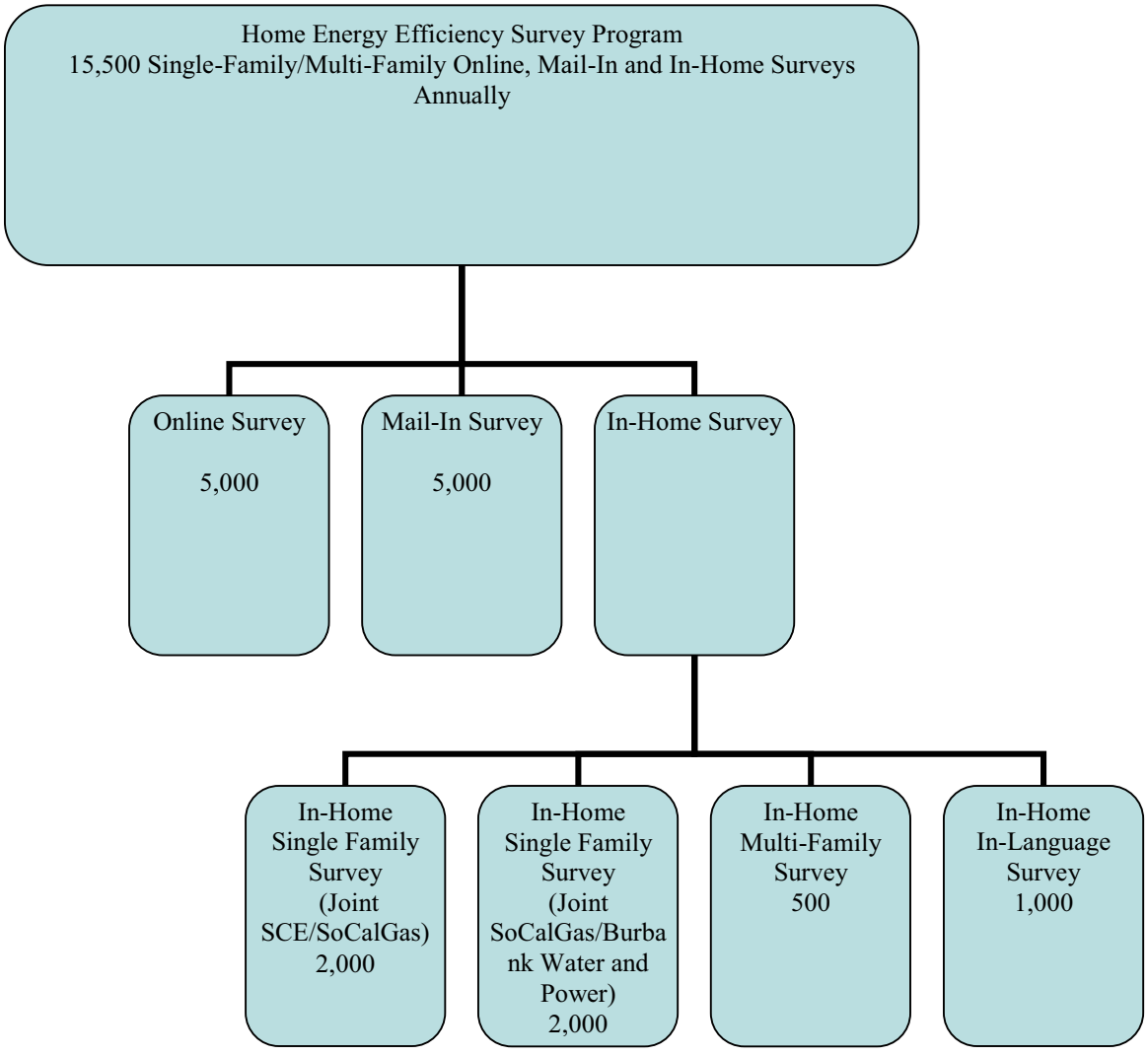
The program is designed to provide valuable information so customers can:

- Save energy and money;
- Make their home more comfortable;
- Discover additional resources and programs that are available to help reduce energy use; and
- Explore mechanisms for capturing and claiming confirmed energy savings for projects that install but do not require a financial incentive or rebate through any of the energy efficiency programs

The statewide HEES program provides customers with information at no charge to help them become familiar with ways to control and reduce energy usage in their home. SoCalGas and the participating statewide utility companies will continue to expand efforts to reach customers who have yet to take advantage of the many utility company programs and energy efficiency services. SoCalGas and participating statewide utility companies will continue to focus on improving the current program by increasing participation, ensuring customer equity, providing innovative approaches to program participation, and by coordinating with other existing programs to maximize program efficiency

Enhancements to the HEES will include related Online tools that will incorporate more interactive functions such as a carbon footprint calculator, an energy usage calculator, and an energy library. These tools will be a valued reference source to our customers. The tools will assist customers in reducing their energy usage, make wise buying decisions, and reduce their impact on the environment.

The program provides comprehensive, multilingual mail-in, online, and in-home energy efficiency surveys to SoCalGas residential customers with energy efficiency information to help them reduce their energy bills. Customers receive customized energy recommendations and information on incentive and rebate programs via internet, mail, or in the home.



The marketing plan will include targeted direct mail campaigns that take into consideration a greater set of criteria and customer behavior than the predecessor program. The program will initiate online marketing and coordination with statewide marketing agencies and new

outreach channels. SoCalGas will also explore opportunities to coordinate with community-based organizations (CBO) and faith-based organizations (FBO) to directly deliver program services.

b. Program delivery and coordination:

i. Emerging Technologies program

HEES 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 and Standards program

Continuous improvements and enhancements will be coordinated statewide to ensure the HEES Program maintains consistency with updates to Codes and Standards. Additionally, whenever analysis of HEES 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

As mentioned, for IOUs offering In-home surveys, the HEES In-home survey team will be comprised of contracted (and in some cases utility staff) workforce and will be trained in areas of energy conservation and technologies towards increased knowledge based of demand-side management and energy efficiency. A comprehensive training curriculum will be implemented to formalize the knowledge base of the survey workforce. This strategy falls in line with a goal of the Workforce Education and Training Strategic Plan intended to ensure that minority, low income and disadvantaged individuals fully participate in training and education programs at all levels of the demand-side management and the energy efficiency.

iv. Program-specific marketing and outreach efforts (provide budget)

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 community based organizations, faith based organization, local community events, fairs, etc.

Program-specific marketing and outreach efforts (provide budget)

Marketing and Outreach	SCE	SoCalGas	PG&E	SDG&E
On-survey marketing	TBD	TBD	TBD	TBD
Mail-in survey marketing	TBD	TBD	TBD	TBD
In-home/phone survey marketing	TBD	TBD	TBD	TBD
Pilot programs (IOU Specific)	TBD	TBD	TBD	TBD
Total	TBD	TBD	TBD	TBD

v. Non-energy activities of program

Subcontractor Activities:

Mail-In Survey Subcontractor - Statewide Mail-In Survey Subcontractor - SoCalGas is currently planning to team with SCE to gain synergies resulting from the selection of a single subcontractor to provide on-line and mail-in surveys and reports to customers located within the combined SoCalGas and SCE service area.

In-Home Survey Subcontractor - SoCalGas will continue to team with SCE and in addition, for 2009-2011 will also team with Burbank Water and Power to contract with a subcontractor to provide in-home survey/audits to customers located within the combined SoCalGas and SCE service area And SoCalGas and Burbank Water and Power area.

Online Survey Subcontractor - SoCalGas will continue to team with SCE to contract with a subcontractor to provide web and software support to provide online surveys to customers located within the combined SoCalGas and SCE service area.

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.

vii. CEC work on PIER

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

viii. CEC work on codes and standards

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

ix. Non-utility market initiatives

HEES will coordinate with DOE's ENERGY STAR® to provide customers with information on energy efficient lighting, appliances, and equipment.

c. <u>Best Practices</u>:

While all California utilities have offered residential energy survey programs for some years, 2006-2008 was the first time surveys were offered statewide as a coordinated program with the same kinds of survey services everywhere. In addition, there was an initial emphasis on hard-to-reach customers which will be continue throughout the 2009-2011 program cycle by targeting and outreaching to in-language communities. Statewide best practices are outlined below:

- HEES Report and Customer Usage History: Because the HEES Report includes comprehensive usage and billing information the HEES Program will continue to

promote the survey program as a way to educate customers on their potential energy savings opportunities.

- Ethnic communications: The program will continue to be offered to customers in several languages based upon IOU demographics to minimize the opportunities lost due to language barriers.
- Targeted marketing: On a statewide level the HEES program will continue to focus HEES Marketing campaigns towards customers with higher usage. As mentioned, the program may also be utilized as an outreach mechanism in conjunction with community based organizations, faith based organization, local community events, green initiatives, etc. This approach reduces overall marketing costs by maximizing the response rates generated from marketing efforts.

d. Innovation:

Improvements will be made to the customized HEES Report recommendations and will include demographic data (income, household size, education, etc). This will enhance the reports, ensure consistency, and reflect EE Strategic Planning. Further, HEES will improve the customer experience by incorporating practical and credible information and relevant recommendations validated by Energy Engineering sources, such as providing the percentage of consumption reduction realized by implementing recommendations, providing a Carbon Foot Print Calculator, or providing similarly pertinent information.

SCE/SoCalGas:

- The HEES program will integrate the On-Line HEES with "My Account" on-line customers to streamline the customer experience, making it more efficient and convenient.
- The HEES Program will initiate new enhancements to the program for 2009-2011 is to provide a quarterly follow up report to enable participants to understand how their energy use varies throughout the year and how their household compares with similar households in multiple languages. This multi-language approach will enhance the program's ability to reach California's culturally diverse consumers and provide on-going efficiency recommendations based on a whole-house system approach.
- 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. Updates to all energy savings assumptions will be reviewed and adjusted as to reflect changes in usage patterns and energy savings values. Values used will be validated by the DEER Database, SoCalGas Work Papers, or SoCalGas's Engineering and Design Resources Team.

e. Integrated/coordinated Demand Side Management:

The analysis portions of the residential audit programs will be expanded to include demand response and distributed generation. This would be accomplished by adding on to the current audit formats. Current audits gather the information needed to calculate energy and demand savings and provide recommendations of the cost effectiveness of installing energy efficiency measures. Simplified algorithms will be designed to gather the necessary information to perform similar analyses for demand response and distributed generation applications. Customers will be provided immediate recommendations on the cost effectives

of demand response and distributed generation applications for their residence. Customers will also receive applications for these programs when appropriate. Residential tracking systems will be modified to record and track the additional data. Reports will be developed and forwarded demand response and distributed generation programs for additional action as needed.

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.

f. Integration across resource types (energy, water, air quality, etc):
The HEES Program will continue to pursue alliances with local municipalities and water agencies, as feasible.

g. Pilots:
Statewide Pilot – Low Income Energy Efficiency (LIEE) Initiative: Statewide, the HEES Program will begin to encourage eligible customers to participate in the Low Income programs and other programs that will help them lower their energy consumption.

SCE/SoCalGas/SDG&E Pilot - Multi-Family Program: SCE, SoCalGas, and SDG&E intend to offer the HEES Program to the multi-family sector as a Pilot Program in 2009-2011. This will involve combined common-area and individual renter-occupied unit surveys. The resulting report for the tenant will focus closely and specifically on lifestyle modifications and other tenant issues, including gathering information on tenant-controlled systems and appliances, such as HVAC units, dishwashers, refrigerators, etc. This information will then be exported for analysis with the information gathered in the common area survey and included with the results of the subsequent owner report.

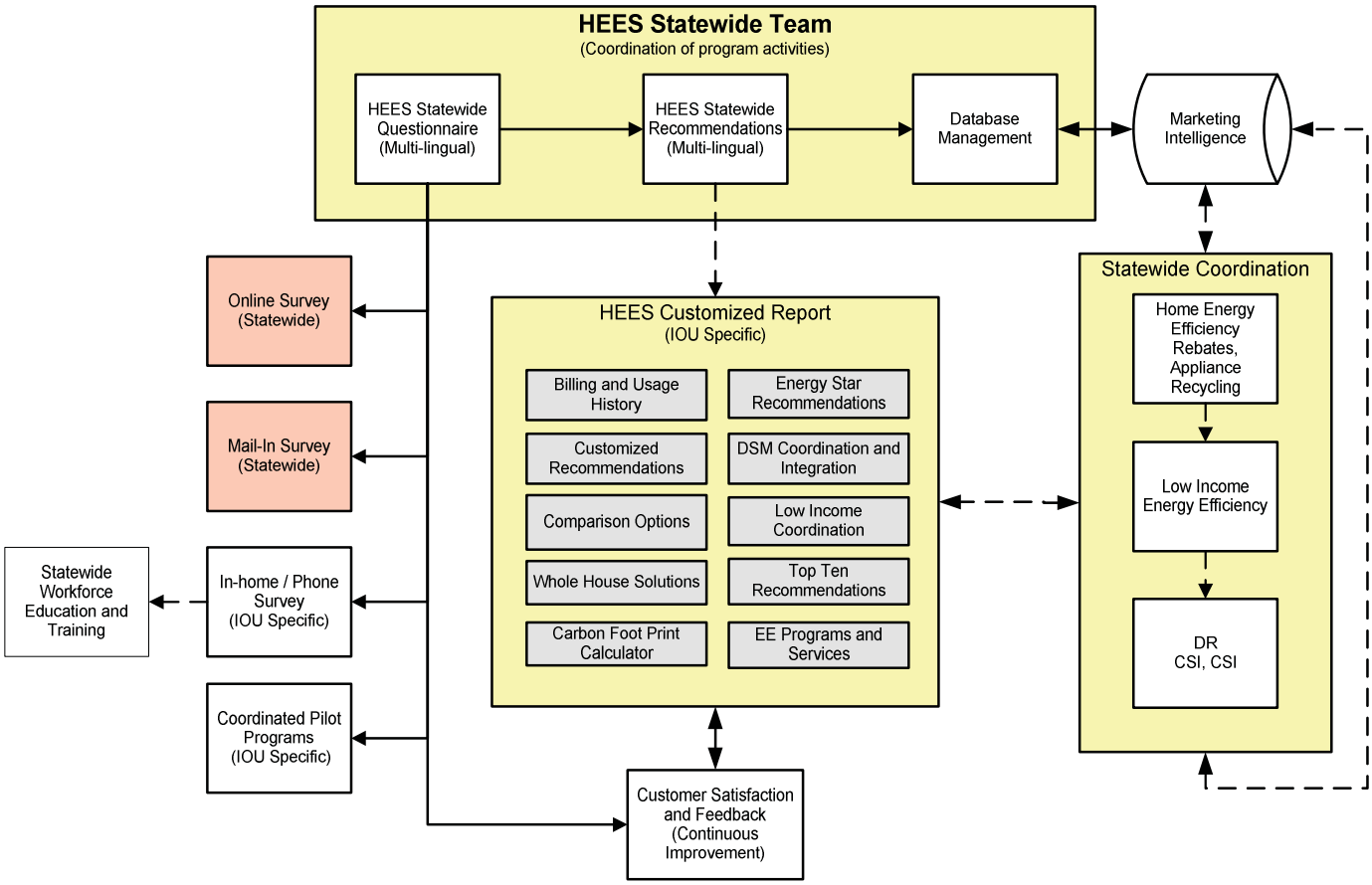
SCE/SoCalGas Pilot: SCE and SoCalGas will provide quarterly post-survey feedback mechanism (opt-in) to customers. The pilot initiative will provide customers with a comprehensive energy usage report and will contain historical usage data to reinforce positive trends towards sustainable energy conservation.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

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

2009–2011 Energy Efficiency Programs
Statewide Residential Program
Program Implementation Plan

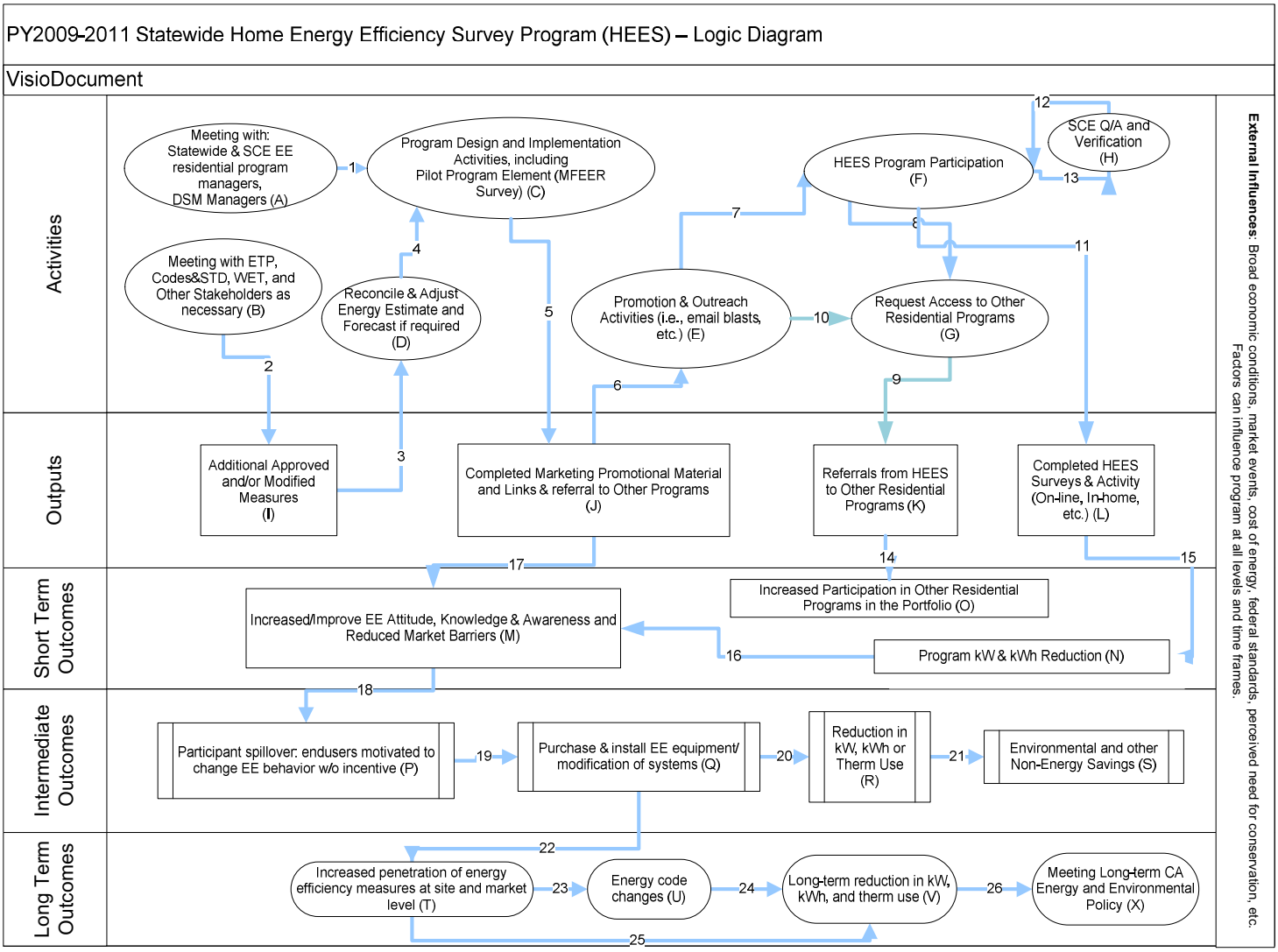
7. Diagram of Program:

The Diagram of the HEES Program represents the conceptual view of the future statewide program. The HEES Statewide Team will collaborate to develop statewide consistency but may be limited by feasibility, budget, and time to fully develop the concepts depicted.



2009–2011 Energy Efficiency Programs
Statewide Residential Program
Program Implementation Plan

8. Program Logic Model:



2009–2011 Energy Efficiency Programs
Statewide Residential Program
Program Implementation Plan

1. **Program Name:** Multifamily Energy Efficiency Rebate Program (MFEER)
   Program ID: TBD
   Program Type: This is a statewide residential core program.

2. Projected Program Budget Table

Table 1[27]

Program #	Main Program Name / Sub-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					
	Etc.					
	TOTAL:					

3. Projected Program Gross Impacts Table – by calendar year

Table 2

Program #	Program Name / Sub-Programs	2009 - 2011 Three-Year EE Program Gross kWh Savings	2009 - 2011 Three-Year EE Program Gross kW Savings	2009 - 2011 Three-Year EE Program Gross Therm Savings
Market Sector Programs				
	Core Program #1			
	Sub-Program #1			
	Sub-Program #2			
	Etc.			
	TOTAL:			

4. Program Description

[27] 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.

2009–2011 Energy Efficiency Programs
Statewide Residential Program
Program Implementation Plan

a) Describe program

The Multifamily Energy Efficiency Rebate (MFEER) Program is a continuance of the existing program within the IOU's residential portfolio. In accordance with the California Long Term Energy Efficiency Strategic Plan (CLTEESP), 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.

Multifamily property owners and managers are a historically less responsive market to energy efficiency efforts. As one of California's largest industries, this unique customer segment warrants additional attention and effort to motivate property owners and managers to actively participate in energy efficiency programs. MFEER Program proposes a series of comprehensive measures to address systems within multifamily housing establishments.

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

The MFEER continues to address the ongoing concern with "split incentives" where the residents are not the owners of the property, thus lack incentive to improve. Likewise, the property owners typically do not live on site and pay higher utilities expenses due to less than efficient appliances; thus also lack the incentive to upgrade. The MFEER has been effectively designed to drive this customer segment toward participation by offering property owners a variety of energy efficiency measures and services.

Program Integration: The MFEER Program marketing plans include print material, direct mail campaigns, print advertisement, trade show exhibitions, presentations, and statewide advertising; the program also links program rebates for ENERGY STAR® refrigerators with incentives from the Appliance Recycling Program (ARP) and coordinates with the Home Energy Efficiency Survey (HEES) Program.

Support for LIEE and Non-LIEE qualifying low income families: MFEER Program also promotes Low Income Energy Efficiency Program within the customer application to make the property owner/manager aware of the available income-qualified services for the tenants. The MFEER will work with local/municipalities to support AB811, so the Non-LIEE qualifying low income families' needs can be best served, and still adhere to MFEER's program design.

b) List measures

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

Electrical measures:

- Screw-in CFLs (ENERGY STAR Qualified)

- Screw-in CFL Reflector bulbs (ENERGY STAR Qualified)
- High Performance Dual-Pane Windows
- Ceiling Fans (ENERGY STAR Qualified)
- Interior CFL Fixtures (ENERGY STAR Qualified)
- T5 or T8 Lamps w/electronic ballasts
- Attic and/or wall insulation
- Electric storage water heaters
- Exterior CFL fixtures (ENERGY STAR Qualified)
- Occupancy sensors
- Photocells
- Exit Signs
- Package terminal air conditioners & heat pumps
- Room air conditioners (ENERGY STAR Qualified)
- Refrigerators (ENERGY STAR Qualified)

Gas measures:

- High efficiency Dishwasher
- Central system natural gas water heaters and boilers
- Natural gas water heater and/or boiler controllers
- Natural gas storage water heater
- Central natural gas furnace
- Attic and wall insulation

c) List non-incentive customer services

MFEER schedules training workshops to educate the contractors on the benefits from the measures offered by this program and other energy efficiency programs, including the low-income program.

5. Program Rationale and Expected Outcome

a) Quantitative Baseline and Market Transformation Information:

Table 3: Proposed Indicators for Consideration

	Baseline Metric		
	Metric A	Metric B	Metric C
Overall Program			

Refer to the overarching PIP section

b) Market Transformation Information:

Table 4: Indicators for Consideration

	Internal Market Transformation Planning Estimates		
Market Sector and Segment	2009	2010	2011
Metric A			
Metric B			
Metric C			
Metric D			

Refer to the overarching PIP section

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 (changing out short-lived incandescent lamps) are economical. Below, you will find a list of program barriers:

Ongoing concern with split incentive: 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. These facts imply an uphill effort to get owner/manager participation.

In alignment with California's BBEES and EAP policy initiatives, and advanced by the CLTEESP, the MFEER is in the unique position to overcome the split incentive barrier by serving two distinct beneficiaries of energy savings; the multifamily property owner and the tenant.

MFEER design has been overcoming the split incentive barrier since its inception in 2002 as has its predecessor (i.e. Residential Contractor Program) 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.

Difficult to reach due to property owners lack cohesiveness as a group and high turn-over rate of property managers: Further difficulties in planning are generated by the fact that property owners/managers, in large part, are not a cohesive group, which leads to disparities and gaps in industry knowledge and poses a barrier to knowledge sharing. In addition, the on-site property managers tend to be somewhat transient in nature making consistent contact difficult.

The multifamily property sector is a commercial enterprise providing 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 needs which are often overlooked.

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. The inclusion of rented mobile homes when the park owner/manager is conducting common area replacements is yet another objective.

The creation of energy efficient complexes has benefits above 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 where more knowledgeable customers undertake measures that can reduce the overall energy footprint with no loss to safety or comfort.

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

Selected Measures Account for Majority of Program Savings: Although the MFEER offers a comprehensive list of measures for the multifamily dwellings, however, its program results are dominated by lighting related measures. The cause of this is under investigation in the 2006-2008 process evaluation report, which is expected to be completed in 2009.

Program Integration to Overcome Barriers: MFEER will integrate opportunities with other the energy efficiency programs and services, such as the Appliance Recycling Program (ARP), Home Energy Efficiency Survey (HEES), Home Energy Efficiency Rebate (HEER) Program and SCE's income-qualified programs. This collaboration should increase participation levels for each respective program.

- The MFEER will continue to work with the Appliance Recycling Program to promote the turn-in of inefficient (but functional) property owner-owned refrigerators. MFEER will also consider opportunities with other energy efficiency programs or services to generate interest and gain higher participation levels through joint marketing efforts.
- MFEER will promote the LIEE 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 targeting the tenants through a direct-mailer, to promote services not offered under the program, such as the CARE

discount of 20% or more off the electric bill and the income-qualified refrigerator replacement.

- MFEER will coordinate with the HEES 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 utilizing MFEER and other energy efficiency programs.

d) Quantitative Program Targets:

The statewide MFEER is striving to meet the following program activities targets. The proposed targets may be modified due to funding restrictions, especially for the 2009 bridge funding year.

Table 5: Proposed Program Activity Targets

Multifamily Energy Efficiency Rebate	Program Target by 2009	Program Target by 2010	Program Target by 2011
Target #1	TBD		
Target #2			
Target #3			
Target #4			

Note: The proposed activities above may be limited by program funding restrictions, especially for 2009

e) Advancing Strategic Plan goals and objectives:

In accordance with the CLTEESP, 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 work to reduce the energy and carbon footprint of multifamily dwellings and will create additional energy savings and integration opportunities through inter-program referral and data sharing, and bundling of DSM solutions across energy efficiency, DR, CSI, smart meter and other IDSM efforts.

The MFEER will support the following CLTEESP:

- 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.

- 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.

This current program design does not specifically address ED's concern for meeting the market transformation goal of 40% energy consumption reduction from 2008 levels by 100% of multifamily households by 2020. However, the current program is part of the solution to achieve the multifamily transformation goal for the state. 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 would need to make significant changes in program design, program cost effectiveness, and many other economical feasibility issues. Furthermore, the MFEER program would need to be sensitive to the CPUC/CEC market potential studies.

6. Program Implementation

a. Statewide IOU Coordination:

The Multifamily Energy Efficiency Program provides cash rebates for the installation of 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 2 or more dwelling units may qualify.

The program offers the following incentives for its energy efficiency measures:

MEASURE	PG&E	SCE	SoCalGas	SDG&E
Attic Insulation	$0.15/Square Foot	$0.15/Square Foot	$0.30/Square Foot	$0.15/Square Foot
Wall Insulation	$0.15/Square Foot	$0.15/Square Foot	$0.50/Square Foot	$0.15/Square Foot
High Efficiency Clothes Washer Level 1 - dwelling unit	$35/Unit	n/a	n/a	n/a
High Efficiency Clothes Washer Level 2 - dwelling unit	$75/Unit	n/a	n/a	$75/Unit
High Efficiency Clothes Washer Level 1 - coin-op	$150/Unit	n/a	$150/Unit	n/a
High Efficiency Clothes Washer Level 2 - coin-op	$150/Unit	n/a	$150/Unit	$150/Unit
High Efficiency Dishwasher Level 1	$30/Unit	n/a	$30/Unit	n/a
High Efficiency Dishwasher Level 2	$50/Unit	n/a	$50/Unit	n/a
High Performance Dual Pane Windows	$0.75/Square Foot	$0.75/Square Foot	n/a	n/a

Residential Cool Roof - Low Slope	$0.20 per sq. ft.	n/a	n/a	n/a
Residential Cool Roof - Steep Slope Tier I	$0.10 per sq. ft.	n/a	n/a	n/a
Residential Cool Roof - Steep Slope Tier II	$0.20 per sq. ft.	n/a	n/a	n/a
Central System Natural Gas Water Heaters	$500.00/unit	n/a	$500.00/unit	$500.00/unit
Natural Gas Water Heater and/or Boiler Controllers	n/a	n/a	$750.00/unit	$750.00/unit
Natural Gas Water Heater and/or Boiler Controllers	n/a	n/a	$1,500.00/unit	$750.00/unit
Central system Natural Gas Boilers-Hot Water/Space Heating	$1,500/system	n/a	$1,500/system	$1,500/system
Natural Gas Storage Water Heater	$30.00/unit	n/a	$ 50.00/unit	$30.00/unit
Electric Storage Water Heater	$30.00/unit	$30.00/unit	n/a	$30.00/unit
Commercial Steam Traps - any pressure	$50.00/unit	n/a	n/a	n/a
Commercial Steam Traps - ≤ 15 psig	$100.00/unit	n/a	n/a	n/a
Industrial Steam Traps - > 15 psig	$200.00/unit	n/a	n/a	n/a
Low-Flow Showerhead	$15.00/unit	n/a	n/a	$5.00/unit
Faucet Aerators	n/a	n/a	n/a	$1.25/unit
Ducted Evaporative Cooler - Level 1	$300.00/unit	n/a	n/a	n/a
Ducted Evaporative Cooler with New Pressure Relief Damper(s) - Level 1	$400.00/unit	n/a	n/a	n/a
Ducted Evaporative Cooler - Level 2	$500.00/unit	n/a	n/a	n/a
Ducted Evaporative Cooler with New Pressure Relief - Level 2	$600.00/unit	n/a	n/a	n/a
Package Terminal Air Conditioners and Package Terminal Heat Pumps	$100.00/unit	$100.00/unit	n/a	$100.00/unit
Energy* Room Air Conditioners	$50.00/unit	$50.00/unit	n/a	$50.00/unit
Variable Speed Motor (VSM) Air Handler System	$50.00/unit	n/a	n/a	n/a
92 AFUE Central Natural Gas Furnace	$200.00/unit	n/a	$200.00/unit	$200.00/unit
94 AFUE Central Natural Gas Furnace	$300.00/unit	n/a	n/a	n/a
Energy* Exterior Hardwired Fluorescent Fixtures	$30.00/fixture	$30.00/fixture	n/a	$30.00/fixture
Energy* Interior Hardwired Fluorescent Fixtures	$40.00/fixture	$40.00/fixture	n/a	$40.00/fixture

Energy* Labeled Ceiling Fans with Energy* CFL	$20.00/fixture	$20.00/fixture	n/a	$20.00/fixture
LED Exit Signs	$35.00/fixture	$35.00/fixture	n/a	$35.00/fixture
Occupancy Sensors	$10.00/sensor	$10.00/sensor	n/a	$10.00/sensor
Photocells	$10.00/photocell	$10.00/photocell	n/a	$10.00/photocell
Screw-In Compact Fluorescent (CF) Reflector Bulbs - R30	$8.00/unit	$8.00/unit	n/a	$8.00/unit
Screw-In Compact Fluorescent (CF) Reflector Bulbs - R40	$10.00/unit	$10.00/unit	n/a	$10.00/unit
Time Clocks	$36.00/time clock	n/a	n/a	n/a
T8 or T5, 2-ft. 1 lamp	$32.00/unit	$32.00/unit	n/a	$32.00/unit
T8 or T5, 2-ft 2 lamps	$34.00/unit	$34.00/unit	n/a	$34.00/unit
T8 or T5, 2-ft 3 lamps	$38.00/unit	$38.00/unit	n/a	$38.00/unit
T8 or T5, 2-ft 4 lamps	$45.00/unit	$45.00/unit	n/a	$45.00/unit
T8 or T5, 3-ft. 1 lamp	$32.00/unit	$32.00/unit	n/a	$32.00/unit
T8 or T5, 3-ft 2 lamps	$34.00/unit	$34.00/unit	n/a	$34.00/unit
T8 or T5, 3-ft 3 lamps	$38.00/unit	$38.00/unit	n/a	$38.00/unit
T8 or T5, 3-ft 4 lamps	$45.00/unit	$45.00/unit	n/a	$45.00/unit
T8 or T5, 4-ft. 1 lamp	$32.00/unit	$32.00/unit	n/a	$32.00/unit
T8 or T5, 4-ft 2 lamps	$34.00/unit	$34.00/unit	n/a	$34.00/unit
T8 or T5, 4-ft 3 lamps	$38.00/unit	$38.00/unit	n/a	$38.00/unit
T8 or T5, 4-ft 4 lamps	$45.00/unit	$45.00/unit	n/a	$45.00/unit
T8 or T5, 8-ft. 1 lamp	$32.00/unit	$32.00/unit	n/a	$32.00/unit
T8 or T5, 8-ft 2 lamps	$34.00/unit	$34.00/unit	n/a	$34.00/unit
T8 or T5, 8-ft 3 lamps	$38.00/unit	$38.00/unit	n/a	$38.00/unit
T8 or T5, 8-ft 4 lamps	$45.00/unit	$45.00/unit	n/a	$45.00/unit
T12 Delamping	$6.00/each	$6.00/each	n/a	$6.00/each
Commercial Pool and Spa Heater	$2.00/Mbtuh	n/a	$200.00/each	n/a
Efficient Two-Speed Pool Pump and Motor	$100.00/unit	n/a	n/a	n/a
Efficient Two-Speed Pool Pump Motor with controller	$100.00/unit	n/a	n/a	n/a
Efficient Variable-Speed Pool Pump and Motor	$100.00/unit	n/a	n/a	n/a
Efficient Variable-Speed Pool Pump Motor with controller	$100.00/unit	n/a	n/a	n/a
Energy* Screw-in CFL 5-13 watts	n/a	$4.00/each	n/a	$4.00/each
Energy* Screw-in CFL 14-20 watts	n/a	$5.00/each	n/a	$5.00/each
Energy* Screw-in CFL 21-30 watts	n/a	$6.50/each	n/a	$6.50/each
Energy* Labeled Refrigerators	n/a	$50.00/each	n/a	n/a

The Multifamily Energy Efficiency Program marketing plans consist of print collateral material, direct mail campaigns, print advertisement, trade show exhibitions and presentations, statewide advertising, and leveraging with other IOU energy efficiency efforts and programs where feasible. (see targets above, Table 5)

MFEER program will coordinate with CEC, ARB, AQMD and other local/Municipalities to implement environmental program to support California's long term strategy plan.

b. Program delivery and coordination:

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

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 mega-property companies such as the Irvine Company. This network of contractors helps identify perspective properties and contact person. The contractors also help the property managers develop the list 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, the program also make special outreach and training sessions available to the MFEER affiliated contractors on a regular basis.

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

ii. Codes and Standards program
The MFEER works with the codes and standards group to ensure all the measures 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, so the long term strategic plan could be accomplished.

iv. Program-specific marketing and outreach efforts (provide budget)
The Multifamily Energy Efficiency Program marketing plans consist of print collateral material, direct mail campaigns, print advertisement, trade show exhibitions and presentations, statewide advertising, and leveraging with other IOU energy efficiency efforts and programs where feasible

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

vi. Non-IOU Programs
The program allows for cross promoting of other available programs, such as water companies that offer rebates for clothes washers and dishwashers.

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

viii. CEC work on codes and standards
MFEER is very sensitive to the codes and standards work 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 applications. In addition, MFEER also participate in activities with the local and national housing authorities.

c. Best Practices:

Given how difficult it is to reach these customers, the MFEER is designed to leverage the knowledge and contacts of its network of contractors. Given the limited marketing budget, this targeted outreach has yielded fruitful results for the program. It also consistently helped the program to overcome split-incentive as a barrier for this segment. This program is often shut-down early due to its ability to meet kW and kWh savings goals early in the program cycle.

This program also drives permanent change in California and achieves market transformation through the installation of Energy Star interior and exterior hardwired fixtures, 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. Property owners working with one of the IOUs are automatically referred to the program manager

of other IOUs, when their properties are served by multiple IOUs. The IOUs use identical rebate programs and similar rebate applications, which reduce confusion and barriers that typically arise when working with multiple companies.

As one of the few programs in the nation that specifically addresses this hard-to-serve market segment, this unique and innovative program has secured a model approach for other utilities to emulate. In addition, the program represents an innovative partnership among California utilities, demonstrating the great potential of 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 traditionally have been unable to receive energy efficiency rebates. Some tenants qualified for the low-income programs, and prior to 2002, under the RCP program, a few multifamily properties received installation of compact fluorescent lamps, water heater controllers, and duct test and sealing. The development and implementation of the statewide Multifamily Energy Efficiency Rebate Program has increased the participation of not only property owners/managers (for the common area energy efficient measures), but of tenants as well, who use approximately 80% of the energy in multifamily buildings. Traditionally, this has been an untapped market. Energy savings have increased exponentially each year that rebate funding has been available.

In accordance with the California Energy Efficiency Strategic Plan, SoCalGas will explore opportunities to leverage external funding, rebates and encourage comprehensive participation in energy efficiency programs. Such options include On-Bill Financing. The On-Bill Financing option, for owners of multifamily units, facilitates the purchase and installation of comprehensive, qualified energy efficiency measures by customers who might otherwise not be able to complete such purchases given capital and/or administrative constraints. Participating On-Bill Financing customers will be eligible to receive a full rebate from the SoCalGas MFEER program and to finance the balance of qualified energy efficiency measures. Financing combined with the MFEER program can provide customers with the greatest benefit for installing the maximum number of energy efficient measures in their multifamily properties, as well as help to alleviate the burden of high initial capital costs associated with the purchase.

e. Integrated/coordinated Demand Side Management (ISDM):

The MFEER will work with IDSM program to identify the best possible collaboration. The potential offer could include smart metering, load management and other services. The details of this collaboration will be better defined in the 2009-2011 program cycle.

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

The program (PG&E and SoCalGas) allows for cross promoting 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 it consistent statewide.

SCE and SoCalGas will collaborate to create a Whole Building pilot program specifically for the Multifamily market segment. The pilot will be created by adding a Multifamily component to the current (joint) Home Energy Efficiency Survey (HEES) Program. The audits will address water, gas and electric savings for multifamily buildings. SCE/SoCalGas will share the results of the multifamily HEES pilot. If successful, the MFEER will adopt this implementation as part of the statewide initiative.

g. Pilots:

Whole Building Pilot Program:
A Multifamily Component will be added to the HEES Program: SCE and SoCalGas will create a pilot program that emulates the current energy audit program for single family residents. In order to accomplish this, we will work with a third party to create the multifamily audit tool. We plan to offer the pilot program at various venues such as the Apartment Owners Association meetings, tradeshows and seminars. This approach should be met favorably as owners typically want to save as much money as possible. By using the Audit to perform a comprehensive energy analysis, the MFEERP core measures will be recommended when appropriate. We will incorporate recommendations for water savings and refer customers to their local water districts when appropriate.

Pay for Performance Pilot:
SoCalGas and SDG&E plan to incorporate a 'Pay for Performance Incentive Mechanism for controller contractors and installers. In previous program cycles, a large majority of program participation has been due to contractors promoting the benefits of an energy management control for hot water boilers and central water heaters. These controls are a critical component of the MFEER program. The program will offer mandatory contractor training and certification, based on best practices approach to improving the overall system integrity of the hot water distribution system. Contractor incentives will be paid based on the installation of qualified measures and validated energy savings.

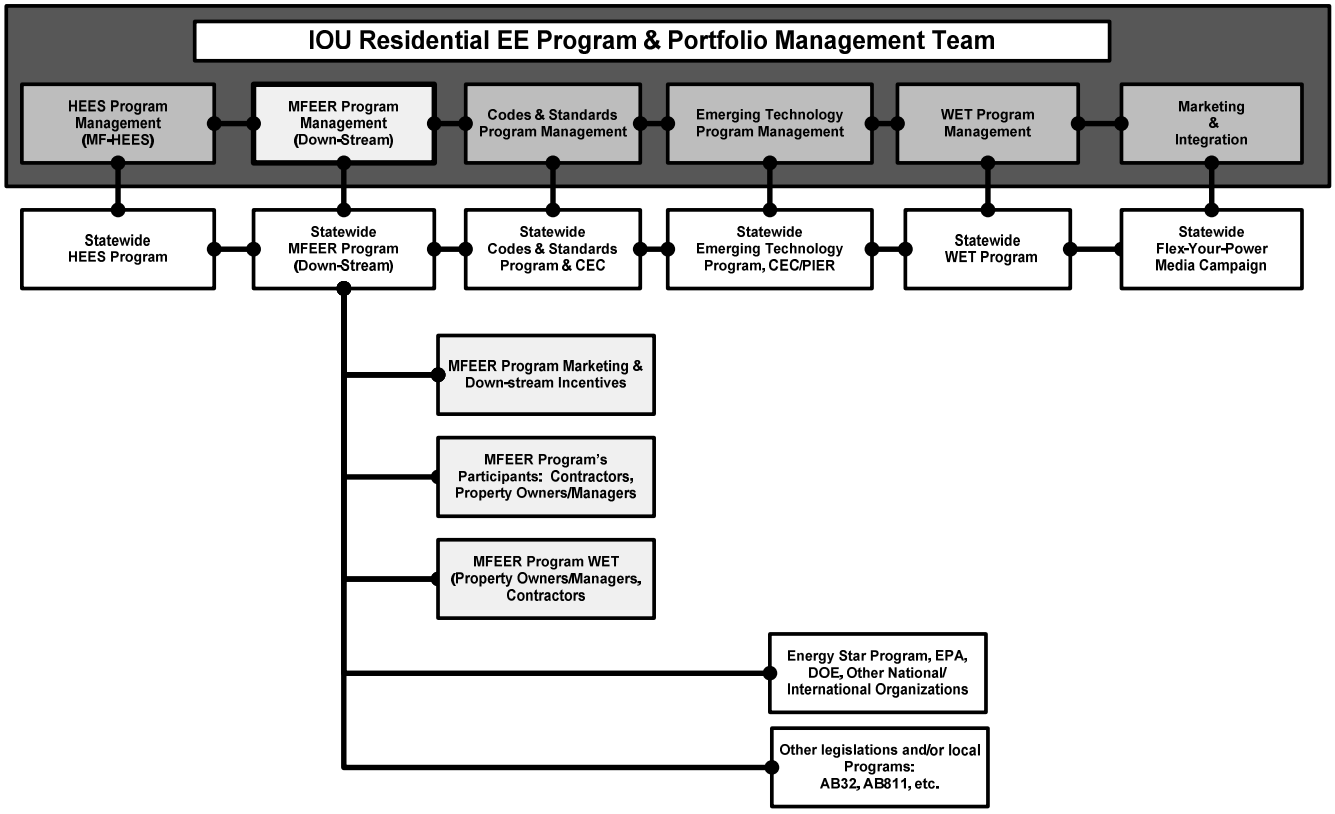
Custom Calculation Pilot:
SoCalGas has identified an underserved sub-segment within the multifamily market segment. These customers are identified as non-core accounts as they typically use in excess of 50,000 therms annually. Although these customers are considered 'residential', they typically use commercial equipment such as steam boilers to provide space and /or water heating in excess 1MMBTUH. In previous program cycles, these customers were unable to participate in IOU EE programs due to equipment eligibility requirements. SoCalGas plans to implement a pilot program to address this overlooked sub-segment of the multifamily market.

h. EM&V:

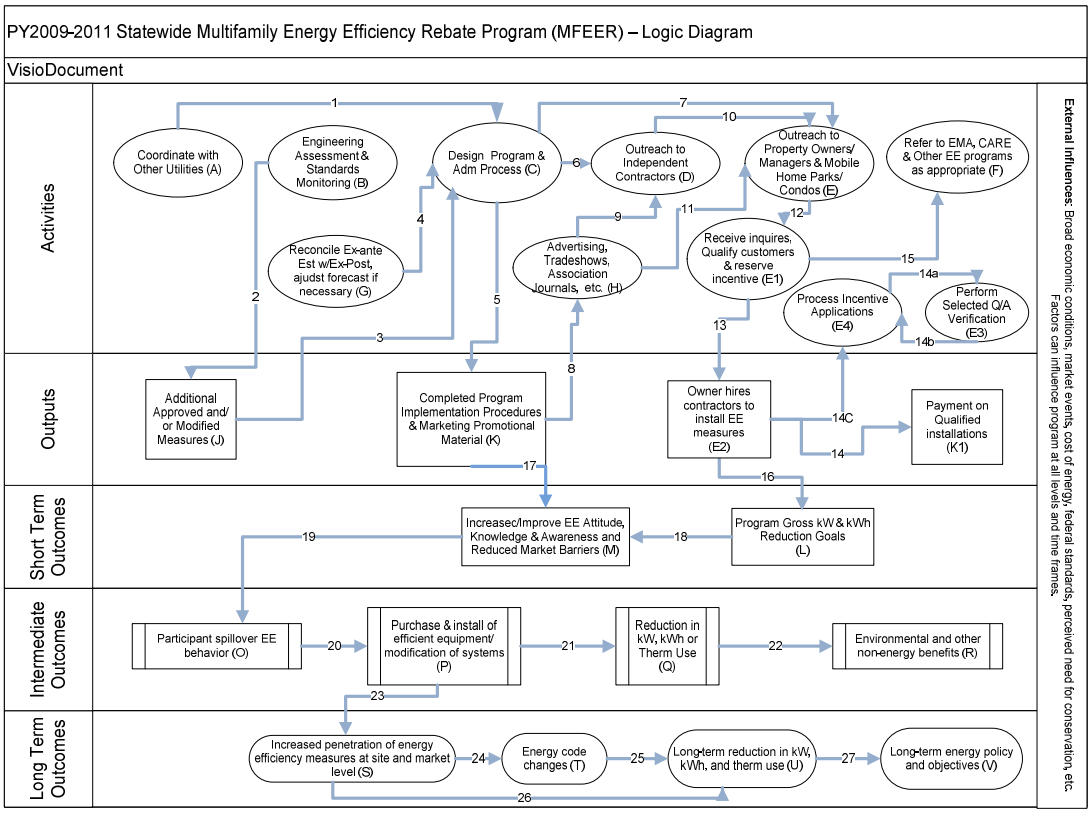
The utilities are proposing to work with the Energy Division to develop and submit a comprehensive EM&V Plan for 2009-2011 after the program implementation plans are filed. This will include process evaluations and other program-specific studies within the context of broader utility and Energy Division studies. More detailed plans for process evaluation and other program-specific evaluation efforts cannot be developed until after

the final program design is approved by the CPUC and in many cases after program implementation has begun, since plans need to be based on identified program design and implementation issues.

7. Program Interaction Diagram: MFEER



8. Program Logic Model: MFEER



2009 – 2011 Energy Efficiency Programs
Commercial EE
Program Implementation Plan

1. Program Name: Commercial Energy Efficiency Program
   Program ID: TBD
   Program Type: This is a core program.

2. Projected Program Budget Table

Table 1[1]

Program #	Main Program Name/Sub-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					
	SCG SW Commercial Programs					
	#SW-ComA - Calculated	$ 847,011	$ 393,371	$ 6,800,389	$ -	$ 8,040,771
	#SW-ComB - Deemed	$ 4,241,581	$ 1,544,154	$ 9,467,736	$ -	$ 15,253,471
	#SW-ComC - Nonresidential Audits	$ 193,572	$ 40,840	$ 1,598,889	$ -	$ 1,833,301
	#SW-ComD - Continuous Energy Improvement	$ 155,159	$ 270,209	$ 603,750	$ -	$ 1,029,118
	TOTAL:	**$ 5,437,323**	**$ 2,248,574**	**$ 18,470,764**	**$ -**	**$ 26,156,661**

These budget numbers are presented in Appendix C: Energy Division Tables, Graphs Pie Charts: Table 7.1 - 2009 - 2011 IOU Strategic Planning Program Budget

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

3. Projected Program Gross Impacts Table[2] – by calendar year

Table 2

Program #	Main Program Name/Sub-Programs	2009-2011 Three-Year EE Program Gross kWh Savings	2009-2011 Three-Year EE Program Gross kW Savings	2009-2011 Three-Year EE Program Gross Therm Savings
	Market Sector Programs			
	SCG SW Commercial Programs			
	#SW-ComA - Calculated	0	0	5,460,502
	#SW-ComB - Deemed	0	0	12,345,995
	#SW-ComC - Nonresidential Audits	0	0	0
	#SW-ComD - Continuous Energy Improvement	0	0	0
	TOTAL:	**0**	**0**	**17,806,497**

These savings values are presented in Appendix C: Energy Division Tables, Graphs & Pie Charts: Table 7.2 - IOU 2009 - 2011 Program Savings Estimates

4. Program Description

a) Describe program

The Statewide Commercial Energy Efficiency Program offers California's commercial customers a statewide-consistent suite of products and services to overcome the market barriers to optimized energy management. The program targets integrated energy management solutions, including energy efficiency, demand response (DR), and distributed generation, through strategic energy planning support; technical support services, such as facility audits, calculation and design assistance; and financial support through rebates and incentives.

Targeted end-users include all commercial sub-segments such as distribution warehouses, office buildings, hotels, motels, laundry, restaurants, government, schools, universities, colleges, hospitals, retail facilities, entertainment centers, and "hard-to-reach" smaller customers that have similar buying characteristics.

The Statewide Commercial Energy Efficiency Program includes five core statewide sub-program elements, including Continuous Energy Improvement, Non-Residential Audits, Direct Install, Deemed Rebates and the Calculated support services and incentives. Each utility also offers local program elements, third party programs, and local government partnerships that complement and

enhance this core offering for their region, as described below, and in complete detail in the Commercial Sub-Program descriptions. Together these offerings are designed to not only overcome the traditional market barriers to energy efficiency, but also use efficiency to advance demand reduction and distributed generation opportunities uniquely suited to the Commercial segment.

- Continuous Energy Improvement (CEI) is a non-resource sub-program that describes the strategic planning tools and resources which lay the groundwork for long-term integrated energy planning and serve as a launching platform for other utility and non-utility programs and services. Through analysis, benchmarking, long-term goal setting, project implementation support, performance monitoring, and ultimately energy management certification, CEI aims to transform the market from a "project-to-project" approach to a continuous improvement pathway. In support of the California Long Term Energy Efficiency Strategic Plan (CLTEESP), a CEI approach also sets the stage for non-energy resource integration, such as greenhouse gas reduction, water conservation strategies, and regulatory compliance.

- Non-Residential Audits (NRA), including basic audits, Integrated Audits, and Retro Commissioning (RCX) audits, provide an inventory of technical project opportunities and financial analysis information that can be used to populate a customer's short- or long-term energy plan, and overcome both informational and technical customer barriers.

- The Direct Install rebate offering provides small business customers that have a small peak demand the opportunity to have a third-party contractor retrofit existing systems to energy efficient systems at no cost to the customer.

- The Deemed rebate offering provides utility representatives, equipment vendors, and customers an easy-to-use mechanism to cost-effectively subsidize and encourage adoption of mass market efficiency measures through fixed incentive amounts per unit/measure.

- The Calculated program offering provides standardized incentives for customized and integrated energy efficiency/DR projects in new construction, retrofit, and RCX projects, and offers comprehensive technical and design assistance for each. It overcomes information, technical, and financial barriers. Because it provides a customized calculation method that can consider system and resource interactions, it will be the preferred approach for supporting the integrated, whole system, and multi-resource management strategies of the CLTEESP.

When developing program metrics and targets for each sub-program element, each utility will consider market potential as available, past program participation

rates, market progress, current economic conditions, work-paper and baseline updates, and customer mix and penetration. Statewide coordination and planning will facilitate inter-utility sharing of successes, lessons learned, and best practices in the pursuit of those targets and metrics.

Statewide coordination and planning between utility program planning staff, utility functional departments, government agencies, and other key partners and stakeholders will also be critical to the advancement of the CLTEESP. Leveraging national and state initiatives, tools and resources to manage energy and resources – including greenhouse gasses (GHG), air quality, and water – is a critical path to optimizing the potential for California's commercial customer segments to thrive. As described in full in PIP Section 6b, the Statewide Commercial Energy Efficiency Program design includes the staged integration and coordination of existing non-utility programs, initiatives, and regulations, and a future drive or support of advancements in integrated resource planning, energy management certification, industry benchmarking, workforce education and training, and sharing of industry best practices.

The commercial customer markets are uniquely suited to integrated energy strategies, and an integrated approach will effectively help customers meet overall economic and green goals. Opportunities for distributed generation from biogas, biomass, solar, fuel cells, and wind will be supported through this plan in support of state renewable energy targets, state GHG reduction efforts under AB32, and support of emerging carbon markets and offset programs. Consistent with California's preferred loading order, however, the utilities will continue to aggressively market and support energy efficiency first, as California's most cost-effective energy resource, while also being mindful of the customer's ultimate interests and goals.

b) List measures

Technologies addressed through this program effort are varied, and include, HVAC, food service equipment, boilers, hot water and steam systems, absorption chillers and insulation . A comprehensive list is located in Appendix A. Incentive levels will be those aligned with the Calculated and Deemed sub-programs.

c) List non-incentive customer services

The Statewide Commercial Energy Efficiency Program will include a wide variety of non-incentive program services intended to support customer strategic planning, educate and train customers and the workforce about energy efficiency, and provide customized technical and project support. The service list includes:

Continuous Energy Improvement (CEI)

- Energy management assessments
- Energy planning
- Baselining and benchmarking
- Project implementation support
- Customer recognition
- Resources on Energy Design Resources website

Customer Education and Training

- DOE Basic, Intermediate, and Specialist Training – refrigeration systems, HVAC, motors, compressed air, and steam.
- Other commercial process systems training
- Regulatory compliance and energy efficiency convergence, for example, NOX and boilers
- Integrated industry-focused workshops, e.g., restaurants, lodging, retail, hospitals, commercial buildings, hi-tech and bio-tech facilities

Workforce Education and Training

- DOE Basic, Intermediate and Specialist Training in support of ANSI Certification, per the CLTEESP.
- Title 24 Training, and Building Operator Certification
- HVAC training including NATE certification

Non Residential Audits

- Basic audits
- Integrated audits
- RCx audits

5. Program Rationale and Expected Outcome

a) **Quantitative Baseline and Market Transformation Information**

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

Market transformation is embraced as an ideal end state resulting from the collective efforts of the energy efficiency field, but differing understandings of both the MT process and the successful end state have not yet converged. The CPUC defines the end state of MT as "Long-lasting sustainable changes in the structure or functioning of a market achieved by reducing barriers to the adoption of energy efficiency measures to the point where further publicly-funded intervention is no longer

appropriate in that specific market."[3] 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[4].

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[5]. Markets are social institutions[6], 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[7] 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[8]. According to York[9], "Market transformation is not likely to be achieved without significant, permanent increases in energy prices. From an economic perspective, there are 3 ways to achieve market transformation: (1) fundamental changes in behavior, (2) provide proper price signals, and (3) permanent subsidy."

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

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[3] California Public Utilities Commission Decision, D.98-04-063, Appendix A.
[4] California Public Utilities Commission (2008) *California Long Term Energy Efficiency Strategic Plan,* p. 5. Available at http://www.californiaenergyefficiency.com/docs/EEStrategicPlan.pdf
[5] 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
[6] 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/
[7] 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.
[8] 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.*
[9] York, D., (1999). "A Discussion and Critique of Market Transformation", Energy Center of Wisconsin. Available at http://www.ecw.org/ecwresults/186-1.pdf.

baselines may have been as well as on the degree of successful market transformation[10]. 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[11], 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[12]. 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[13]. 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.)[14]" The Strategic Plan recognizes that regulatory policies are not yet in place to support the success of market transformation efforts[15], but also reflects the CPUC's directive to design energy efficiency programs that can lay the groundwork for either market transformation success or for codes and standards changes.

Above all else, the hallmark of a successful market transformation program is in the coordination of efforts across many stakeholders. The most successful MT programs have involved multiple organizations, providing overlapping market interventions[16]. 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

[10] 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
[11] Rogers (1995) Diffusion of Innovations, 5th Ed.
[12] 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
[13] Sebold et al (2001) p. 6-5,
[14] 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.
[15] CPUC (2008) Strategic Plan, p. 5.
[16] Nadel, Thorne, Saches, Prindle & Elliot (2003).

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[17] 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.

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

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

Therefore, for the Commercial sector, the following approach to quantitative baseline and market transformation information is presented as follows.

The IOUs are proposing metrics believed to reliably market transformation for Energy Efficient equipment in key energy end-use areas. While all metrics fall short of a perfect measure, the ideal metric would have a baseline that is already established that includes a reasonable and easy method of duplication and comparison. Market transformation cannot be measured on a year to year basis but will take several years and measurements to reliably discern trends.

[17] Peloza & York, (1999).

The overarching purpose for this metrics is to gauge the saturation levels of energy efficient lighting and high efficiency boilers in order to understand past accomplishments and future energy savings potential in the commercial sector. Specifically it is proposed that new lighting and boiler saturation studies be conducted. The objective of these studies would be to estimate the efficiency levels of equipment in the field. A comparison could then be made to comparable baseline studies and a determination made if a trend is taking place that indicates that more energy efficient solutions are being installed in commercial applications. As market transformation is more than just market share of measures, the suggested metrics also include an attitudinal metric.

Attitudinal change is an important part of any market transformation effort. This change may be tracked with a battery of questions that probes customer attitudes, knowledge and awareness (AKA) of energy efficiency. In order to gauge an attitudinal based metric for this sector a battery of questions probing AKA among customers would have to be created and used to scale AKA. Examples of AKA would include knowledge of energy efficiency lighting and other specific measures. Evaluators could also draw from customer surveys used in past program evaluation studies to determine whether any response patterns would be a useful indicator of market transformation, moving forward. The dimensions of any scale would need to be selected by the MT collaborative. The baseline response pattern to the AKA scale would need to be established early during the program cycle. Customers could be surveyed on an annual basis and changes in their AKA tracked along the scale. Responses of customers for a particular sub-program could be pulled out for separate analysis, as needed. In addition, the suggested metrics also include a behavioral metric.

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

With this discussion in mind, IOUs propose the following metrics for this sector:

Table 3

	Baseline Metric			
	Metric A	**Metric B**	**Metric C**	**Metric D**
Measure-based metric	Ratio of high efficiency lighting installed over a base lighting case			
Measure-based metric		Ratio of high efficiency boilers over a base case		
Attitudinal-based metric			Ratio of survey participants that have built EE practices into their business models when considering capital improvements	
Behavioral-Adoption based metric				Behaviors of sector are gauged based on a scale developed to measure energy efficient behaviors in businesses

b) Market Transformation Information

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

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

Table 4

	Internal Market Transformation Planning Estimates		
	2009	**2010**	**2011**
Ratio of high efficiency lighting installed over a base lighting case	Improvement over baseline, over time	Improvement over baseline, over time	Improvement over baseline, over time
Ratio of high efficiency boilers over a base case	Improvement over baseline, over time	Improvement over baseline, over time	Improvement over baseline, over time
Ratio of survey participants that have built EE practices into their business models when considering capital improvements	Establish baseline	Improvement over baseline, over time	Improvement over baseline, over time
Behaviors of sector are gauged based on a scale developed to measure energy efficient behaviors in businesses	Establish baseline	Improvement over baseline, over time	Improvement over baseline, over time

c) Program Design to Overcome Barriers:

The 2009-11 Statewide Commercial Energy Efficiency Program builds on past program successes and best practices to overcome both common and unique barriers to efficiency in the segment, including:

Commercial barriers:

- Commercial customers are a diverse and geographically widespread sector, dependent on regional resources or vendors for information,
- Small business customers, such as franchisees, are generally regarded as 'hard-to-reach' and are traditionally less likely to install EE technologies due to financial, geographic, ethnic, and other market barriers..

- Building owners, especially landlord owners[18], want to minimize first cost for new buildings as well as for renovation.
- For multi-tenant landlord owned property management buildings, property managers operate differently from owners because the building is their business. Decision making is more complex, with emphasis on building value and Return on Investment (ROI) rather than lower operating costs. They also depend on complex legal agreements, and building and tenant turn over.
- Breaking the tenant landlord barrier for implementing efficiency measures is a critical step to market penetration.
- Energy efficiency improvements are not perceived to add value and marketability of properties
- Institutional owners are often constrained by rigid boundaries separating capital development and operating budgets and are limited by lowest-bid regulations for capital projects.
- There is a general lack of awareness of the benefits of energy efficiency, and uncertainty and skepticism over long-term energy and cost savings.
- Some industries such as Healthcare and BioTech also face strong regulatory issues to be integrated in the energy efficiency offer (for example: OSHPD and CALOSHA).
- In some activities like HighTech and Hospitality, international competition drives short-term survival attitudes versus a long-term continuous improvement approach. In addition franchises have additional barriers to overcome such as Franchise owner approval.
- Efficient design alternatives can be lost in low-cost bidding scenarios.
- Whole system opportunities are missed by individual equipment vendors.
- Customers are often not aware of systems that are operating at less than optimal efficiency.

By focusing more directly on sub segments, this plan will better serve commercial customers by gaining efficiency and consistency in program delivery. This targeted and focused approach will mitigate the barriers as follows:

- Program applications and processes will be simplified and made more consistent. There will be a central core incentive/rebate offering, with service-specific riders added as needed. This will enable customers to better understand the program delivery process. Program verification processes will also be made more consistent so that the customer is touched fewer times for multiple offerings;
- A package of program bundles will be made available so that typical offerings for a sub segment will be grouped together. This will minimize

[18] For properties where the landlord owns the equipment and the lessee pays the bills, there is currently minimal incentive for the customer or the landlord to invest in EE

lost opportunities as a more comprehensive program and service offering will be readily available for customers;

- Marketing outreach efforts will be more focused on customer sub segments rather than programs, which should lead to improved customer adoption for all programs. Utilities will continue to foster strategic partnerships with industry associations such as Building Owners and Managers Association (BOMA), Department of General Services (DGS), Green Building Council, Air conditioning Heating and Refrigeration Institute (AHRI), American Society of Heating Refrigeration and Air Conditioning Engineers (ASHRAE), Manufacturers Trade Associations, and specific sub-segment professional association as California Hospital Association (CHA), CSHEE, International Society of Pharmaceutical Engineering (ISPE), etc., to engage in a multi-faceted approach to marketing energy efficiency practices and programs to targeted users.
- Program bundling will be configured so that customers will have greater flexibility in how they enroll; however, the program bundles will be packaged so that customers will be encouraged to take a more comprehensive approach to EE;
- Because program offerings will be bundled, especially through the Continuous Energy Improvement Program, the program eligibility requirements will be made more consistent, leading to fewer areas where customers are not served;
- For public sector customers, existing federal and state programs and mandates will be leveraged
- Utilities will expand the On-Bill Financing Program, which offers unique benefits to commercial customers by allowing them to retain rebates and cost savings from EE projects. This triggers and expedites EE project adoption;
- The new construction whole building approach (WBA) will be extended to existing buildings as one example of the customized bundling outlined in the CLTEESP. This approach will make available the tools and resources necessary for customers opting to take the most comprehensive approach to EE;
- Coordination with other parties will be enhanced so that related programs (e.g. water conservation, reduction GHG emissions, LEED™, etc.) are clearly and concisely communicated to customers, which should improve participation in all offerings;
- During the 2009-11 period, as part of AB 1103 requirements, utility data to be used for benchmarking buildings will be provided by the IOUs to the EPA for facility owners' use. While providing this data will meet the intent of the law, a new offering will be added (the Energy Benchmarking Program) that will allow customers to learn the process and methodology for setting up their own benchmarks. This will give customers the information required to understand how their buildings perform and how

the improvements they make can be tracked. It will be associated with Retro-Commissioning services, focusing on operation improvements and allowing many projects to be funded through operating budgets, overcoming a common financial barrier related to capital budget approvals.

d) Quantitative Program Targets:

Table 5

Program Name	Program Target by 2009	Program Target by 2010	Program Target by 2011
Non-Res Audit	# Audits TBD	TBD	TBD
Calculated	4M Therms	4.2M Therms	4.4M Therms
Deemed	5M Therms	5.2M Therms	5.4M Therms
CEI	Development	TBD	TBD

e) Advancing Strategic Plan goals and objectives:

Many activities under the Commercial Statewide Portfolio advance the goals, strategies, and objectives of the California Long Term Energy Efficiency Strategic Plan (CLTEESP). Details on these actions are provided in the tables found in the Commercial Sub-Program descriptions. The examples below highlight some of the Portfolio strategies that align with the Strategic Plan:

- **Integration:** To encourage greater use of IDSM, IOUs will
  - Offer customers solutions that integrate site-specific and optimized packages of comprehensive energy efficiency, demand reduction, solar, combined heat and power, hybrid cooling, and thermal storage opportunities.
  - Develop an active cooperation network among the different stakeholders, such as corporate and local managers, OSHPD, engineering firms, service companies, architects, and vendors.
  - Create customized long-term plans with large corporations connecting corporate and local levels integrating energy efficiency, DR, self-generation and renewables.

- **New energy efficiency delivery methods:** To take advantage of the significant opportunities offered by information, behavior-change strategies and training as delivery channels for increasing energy efficiency, utilities will:
  - Drive expanded involvement of the California Commissioning Collaborative in developing statewide measurement and verification

(M&V) protocols and professional training and accreditation programs for the retrocommissioning industry
- Champion adoption of stringent codes and standards within the industry.
- Publish baselines, best practices and calculation tools to facilitate the dissemination of information and to help customers select and evaluate energy efficient solutions.

- **Financing and Funds Leveraging:** To overcome cost barriers to energy efficiency, the IOUs will:
  - Offer on-bill financing
  - Collaborate with water agencies to promote and coordinate incentives for measures that save water and energy.
  - Identify additional funding such as State & Federal tax credits, grants, incentives, and manufacture rebates
  - Partner with integrators like Siemens, Trane to aggregate energy efficiency with other building improvements, such as security, safety, waste management, and IT.
  - Analyze the green vision of corporations and align energy plans in support of their objectives

- **Advanced Products:** IOUs will create demand for advanced, energy-saving products—such as HVAC—by expanding incentives to include both financial incentives and technical assistance for advanced systems, working closely with Emerging Technologies to bring new technologies through development to the market, and strengthening relationships with vendors.

- **Workforce Development:** To expand their role in creating and meeting the demand for a robust energy efficiency workforce, the IOUs will:
  - Encourage the development of new and innovative programs to influence commercial trade schools to teach about the financial incentives, tools, protocols, partnerships, expert analysis, and implementation support services that promote commercial building energy efficiency and optimum load management.
  - Engage various industry and energy-wise stakeholders to expand their current intellectual knowledge and coordinate education/training opportunities through the WE&T program, outreach through ME&O, and coordination with research and technology.

- **ZNE Commercial Buildings:** To help make ZNE a reality in the commercial sector, utilities will:
  - Facilitate benchmarking and constant improvement by supporting the initiative recently launched by the DOE and Lawrence Berkeley Laboratory

6. Program Implementation

SoCalGas will offer four Commercial sub-programs: Calculated Incentive, Deemed Savings, Non-Residential Audits, and Continuous Energy Improvement. SoCalGas will not offer the other Statewide sub-programs because those excluded are targeted primarily towards electric customers. The sub-PIPs for the programs not offered have been removed from this PIP.

a. Statewide IOU Coordination:
   i. Program name: Statewide Commercial Energy Efficiency Program

   ii. Program delivery mechanisms:

The Statewide Commercial Energy Efficiency Program will coordinate on a statewide level to ensure the program is continuously updated and enhanced throughout the three-year implementation cycle. In addition, the five Commercial Sub-Programs will be coordinated on a statewide level to unify the implementation of program aspects such as Program name, Program delivery mechanisms, Incentive levels, Marketing and outreach plans, and IOU program interactions. (For a detailed description of each of these program aspects and how they will be coordinated statewide, please refer to the Commercial Sub-Program descriptions). The two coordination systems (one for the broad programmatic level and one designed for the sub-program level) will interact with and support one another. The broad, high-level coordination effort will be described below, focusing on how the IOUs will work together to effect the continuous improvement of the Statewide Commercial Energy Efficiency Program.

The Statewide IOU Coordination process for the Statewide Commercial Energy Efficiency Program will be as follows:

- **Designate an IOU Program "Lead"** – The coordination process will begin with each IOU designating a Statewide Commercial Energy Efficiency Program "lead." The IOU lead will represent one Commercial sub-program, investigating new innovations, special accomplishments, and challenges experienced by sub-program managers in all IOUs. Where such innovations or challenges show potential for impacting the Statewide Commercial Energy Efficiency Program across multiple sub-programs or the Statewide program as a whole, the IOU lead will present such information to a quarterly Steering Committee meeting.

- **Hold Periodic Steering Committee Meetings** – The Commercial Steering Committee will be comprised of all designated IOU leads (including at least one lead for each of the five sub-programs), and

possibly other contributing stakeholders identified by the IOUs. At the quarterly Steering Committee meeting, individual innovations, challenges, and accomplishments experienced in one IOU or by one sub-program will be transmitted to all IOUs. The Steering Committee will evaluate these individual IOU and sub-program experiences, hear ideas for course corrections and overcoming challenges, replicate successful innovations for consistency statewide, resolve differences in implementation to stay unified, and measure the Commercial Energy Efficiency Program's progress against statewide metrics and goals.

- **Adopt Program Enhancements** – Once the Steering Committee agrees that a particular implementation policy or innovation has merit on a statewide level, each IOU lead will distribute the information to their sub-program managers for adoption and integration. Therefore, the IOU lead will act as a conduit, feeding sub-program information up to the statewide Steering Committee and distributing measures for adoption back to the sub-program managers. This feedback loop will assure consistency and unity in programmatic improvements across the IOUs. In some cases, it may be necessary to invite the sub-program managers to the Steering Committee meeting to get their feedback and ensure they receive the same message.
- **Evaluate Program Enhancements Against Statewide Targets** – To complete the adaptive management loop, the Steering Committee will track the program's accomplishment of statewide targets and goals to ensure that adopted program enhancements are generating their intended results. The Steering Committee will determine whether further course corrections are needed, and if so, rely on the above coordination process to generate the improvements necessary to stay on track.

The high-level focus of this statewide coordination effort will enable the capture of new innovations and opportunities for program improvement, correct program weaknesses that reveal themselves during implementation, and ensure achievement of statewide targets across IOU service territories. Therefore, statewide focus on program unity and continuous program improvement over the course of the three year implementation cycle will be assured.

iii. Incentive levels
** Refer to the Commercial Sub-Program descriptions. **

iv. Marketing and outreach plans, e.g. research, target audience, collateral, delivery mechanisms.
** Refer to the Commercial Sub-Program descriptions. **

v. IOU program interactions with CEC, ARB, Air Quality Management Districts, local government programs, other government programs as applicable
** Refer to the Commercial Sub-Program descriptions.**

b. Program delivery and coordination:

i. Emerging Technologies program

The long-term energy efficiency vision of California can only be attained through the continuous development, verification, and acceptance of new technologies into the market. Portfolio staff actively works with statewide emerging technologies staff to identify new emerging technologies, support evaluation and demonstration, develop and promote case studies, and market results to applicable customers with the goals of total market penetration and eventual movement into code. The Commercial Energy Efficiency Program is currently working to support a diverse list of emerging technologies including advanced building system controls, ultra low NOx burners, hybrid chiller plants, superboiler, commercial refrigeration advancements, commercial refrigeration design enhancements, and solar thermal applications (hot water).

ii. Codes and Standards program

The program relies on the Codes and Standards program to maintain an updated and relevant list of measures that will support savings. As Codes and Standards impact measures, the program will act to align itself with appropriate offerings. Programs will include new offerings that will allow flexibility in adapting to changes in codes and standards, market trends, and technologies. Planned enhancements to Title 24 will be reflected in incentive levels and eligible measures and services. As the market moves toward "low energy" or "zero net energy" buildings, specific changes to each element of the bundling will be made to ensure the latest cost effective technologies/services (e.g., superboiler) made available as these technologies transition from 1) R&D to 2) Emerging technologies to 3) Incubation to 4) Mainstream.

iii. WE&T efforts

WE&T efforts support the education and training of a robust network of industry trade allies, vendors, engineers, design teams and others who can support the market transformation strategies of the Strategic Plan. For the

Commercial Energy Efficiency Program, WE&T efforts will focus in the near term on supporting national ANSI Energy Management Certification development efforts, as outlined in the Strategic Plan. Programs will closely coordinate with key stakeholders to ensure that California is poised to adopt this national standard and be a leader in this effort. Specifically, prerequisite trainings will be offered in DOE systems trainings to lay the groundwork for certification level trainings.

The education and training takes place through energy centers, technology test centers, and education and training program offerings.

iv. Program-specific marketing and outreach efforts

To address the diverse commercial customers segments, utilities will continue to foster strategic partnerships with trade association and industry groups to engage in a multi-faceted approach to marketing energy efficiency practices and programs to targeted users. Specific efforts will include:

- Attending Commercial trade association meetings and publish EE Program information in monthly newsletters
- Close partnerships with key industry associations, and participation in their annual conferences, with an effort to develop conference speaking engagements.
- Targeted integrated education and training to specific market sectors to support peer-to-peer interactions and industry advancement.
- Ads and articles, with program information and case studies, in trade magazines
- Targeted customer efforts through assigned account representatives and program engineers, third parties, and government partnerships.
- Phone and web-based customer support and outreach.
- Market sector specific collateral that drives customers to account representatives and websites for additional support.

v. Non-energy activities of program

Refer to 6e and 6f Commercial Sub-Program descriptions,

vi. Non-IOU Programs

In addition to those efforts described in 6e and 6f of the Commercial Sub-Program descriptions , there are a variety of programs that will be coordinated with and leveraged in support of the Program objectives. These include:

- Connecting customers with The Climate Registry which supports AB32 through CO2 tracking in program resources
- Regulatory program coordination, including EPA air quality standards, water quality standards, and new refrigerant regulations
- Non-utility financing resources, including from water utilities, industry and private banking, state and federal tax credits, incentives, funds, grants, and loan products to support energy and other resource management objectives
- Water/Energy efforts within California
- ANSI standard (see CEI section)
- ISO international energy management standards (see CEI section)

The Program will continue to engage with Air Quality Management Districts, CEC, CARB, DOE, water agencies, and other government agencies responsible for regulating the various aspects and operations of customer facilities participating in the programs.

vii. CEC work on PIER

The Program will interact with the Emerging Technologies Program to leverage new technologies and increase the list of measures available for energy efficiency projects. The portfolio staff actively works to incorporate promising emerging technologies and PIER projects. The program will work with PIER on researching new technologies for evaluation and testing for application in mainstream projects.

viii. CEC work on codes and standards

Refer to 6.b.ii.of the Commercial Sub-Program descriptions,

ix. Non-utility market initiatives

The Commercial Energy Efficiency Program will coordinate with applicable market initiatives to leverage market momentum and areas of mutual advantage. The Program will leverage the following efforts:

- California Green Building Initiative
- LEED
- Zero-net energy
- DOE
- AB1103

c. Best Practices:

As described in prior sections, the Commercial Energy Efficiency Program reflects the best of each utility program's successful components of statewide Commercial Energy Efficiency Program offerings, and introduces new elements from other utilities and national efforts as well. Best practices include:

- A Continuous Energy Improvement approach that transforms the market and reduces energy intensity while pursuing technical and management opportunities.
- Development of a prioritization process, leveraging the CEI sub program, that works to identify the most significant upgrade potential based on building and ownership characteristics. This process will help guide customers to a integrated building approach leveraging all of the available utility programs for a customer segment rather than only pursuing the "low hanging fruit". The utilities will continuously educate the various delivery channels on the importance of the integrated building approach and how to increase customer participation at a whole building level.

- Technical Assistance: The IOUs recognize the need for a personalized, full service approach when providing technical assistance to customers –from audits to design and technical assistance, presentation of recommendations, resources to develop a long term plan, and the potential of project management assistance with financial incentives.

- Vendor Partnerships: This strategy will be coupled with vendor support and educational workshops and classes to provide the full breath of support customers may need to influence their decision to implement energy efficient equipment and practices.

- Statewide Coordination: The IOU program representatives will meet on a quarterly basis to improve program operations by sharing successes and areas of operational concerns.

- Leveraging Local Commercial sector: Resources such as industry associations, trade associations, and facility management associations will be leveraged.

d. Innovation:

Significant innovative aspects of the Commercial Energy Efficiency Program offering include:
Integration

- Continuous Energy Improvement will foster a long-term energy management approach
- Integrated Energy Assessments provide targeted customers with integrated solutions in efficiency, demand reduction and DG, and advise customers on other sustainability practices such as water conservation opportunities, CO2 reduction potential or other programs references.
- IOUs will link customers with the California Climate Registry to support carbon foot printing of a customer's plant.

Marketing

- The Customer segmentation work currently underway will support development of new, targeted integrated marketing and outreach plans outlining multiple delivery channels that target customers based on their specific needs.
- Closer coordination with third parties, government partnerships, core programs, and other delivery channels will optimize portfolio performance.
- Utilities will increase outreach to new trade and community-based associations, leveraging best practices identified in ACEEE study of utility Commercial Energy Efficiency Programs.
- Energy Design Resources, developed statewide by IOUs, will be expanded as a web-based hub of commercial and food processing best practice information, training, modeling and performance tracking tools.
- Expanded workforce education and training efforts with vendors, design teams, industry association members and other key market actors will help overcome many customer informational and transactional barriers
- Training will be provided on modeling and quantifying savings opportunities through tools such as Energy Pro.

Implementation

- Utilities will coordinate process improvements for statewide programs to ease participation barriers.

Energy performance measuring and benchmarking assistance/services to customers will enable customers to compare themselves to "best in class" peers utilizing tools such as the U.S. EPA's Energy Star Benchmarking tool.

e. Integrated/coordinated Demand Side Management:
An integrated portfolio is cost effective, captures program delivery efficiencies, and serves the needs and wants of customers who prefer a single, informed utility point of contact who can help inform and prioritize their energy investment decisions based on their unique needs. To that end, the statewide utilities and the Statewide Commercial Energy Efficiency Program have made tremendous progress in advancing integrated solutions:

- Marketing: In marketing integration, the IOUs are placing major emphasis on getting the right message to the right customer at the right time. Advanced customer segmentation is being used to develop detailed integrated marketing and outreach plans which outline multiple tactics, delivery channels and key messages to target customers based on their specific needs.

  The account representatives, who serve as the key customer point of contact, will be attending an integrated sales strategy and training program to ensure consistent delivery of portfolio offerings.

- Education and training – especially workshops organized around a customer segment – provides an ideal situation to integrate customer energy solutions. Utilities will build on past successes to provide integrated workshops to restaurants, retailers, office building facility managers, lodging, and warehouses. The workshop topics generally start with "analysis" resources and methods, and move on to "conservation", "efficiency", "demand response", then "generation" topics and resources. These workshops provide opportunities for utilities to cross-sell solutions and share key information with other utility departments.

  As appropriate, Workforce Education and Training will also cover integrated energy and system solutions, which will be increasingly important as Critical Peak Pricing matures.

- The availability of a Continuous Energy Improvement approach, especially for the largest, most strategic customer accounts, will facilitate a thoughtful, integrated energy plan and will allow utilities to stay engaged in supporting the progress of that plan.

- Integrated Audits combine funds and resources of energy efficiency and demand response programs to provide integrated recommendations to customers that emphasize energy management in proper sequence, in support of the CA Loading Order: Permanent reductions will be achieved through energy efficiency first, and then through demand reduction. The effects of both efforts reduce payback costs of recommendations and support advanced energy management decisions. Demand reduction opportunities will be targeted in the larger facilities, especially as part of monitoring-based retro-commissioning efforts where the technologies to facilitate demand reduction would be installed.

- Emerging Technologies and CEC-PIER collaboration is expected to include pilot projects and market acceleration assistance for market-ready products in the general categories of ultra low NOx burners, heat recovery, high efficiency water heating and steam production, hybrid chilling, HVAC, controls, and building envelope improvements.

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

California's Commercial sectors face a multitude of environmental, regulatory, and financial (Landlord owned, capital outlay) challenges that impede the adoption of new energy efficiency technologies. In addition, new regulations aimed at improving air quality, water quality and reducing toxic environmental pollutants are proving to be expensive and disruptive to business as usual, and in many cases will have the impact of increasing energy use in compliance.

The Commercial Energy Efficiency Program proposes to leverage these challenges to coordinate with the regulating agencies and the programs they are operating in order to support mutually advantageous program designs, customer incentives, marketing opportunities, and implementation opportunities.

Utilities will pursue opportunities to partner with water agencies to offer joint energy and water incentives in support of projects that reduce both resources, which reduces project costs and improves payback.

Where applicable, the Program will integrate topics like LEED certification into targeted customer workshops, marketing and communications, building on a strong track record from the 2006-8 program cycle.

Energy Efficiency contractor third party programs at the utilities will further integrate resources. These third party programs will focus on specific customer segments offering a complete project package that may include integration aspects.

g. Pilots:

During the course of the three year cycle a pilot may be created based on the needs of the commercial customers.

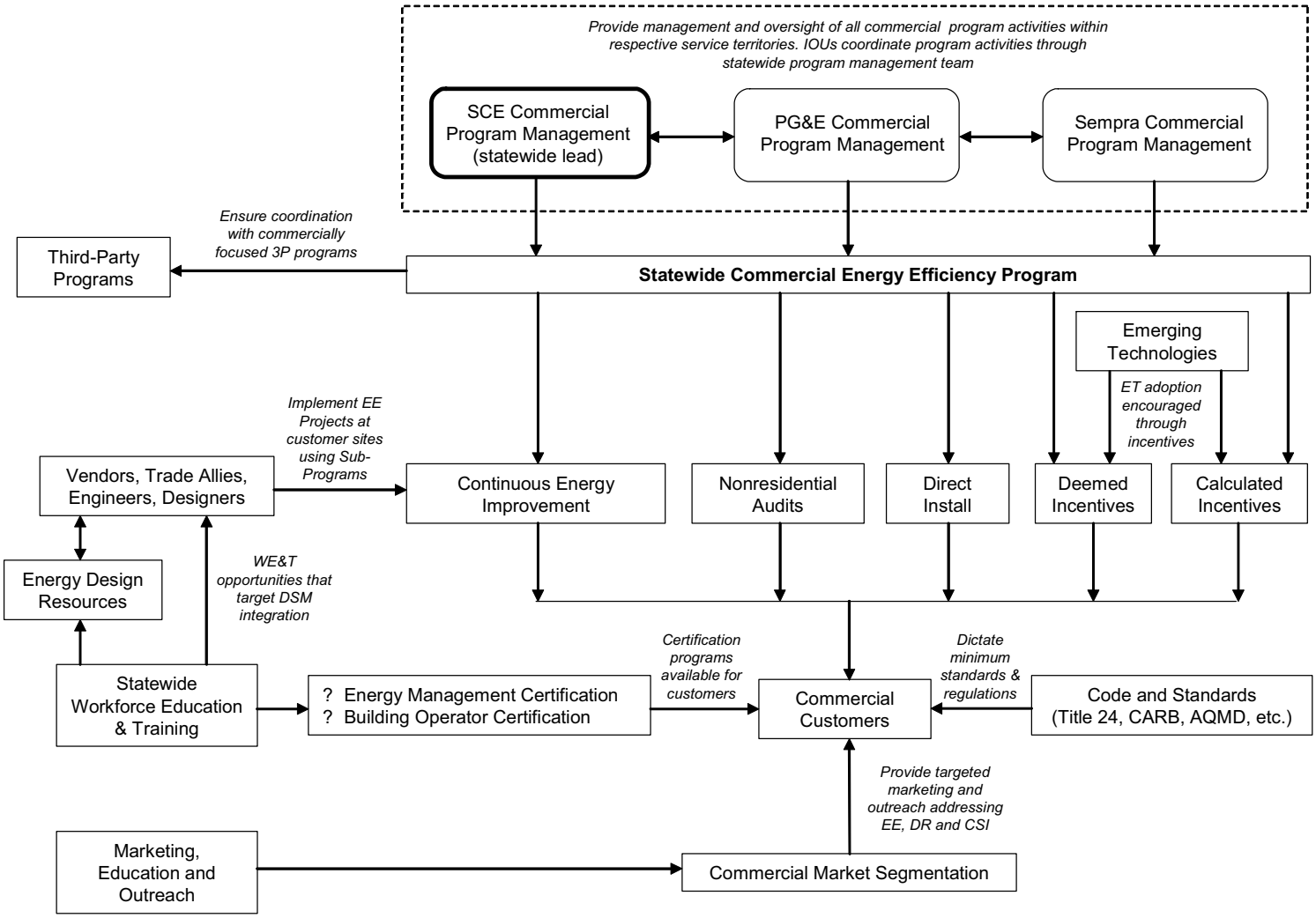
An "Office of the Future" pilot is currently being reviewed for 2010. The program focuses on a partnership with property owners and managers to influence the tenant improvement process and facilitates tenant related actions.

h. EM&V:

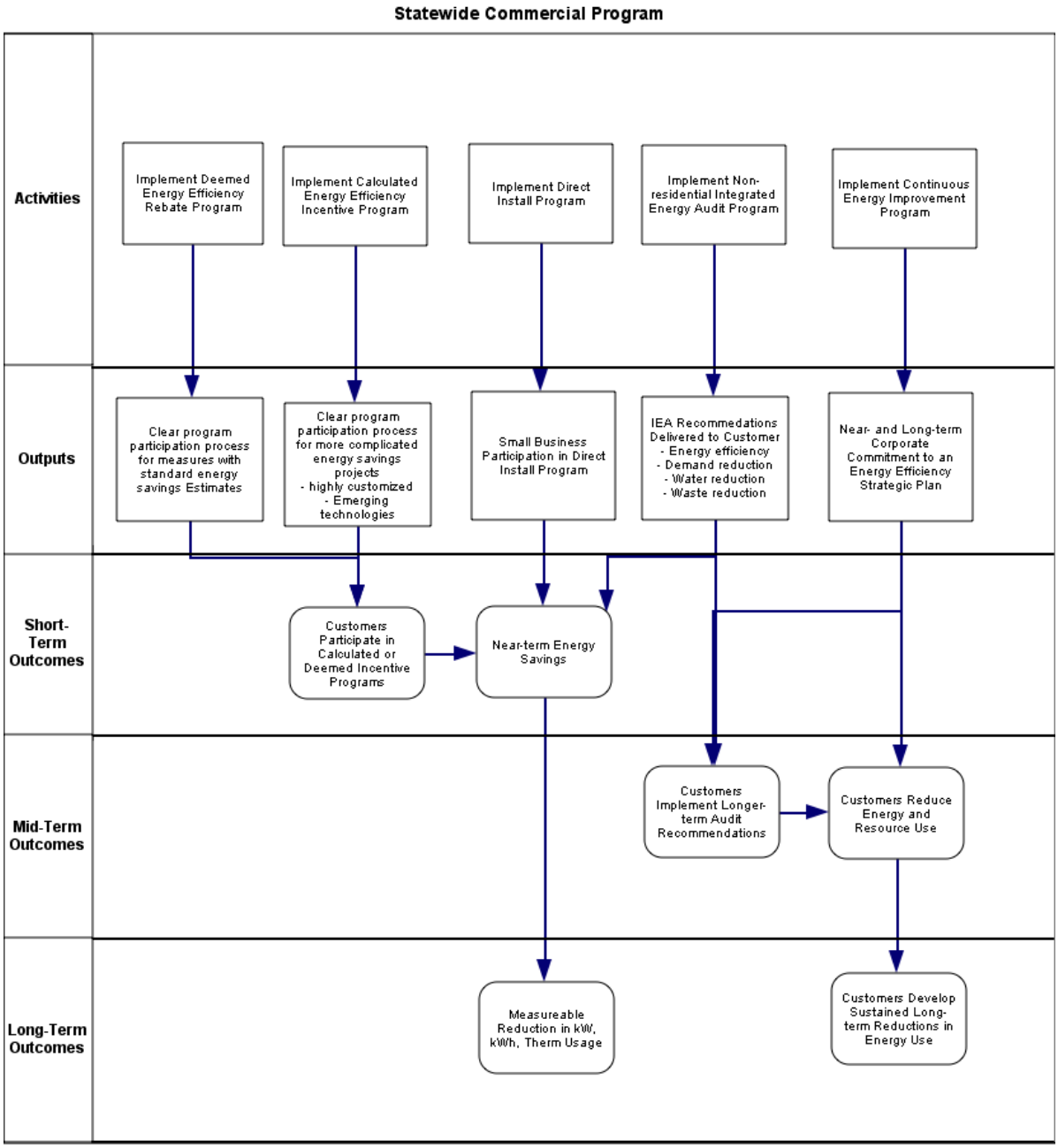
The utilities are proposing to work with the Energy Division to develop and submit a comprehensive EM&V Plan for 2009-2011 after the program implementation plans are filed. This will include process evaluations and other

program-specific studies within the context of broader utility and Energy Division studies. More detailed plans for process evaluation and other program-specific evaluation efforts cannot be developed until after the final program design is approved by the CPUC and in many cases after program implementation has begun, since plans need to be based on identified program design and implementation issues.

7. Diagram of Program:



8. Program Logic Model:



2009 – 2011 Energy Efficiency Programs
Commercial EE
Program Implementation Plan

1. Program Name: Calculated Incentives
   Program ID#: TBD
   Program Type: Sub-Program

2. Projected Program Budget Table

Table 1[19]

Program #	Main Program Name / Sub-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 – by calendar year

[19] 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.

2009 – 2011 Energy Efficiency Programs
Commercial EE
Program Implementation Plan

Table 2

Program #	Program Name / Sub-Programs	2009 - 2011 Three-Year EE Program Gross kWh Savings	2009 - 2011 Three-Year EE Program Gross kW Savings	2009 - 2011 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 statewide non-residential Calculated Incentives sub-program provides customers technical and calculation assistance, as well as incentives based on calculated savings, to influence the design and installation of energy efficient equipment and systems in both retrofit and added load applications.

The Calculated Incentives sub-program is utilized for projects where a rebate is not available through the statewide Deemed program, where project conditions require customized calculations to provide the most accurate savings estimates, or where a project has interactive effects that are best captured through whole building or whole system modeling. Because Calculated savings estimates are based on actual customer operating conditions, pre-inspections (for retrofit projects), engineering review (for all Calculated projects) and post-inspections (for all large Calculated projects) are typically required as part of each utility's project documentation.

An important element of the Calculated Incentives sub-program is the design assistance and calculation assistance provided by the IOUs to influence customers to select the most efficient design and equipment options. For both retrofit and added load projects, IOUs work with the customer and their project team to evaluate their proposed projects and provide a report recommending efficient design alternatives and detailing energy savings, CO_2 reductions, and calculated incentives available for exceeding Title 24 code or industry standard practice baselines as appropriate. This information is also available to customers through the Non-Residential Audit offering. The combination of technical support and the

availability and commitment of approved utility incentive funds is an essential driver to overcome key customer barriers, including lack of technical resources and lack of capital for energy efficiency projects.

Customers and project sponsors (contractors, design teams, vendors, ESCOs) participating in the Calculated Incentives sub-program may also opt to complete their own calculations for submittal to the IOUs for review and approval. For this purpose, consistent nationally recognized calculators are publicly available to customers for use if desired. The DOE 2 calculator or DOE Steam System Assessment Tool Calculator can be used for retrofits and is available online. For whole building construction projects, IOUs accept both Energy Pro, available for license, and the utility-sponsored EQEST, available for free on the statewide Energy Design Resources website www.energydesignresources.com.

Depending on whether a project is a retrofit or added load project, and on whether Title 24 is triggered for a particular project, different baselines are applied to capture appropriate project savings. For retrofit projects, incentives are capped at 50% of the total project costs. For added load projects, incentives are capped at 50% of the incremental project cost.

b) List measures

Calculated Incentives sub-program is a resource program that offers financial incentives for energy efficiency projects involving the installation of new, high-efficiency equipment or systems. The more kWh or therms saved by the energy efficiency project, the higher the incentive payment will be. The incentive options offered by the Calculated Sub-Program have seen high participation due to the program's flexibility in customizing appropriate energy efficiency solutions for a diverse range of customers. Below is a listing of all calculated measures grouped by measure category for all IOUs. Specific measures for each IOU are provided in the attached E3.

#	Measure Name	Per therm Incentive
1	Batch_cullet_preheating	$1.00
2	Closed_hood	$1.00
3	Combustion_controls	$1.00
4	Efficient_burners	$1.00
5	Efficient_drying	$1.00
6	Extended_nip_press	$1.00
7	Flare_gas_controls_and_recovery	$1.00
8	Fouling_control	$1.00
9	Furnace/Oven/Kiln replacement	$1.00
10	Efficient_furnaces	$1.00
11	Heat_Recovery	$1.00
12	Improved_separation_processes	$1.00
13	Insulation/reduce_heat_losses	$1.00
14	Optimize_furnace_operations	$1.00
15	Oxyfuel	$1.00
16	Preventative_maintenance	$1.00
17	Process_Controls_&_Management	$1.00
18	Process_integration	$1.00
19	Thermal_oxidizers	$1.00
20	Automatic_steam_trap_monitoring	$1.00
21	Blowdown_steam_heat_recovery	$1.00
22	Condensate_return	$1.00
23	Flue_gas_heat_recovery_economizer	$1.00
24	Improved_insulation	$1.00
25	Improved_process_control	$1.00
26	Leak_repair	$1.00
27	Load_control	$1.00
28	Maintain_boilers	$1.00
29	Steam_trap_maintenance	$1.00
30	Upgrade_burner_efficiency	$1.00
31	Water_treatment	$1.00

c) List non-incentive customer services

The Calculated Incentives sub-program is primarily an incentive program designed to achieve energy savings through measure implementation; however it does provide such non-incentive measures as technical and calculation assistance to help customers navigate through the application process. This assistance ensures that the sub-program captures lost opportunities by not allowing projects to fall behind schedule simply because the customer does not have the resources to shepherd through the process.

5. Program Rationale and Expected Outcome

a) Quantitative Baseline and Market Transformation Information:

Refer to the overarching PIP section

Table 3

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

b) Market Transformation Information:

Refer to the overarching PIP section

Table 4

	Internal Market Transformation Planning Estimates		
Market Sector and Segment	2009	2010	2011
Metric A	Baseline	Baseline + TBD	2010 + TBD
Metric B			
Metric C			
Metric D			

c) Program Design to Overcome Barriers: The Statewide Calculated Incentives sub-program offers customers incentives to implement energy efficiency measures that have been identified primarily through standard utility energy efficiency audits, in-depth facility/process assessments or retro-commissioning studies.

Other avenues used to identify energy efficiency opportunities include Programs that provide Education and Outreach, Workforce Education and Training, or through IOU Emerging Technologies Programs.

The Calculated Incentives sub-program addresses and eliminates a significant number of barriers to energy efficiency for commercial customers such as:

- A high percentage of the time, developers, building owners, building managers and building contractors build or retrofit to current standards (i.e. Title 24). On the Architect and Engineering Firm side, design engineers specify what they know or what they are familiar with. The Calculated Incentives sub-program encourages or rewards developers, building owners, building managers, contractors, and A&E Firms to "push the efficiency

envelope" and exceed Title 24 requirements, or to exceed industry accepted baseline standards when retrofitting existing buildings or systems by providing up-to-date information on emerging technologies and providing incentives to bridge the "chasm" which typically prevent emerging technologies from being adopted by the market.

- In several instances, high efficiency Emerging Technologies are viable, but are unknown to facility owners and system designers and thus, are slow to penetrate the market, causing energy efficiency opportunities to be "lost." The Calculated Incentives sub-program helps speed market penetration and associated energy savings for Emerging Technologies by offering "premium" incentives for emerging technologies that are "proven" but not widely employed in the markets for which they are intended (e.g. ultra low NOx burners, condensing hot water heaters, etc.).
- Across all Non-residential customer segments, a significant barrier mentioned is "Access to Information". This can be a lack of awareness of operating "best practices", lack of awareness of energy efficiency opportunities, difficulty accessing industry relevant technical assistance, inadequate availability of qualified industry specialists or lack of personnel resources to fully assess a building, system or process. Also, in many instances, customers are not sure of how a specific energy efficiency project will impact their emissions, resource consumption or waste discharge streams.

These barriers are overcome by providing:

- Highly skilled Energy Management Professionals that perform basic and integrated facility assessments;
- IOU Workforce Education and Training seminars through the Energy Centers;
- Web-based information and energy management tools that assist with identifying DSM opportunities;
- In-depth plant or system assessments such as the assessments jointly provided by the IOU's and the U.S. Department of Energy (DOE), that focus on improving production and optimizing energy efficiency;
- Incentives based on energy savings quantified through technical assessments or basic audits that help customers overcome internal financial hurdle rates;
- Incentive mechanisms that reward implementation of advanced technologies;
- Integrated solutions that conserve energy and reduce GHG emissions; and

The Calculated Incentives sub-program delivers a consistent message statewide to commercial customers about the benefits, energy savings and GHG reductions that efficient technologies and "best operating practices" offer. This eliminates the barrier often run into by commercial customers of getting incorrect or out-of-date information from local networks.

The Calculated Incentives sub-program not only brings IOU incentive information to customers, but in many instances also provides additional information about other opportunities for project assistance, such as State or Federal funds available for energy efficiency projects, Tax incentives or other local sources of project funding.

d) Quantitative Program Targets: The sub-program will achieve the following targets:

Table 5

Program Name	Program Target by 2009	Program Target by 2010	Program Target by 2011
Total Number of Projects			
Advanced Lighting Projects			
Projects referred from Non-Residential Audits			

e) Advancing Strategic Plan goals and objectives: The unifying objective of the CLTEESP is to employ market transforming strategies to encourage marketplace adoption of energy efficient measures to a point that public investment in energy efficiency is no longer necessary (Section 1, page 4). The Calculated Incentives sub-program will support this effort by employing two of the five market transformation policies identified in the CLTEESP. Specifically, the Program will offer "carrots" in the form of financial incentives to help pull the marketplace towards energy efficiency. The Calculated Incentives sub-program will also provide education and informational resources through marketing and program outreach efforts. Therefore, these program elements will work in concert to transform the market towards sustained, long-term energy savings.

The program will help to achieve the following near-term strategic goals as identified in Chapter 3 of the CLTEESP:

- 2-3: Ensure compliance with minimum Title 24 codes – The Calculated Incentives sub-program only provides incentives for projects that exceed current Title 24 minimum baselines. Incentive mechanisms will be created to ensure deeper levels of energy reductions including implementation of the Office of the Future Consortium's Phase 2 recommendations, "The 25% Solution", which seek to reduce energy usage 25 percent below Title 24-2005 baselines.
- 2-5: Develop tools and strategies to reduce energy consumption in commercial buildings – The Calculated Incentives sub-program directly supports this effort by collecting data and conducting energy use and

efficiency studies that, when collected over multiple IOU service territories, will be very helpful in supporting statewide efforts to establish a robust and useful knowledge base for the commercial sector.

- 2-7: Develop business models that deliver integrated energy management solutions – The Calculated Incentives sub-program will implement incentive mechanisms that will "reward comprehensive energy management retrofits" such as incentives for reaching certain stretch goals that produce significant energy savings beyond an established baseline.

6. Program Implementation

The statewide non-residential Calculated sub-program provides customers technical and calculation assistance, as well as incentives based on calculated savings, to influence the design and installation of energy efficient equipment and systems in retrofit applications.

The Calculated approach is utilized for projects where a rebate is not available through the statewide Deemed program, where project conditions require customized calculations to provide the most accurate savings estimates, or where a project has interactive effects that are best captured through whole building or whole system modeling. Because Calculated savings estimates are based on actual customer operating conditions, pre-inspections (for retrofit projects), engineering review (for all Calculated projects) and post-inspections (for all large Calculated projects) are typically required as part of each utility's project documentation.

An important element of the Calculated approach is the design assistance and calculation assistance provided by utilities to influence customers to select the most efficient design and equipment options. Utilities work with the customer and their project team to evaluate their proposed projects and provide a report recommending efficient design alternatives and detailing energy savings, CO_2 reductions, and calculated incentives available for exceeding Title 24 code or industry standard practice baselines as appropriate. This information is also available to customers through the Non-Residential Audit offering. The combination of technical support and the availability and commitment of approved utility incentive funds is an essential driver to overcome key customer barriers, including lack of technical resources and lack of capital for energy efficiency projects.

Customers and project sponsors (contractors, design teams, vendors, participating in the Calculated approach may also opt to complete their own calculations for submittal to the utilities for review and approval. For this purpose, statewide consistent calculators are publicly available to customers for use if desired. The

statewide utility-created and maintained Standard Performance Contract (SPC) Calculator can be used for retrofits and some new construction applications and is available online. For whole building construction projects, utilities accept both Energy Pro, available for license, and the utility-sponsored EQEST, available for free on the statewide Energy Design Resources website www.energydesignresources.com.

Depending on whether a project is a retrofit or new construction project, and on whether Title 24 is triggered for a particular project, different baselines are applied to capture appropriate project savings. Retrofit project incentives are capped at 50% of the total project costs. Added load project incentives are capped at 50% of the incremental project cost.

Below is a listing of all calculated measures grouped by measure category

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5	Efficient_drying	$1.00
6	Extended_nip_press	$1.00
7	Flare_gas_controls_and_recovery	$1.00
8	Fouling_control	$1.00
9	Furnace/Oven/Kiln replacement	$1.00
10	Efficient_furnaces	$1.00
11	Heat_Recovery	$1.00
12	Improved_separation_processes	$1.00
13	Insulation/reduce_heat_losses	$1.00
14	Optimize_furnace_operations	$1.00
15	Oxyfuel	$1.00
16	Preventative_maintenance	$1.00
17	Process_Controls_&_Management	$1.00
18	Process_integration	$1.00
19	Thermal_oxidizers	$1.00
20	Automatic_steam_trap_monitoring	$1.00
21	Blowdown_steam_heat_recovery	$1.00
22	Condensate_return	$1.00
23	Flue_gas_heat_recovery_economizer	$1.00
24	Improved_insulation	$1.00
25	Improved_process_control	$1.00
26	Leak_repair	$1.00
27	Load_control	$1.00
28	Maintain_boilers	$1.00
29	Steam_trap_maintenance	$1.00
30	Upgrade_burner_efficiency	$1.00
31	Water_treatment	$1.00

The Statewide Calculated sub-program offers customers incentives to implement energy efficiency measures that have been identified primarily through IOU energy efficiency audits or in-depth facility/process assessments.

Other avenues used to identify energy efficiency opportunities include programs that provide Education and Outreach, Workforce Education and Training, or through IOU Emerging Technologies Programs.

The Statewide Calculated Program delivers a consistent message Statewide to Non-residential customers about the benefits, energy savings and GHG reductions that efficient technologies and "best operating practices" offer to customers. This eliminates the barrier often run into by Non-residential customers of getting incorrect or out of date information from local networks.

The Statewide Calculated Program information and services will be delivered through Account Executives, Utility Call Centers, Partnerships, Energy Efficiency Contractors Programs, and Utility Internet sites.

Statewide Calculated Program information will also be made available through industry events, such as the Western Energy Management Conference and Western Food Service Expo, through industry organizations, such as the The Building Owners and Managers Association (BOMA), The Commercial Laundry Association, American Hotel and Lodging association, and National Retail Association, and through advertising in industry and trade publications.

The Statewide Calculated Program not only brings IOU Incentive information to customers, but in many instances also provides additional information about other opportunities for project assistance, such as State or Federal funds available for energy efficiency projects, Tax incentives, Water conservation incentives, or other local sources of project funding.

The Calculated Sub-program uses Retrocommissioning (RCx) as a resource to deliver energy savings. The non-resource portion of RCx is located in the Nonresidential Audits sub-program. However, as RCx provides calculated savings, this resource aspect is located in the Calculated sub-program. RCx is a systematic process to identify and correct operational problems or inherent repair and maintenance deficiencies that lead to excessive energy use. Unlike retrofits, which focus on equipment replacement, or O&M, which focuses on routine maintenance, RCx focuses on identifying and correcting problems that may not be readily identified by a standard energy audit. O&M items with an effective useful life greater than 3 years will also be identified through this assessment. Additionally, opportunities often exist to optimize existing systems to operate more efficiently than originally designed with minimal new capital outlay. The RCx program builds upon the initial feedback from the current RCx program and expands its reach into the Industrial segment.

Additionally, BSE will improve existing tools and practices for building retrocommissiong to reduce energy consumption in commercial buildings per the Strategic Plan.

RCx will be offered as a bundle of products/services. RCx providers will perform several tasks to identify measures. These tasks include, but are not limited to:

- Initial benchmark
- Collect data to quantify the owner's operational requirements
- Perform detailed on-site audits to evaluate operational deficiencies and/or operational optimization opportunities inclusive of improved and enhanced preventive maintenance and repair programs
- Define measures, quantify savings
- Assist customers with measure implementation
- Verify completion of measures
- Provide post installation documentation and training as well as other persistence techniques
- Post project benchmark

For the information requested in Table 4, please see 5.b above.

For information on sub-program design to overcome market barriers, please see 5.c above.

For information on sub-program targets, please see 5.d above.

For information on how the sub-program advances the Strategic Plan, please see 5e above.

a. Statewide IOU Coordination
The Calculated sub-program will follow the process for Statewide IOU Coordination described in Section 6.0.a.

b. Program delivery and coordination:

i. Emerging Technologies program
The long-term EE vision of California can only be attained through the long-term and continuous development, verification, and acceptance of new technologies into the market. The achievement of long-term goals requires new technology as well as information, training and market development to maximize the EE benefits of cutting edge technologies. In recognition of the importance of emerging technologies, the program is poised to adopt the

efficiency potential of new technologies through its programs. In addition, portfolio staff actively works to incorporate promising emerging technologies and PIER projects.

ii. Codes and Standards program

The program relies on the Codes and Standards program to maintain an updated and relevant list of measures that will support savings. As Codes and Standards impact measures, the program will act to align itself with appropriate offerings. Programs will include new offerings that will allow flexibility in adapting to changes in codes and standards, market trends, and technologies. Planned enhancements to Title 24 will be reflected in incentive levels and eligible measures and services. As the market moves toward "low energy" or "zero net energy" buildings, specific changes to each element of the bundling will be made to ensure the latest cost effective technologies/services (e.g., superboiler) made available as these technologies transition from 1) R&D to 2) Emerging technologies to 3) Incubation to 4) Mainstream.

iii. WE&T

WE&T is a portfolio of education and training programs that showcase energy efficient equipment found on the list of measures offered in the program. The education and training takes place through energy centers, technology test centers, and education and training program offerings. In addition to providing the education and training the classes also address how customers engage the energy efficiency program offerings relative to the class. An Energy Efficiency representative will be present at all relative classes to provide detailed information on the application process to the relevant Energy Efficiency program.

iv. Program-specific marketing ant outreach efforts (provide budget)

The Calculated Sub-Program will be marketed through IOU Account Executives, as well as through educational, outreach and other marketing activities. Marketing activities will target business customers, ESCOs, trade associations, local business groups and government entities to generate interest and program participation. In addition, direct customer contact by Account Executives and e-mail support will be provided.

Marketing campaigns will provide a wide range of action-oriented solutions targeted to "personas" identified through segmentation research. In addition, marketing efforts will be "bundled". That is, a menu of demand response, energy efficiency and conservation programs will provide customers a full array of EE and DR options. By providing packaged energy management solutions for each industry segment SoCalGas will be better able to communicate with and serve customers.

Marketing efforts will incorporate a variety of marketing tactics/activities to promote the Calculated Sub-Program. Education, awareness and outreach efforts will rely on a combination of mass media communication channels and targeted communication channels to ensure the messages reach the intended audiences with enough frequency to motivate attitude and behavior changes. The marketing strategies may include, but are not limited to, a mix of print, radio, TV, direct mail, e-mail, personal contact, trade shows, trade association meetings, customer workshops and seminars, energy related and other community events and partnerships with business and industry organizations, specialized collateral, case studies, website links and information with regular updates, bill inserts, press releases, and newspapers.

Market outreach to raise awareness of EE programs available will use a number of strategies, including:

- Account representatives will make a regular and consistent customer calling effort to key customers within this sector;
- Utility representatives, Energy Efficiency program management representatives, and field engineers will be available to provide additional expertise;
- Additional market outreach initiatives for the Agricultural market sector will include:
    - Participation and membership in selected trade associations
    - Attendance at the key trade shows
    - Utility-sponsored training events at the utilities Customer Training Centers and other convenient locations within the utilities service territory;
    - Hosting of utility-sponsored Webinars that provide sub-segment training and program adoption; and
    - Written collateral pieces that provide an overview of the utilities Energy Efficiency programs will be linked into the appropriate utility DSM web page.

The ideal marketing mix will be assessed for maximum awareness and participation. Marketing and outreach coordination will be coordinated among the IOUs utilizing the statewide coordination process described in Section 6.0a.

v. Non-energy activities of program

The program provides a significant challenge to integrating DSM initiatives to non-energy activities due to the general industry structure, the nature of market sector resource use, limited resource savings potential with smaller customers, and limits to small business owner and operator bandwidth. Therefore,

integrated audits that look across the various EE program offerings, as well as complementary options available through other entities (e.g. water agencies) will be used to identify the opportunities to be recommended to the non-residential customer.

The Water Efficiency Pilot Program will provide potential opportunities to reduce water use and the potential for associated Energy Efficiency savings. Since some customers within the program sectors are major water users, this sector is well positioned to realize linked water/energy benefits through the Water Efficiency Pilot Programs.

vi. Non-IOU Programs
The Program will continue to engage with Air Quality Management Districts, CEC, CARB, DOE, water agencies, and other government agencies responsible for regulating the various aspects and operations of customer facilities participating in the programs.

vii. CEC work on PIER
The Program will interact with the Emerging Technologies Program to leverage new technologies to increase the list of measures available for energy efficiency projects. The portfolio staff actively works to incorporate promising emerging technologies and PIER projects. The program will work with PIER on researching new technologies for evaluation and testing for application in mainstream projects.

viii. CEC work on codes and standards
See Section 6.b.ii.

ix. Non-utility market initiatives
The program will support and provide educational resources on AB32, renewables, ANSI certification, facility benchmarking, Continuous Energy Improvement, California Green Building Initiative, and other initiatives as directed. The IOUs will remain engaged in these efforts and work to influence the development of increasingly higher standards.

c) Best Practices:

The Calculated sub-program approach constitutes "best practice" by:

- Providing cost-effective energy efficiency.
    - The program will reimburse up to 50% of the energy efficiency project cost.

- Energy savings are based on actual facility operations, process measurement, and accepted engineering protocols for calculating energy savings.
- Energy savings receive engineering review for all Calculated projects and are measured and verified post-installation for all Large Calculated projects.
- The program is customer-focused. The incentive options offered have seen high participation due to the program's flexibility in customizing appropriate energy efficiency solutions for a diverse range of customers.
- Avoiding lost opportunities by utilizing a comprehensive approach.
- Producing both short and long term energy savings.
- Produces co-branding opportunities supporting the reduction of greenhouse gases.
    - The program will be co-branded with SoCalGas' "Cool Planet Project", a program that rewards participating customers with an annual membership to The Climate Registry.
- Providing an application process that is both easy and friendly.
- Developing new Pilots to test innovative approaches that achieve deeper savings.

d) Innovation:

Innovative aspects of the program are aimed at improving major program performance indicators such as accuracy of energy saving calculations, higher realization rates, overcoming energy efficiency barriers, reducing application processing time and administrative costs, and integrating energy management.

For the new program cycle, IOUs will implement a new incentive structure that will addresses the current economic downturn by offering an increased incentive and will better motivate customers to participate in energy efficiency incentive programs. During the 2009-2011 program cycle, the new incentive structure will be periodically evaluated so that necessary changes can be made in order to enhance program benefits and performance.

IOUs will continue working collaboratively on modifications to program Policies and Procedures to address ongoing changes in customer expectations, market conditions and program flexibility. Such changes have been and will be targeting ease of program understanding and participation, measures eligibility, increase of customer economical benefits and policy restrictions that will be identified as barriers to participation. IOUs are implementing such a process based on market studies conducted on the subject and preceding discussion of the policy change. Among modifications that would be potentially discussed and implemented are incentive caps, redesign of measure/equipment early retirement according to the CPUC concept and other.

IOUs are planning to elaborate and utilize positive experience obtained using the Savings By Design (SBD) simplified tool and extend it to energy efficiency retrofit projects. Such tools substantially reduce application processing and review time, and minimize number of hand-offs, while not sacrificing accuracy of energy saving calculations.

SoCalGas has standardized its calculating methodology over the course of the 2006 – 2008 Program cycle. This has ensured that calculations will continue to be more uniform and accurate for energy efficiency projects. SoCalGas tools are based on the nationally and internationally accepted Dept of Energy toolsets for the vast majority of its energy efficiency projects. SoCalGas has made DOE tool training a part of its required training curriculum for Account Executives and has also made the tool training available to customers, vendors, consultants and engineers.

IOUs are planning to continue and expand its core Retrocommissioning (RCx) program in multiple target markets. Retrocommissioning is a systematic process for optimizing an existing building or system's performance by identifying operational deficiencies and making necessary adjustments to correct the system. Measures may involve resetting, repair or replacement of existing system controls and components, and in general are low-cost projects with simple payback periods of less than 4 years.

After an energy audit is complete and applicable no-cost/low-cost measures identified, the scope of work will be handed-off to an RCx implementer who, in-turn, will follow RCx program protocols, execute the scope of work (measure implementation, M&V plan, incentive payment for energy savings, etc.) and report final results to the core program office.

e) Integrated/coordinated Demand Side Management:

Where possible, IOUs will use an integrated approach to addressing DSM opportunities. Innovative integrative aspects include merging energy efficiency and demand response analysis and converting recommendations to projects under Retro-commissioning and/or Calculated program. In addition, the program will process and review energy efficiency and demand response measures in a single application. Providing analytical information about applicable distributed generation solutions will maximize customer adoption rates for the most cost-effective energy management opportunities.

f) Integration across resource types

Please refer to Section 6.0f.

g) Pilots: "Deep Savings Pilot"

A Deep Savings pilot is currently being reviewed for 2010. The Pilot is intended to achieve deep savings consistent with the Big Bold Energy Efficiency Strategies in the California Long Term Energy Efficiency Strategic Plan. For example, the "Deep Savings Pilot" may use marketing approaches such as sub-sector competitions, rewarding customers that achieve notable reductions in energy use through branding and graduated incentives. The Pilot will be tracked with the expectation that, if successful, it will be quickly mainstreamed into the Commercial statewide program.

h. EM&V:

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

2009 – 2011 Energy Efficiency Programs
Commercial EE
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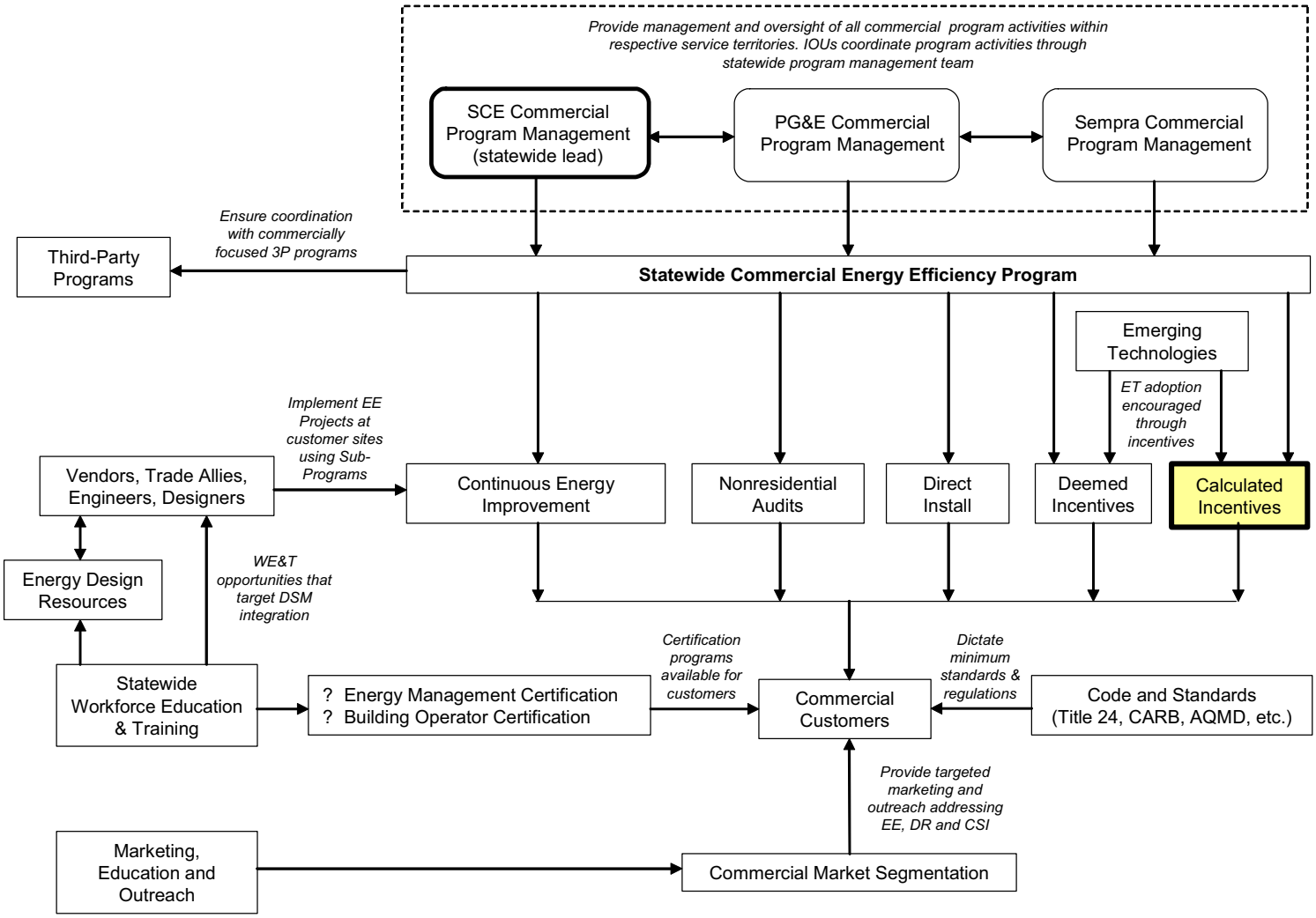
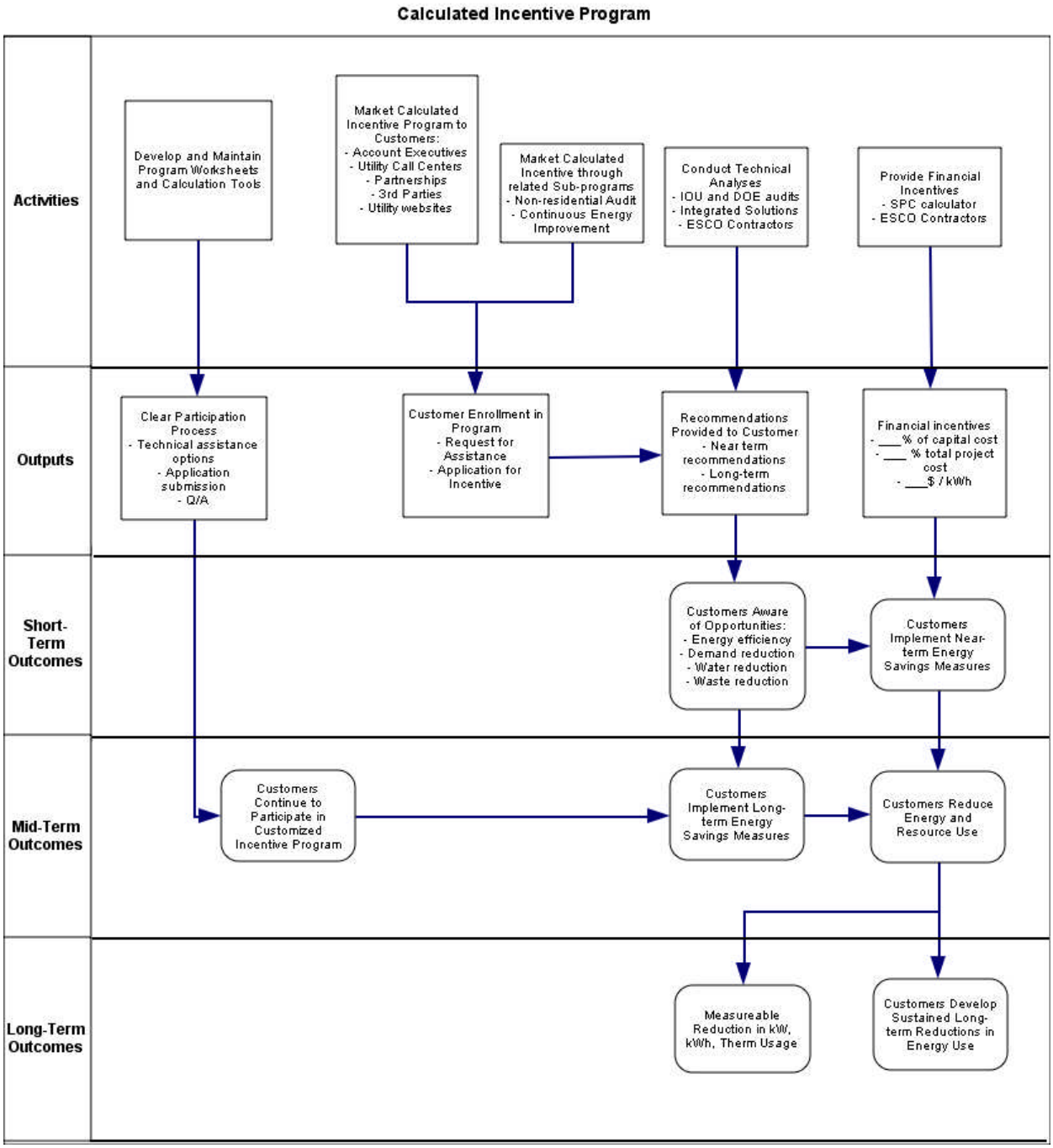
7. Diagram of Program:



8. Program Logic Model:



2009 – 2011 Energy Efficiency Programs
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Program Implementation Plan

1. Program Name: Deemed Incentives
   Program ID#: TBD
   Program Type: Sub-Program

2. Projected Program Budget Table

Table 1[1]

Program #	Main Program Name / Sub-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[2] – by calendar year

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

2009 – 2011 Energy Efficiency Programs
Commercial EE
Program Implementation Plan

Table 2

Program #	Program Name / Sub-Programs	2009 - 2011 Three-Year EE Program Gross kWh Savings	2009 - 2011 Three-Year EE Program Gross kW Savings	2009 - 2011 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 statewide commercial Deemed Incentives sub-program provides rebates for the installation of new energy efficient equipment. Deemed retrofit measures have prescribed energy savings and incentive amounts and are generally intended for projects that have well defined energy and demand savings estimates (i.e. T12 to T8 replacements). The Deemed Incentive mechanism is designed to help influence the installation of energy efficient equipment and systems in both retrofit and added load applications by reducing the initial purchase costs of such equipment and reducing the "hassle" of participating in utility rebate programs by offering a simple application process.

The Deemed Incentives sub-program directly addresses key market factors that lead to higher energy costs for California businesses. Providing a menu of prescribed common measures simplifies the process of reviewing project proposals and provides a "per-widget" rebate that reduces the cost of retrofitting outdated and inefficient equipment. This sub-program makes it attractive for customers to spend money in the short-run in order to achieve lower energy costs in the long-run

b) List measures

The following measure categories are eligible for Deemed Incentives:

- High efficiency water heating
- High efficiency boilers
- Insulation
- Steam traps

c) List non-incentive customer services

The Deemed Incentives sub-program is primarily an incentive program designed to achieve energy savings through measure implementation; however it does provide such non-incentive measures as technical consultation and application preparation assistance to help customers navigate through the application process. This assistance ensures that the sub-program captures lost opportunities by not allowing projects to fall behind schedule simply because the customer does not have the resources to shepherd through the process.

5. Program Rationale and Expected Outcome

a) Quantitative Baseline and Market Transformation Information:

Table 3

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

Refer to the overarching PIP section

b) Market Transformation Information:

Table 4

	Internal Market Transformation Planning Estimates		
Market Sector and Segment	2009	2010	2011
Metric A	Baseline	Baseline + TBD	2010 + TBD
Metric B			
Metric C			
Metric D			

Refer to the overarching PIP section

c) Program Design to Overcome Barriers: The Statewide Deemed Incentives sub-program offers customers rebates to implement energy efficiency measures that have been identified primarily through standard utility energy efficiency audits, in-depth facility/process assessments or retro-commissioning studies. The sub-program is designed to help commercial customers overcome barriers to adopting energy efficiency program measures by reducing financial costs to the customers for the implementation of energy efficient measures that address major end-uses (e.g. ~~lighting, HVAC, plug loads~~ water heating, space heating, etc.). Additionally, the easy-to-

use online and paper application process reduces that hassle and transaction costs generally associated with Calculated Incentives, where engineering calculations and pre- and post-monitoring may be required.

The Deemed Incentives sub-program delivers a consistent message statewide to commercial customers about the benefits, energy savings and GHG reductions that efficient technologies and "best operating practices" offer. This eliminates the barrier often run into by commercial customers of getting incorrect or out-of-date information from local networks.

The Deemed Incentives sub-program not only brings IOU incentive information to customers, but in many instances also provides additional information about other opportunities for project assistance, such as State or Federal funds available for energy efficiency projects, Tax incentives or other local sources of project funding.

In several instances, high efficiency Emerging Technologies are viable, but are unknown to facility owners and system designers and thus, are slow to penetrate the market, causing energy efficiency opportunities to be "lost." The Deemed Incentives sub-program helps speed market penetration and associated energy savings for Emerging Technologies by offering "premium" incentives for emerging technologies that are "proven" but not widely employed in the markets for which they are intended (e.g. ultra low NOx burners, condensing hot water heaters, etc.).

d) Quantitative Program Targets: The sub-program will achieve the following targets.

Table 5

Program Name	Program Target by 2009	Program Target by 2010	Program Target by 2011
Total Number of Projects			
New Technologies Introduced into Program			
Projects Referred from Non-Residential Audits			

e) Advancing Strategic Plan goals and objectives: The unifying objective of the CLTEESP is to employ market transforming strategies to encourage marketplace adoption of energy efficient measures to a point that public investment in energy efficiency is no longer necessary (Section 1, page 4). The Deemed Incentives sub-program will support this effort by employing two of the five market transformation policies identified in the CLTEESP. Specifically, the Program will offer "carrots" in the form of financial incentives to help pull the marketplace towards energy efficiency. The Deemed Incentives sub-program will also provide education and informational resources through marketing and program outreach efforts. Therefore, these

program elements will work in concert to transform the market towards sustained, long-term energy savings.

The program will help to achieve the following near-term strategic goals as identified in Chapter 3 of the CLTEESP:

- 2-3: Ensure compliance with minimum Title 24 codes – The Deemed Incentives sub-program only provides incentives for projects that exceed current Title 24 minimum baselines. Incentive rates will be created to encourage the implementation of advanced technologies (e.g. superboiler) to ensure deeper levels of energy reductions including implementation of the Office of the Future Consortium's Phase 2 recommendations, "The 25% Solution", which seek to reduce energy usage 25 percent below Title 24-2005 baselines.
- 2-5: Develop tools and strategies to reduce energy consumption in commercial buildings – The Deemed Incentives sub-program directly supports this effort by collecting data and conducting energy use and efficiency studies that, when collected over multiple IOU service territories, will be very helpful in supporting statewide efforts to establish a robust and useful knowledge base for the commercial sector.
- 2-7: Develop business models that deliver integrated energy management solutions – The Deemed Incentives sub-program will implement incentive mechanisms that will "reward comprehensive energy management retrofits" such as incentives for reaching certain stretch goals that produce significant energy savings beyond an established baseline. Additionally the iBonus concept (see Section 6.e) will further encourage integrated solutions.

6. Program Implementation

The Deemed sub-program, commonly referred to as Express Efficiency, will pay rebates for the installation of new energy efficient equipment. Itemized retrofit measures have prescribed energy savings and incentive amounts. These measures are categorized under the following end uses:

- Food service
- Industrial Process
- High-Efficiency Water Heating
- Greenhouse Curtains and Infrared Films
- Pipe and Tank Insulation
- Steam Traps

The Deemed program overcomes key market factors that contribute to higher energy costs for California businesses. Providing a menu of prescribed common measures simplifies the process of reviewing project proposals and provides a "per-widget" rebate that reduces the cost of retrofitting outdated and inefficient equipment. This element makes it attractive for customers to spend money in the short run in order to achieve lower energy costs in the long run.

Using itemized energy efficiency measures is intended to overcome barriers that prevent many customers from adopting energy efficiency alternatives. The barriers are addressed by itemizing common energy efficiency measures and rebates, stimulating the supply of high efficiency equipment and products (through higher demand), and offering rebates that help offset higher start up and down payment expenses for energy efficient retrofits.

Furthermore, to ensure equity to all customer segments, this program will continue to offer statewide-consistent, cost-offsetting itemized rebates to help customers with the cost of installing new energy efficient equipment.

The Deemed program will be implemented and coordinated through the same processes used in the Calculated sub-program. The Deemed program will include the following two elements:

- Existing itemized retrofit (e.g. Express Efficiency)
- Other itemized measures as relevant.

The difference between the two elements is that applicants who wish to participate in the itemized retrofit element will be allowed to reserve funds for their projects. Reservations will be taken via phone, fax, internet, or mail. SoCalGas will maintain a reservation system for the convenience of applicants. Although reservations are not required, SoCalGas recommends that customers reserve funds. At the time that they make a reservation, the applicant will be notified if a pre-inspection is required. Pre-inspection is not required unless there is prior participation at the proposed project location for the same measures being reserved. Projects with prior participation are subject to mandatory pre- and post-inspection. If an applicant does not reserve funds and submits an application that raises the issue of prior participation, the applicant is responsible for clearly demonstrating that the requirements in the terms and conditions were met before a rebate will be paid.

Incentives and savings payouts will be based upon deemed measures in the DEER database or through SoCalGas work papers.

Deemed energy efficiency rebates will be part of the integrated strategy to promote energy efficiency with non-residential customers. The Statewide Deemed Team will hold regular conference calls and in-person meetings to share successes challenges, and best practices in delivering energy efficiency via deemed incentives. When appropriate, the Commercial, Industrial, and Agricultural segments will meet as a Statewide entity to share successes challenges, and best practices in delivering energy efficiency to each market sector and associated sub-segments.

Deemed Energy Efficiency Rebates will be primarily delivered via paper or online application. Measures will be the same across IOUs and incentive levels will also be aligned, unless markets in the individual IOUs require adjustments based on research, communication with industry, and/or changes in the economic landscape.

Deemed Energy Efficiency Rebates will work with the other sub-Programs to design customer facing marketing materials that integrate EE offerings into a complete energy savings package that is focused on individual market segments.

Where appropriate, IOUs will coordinate with Publicly Owned Utilities (POUs) to extend customer reach and more deeply penetrate each customer segment and technology market. Each IOU will also coordinate internally with Government Partnership Programs to maximize the effectiveness of Program offerings and minimize overlap and confusion.

For information on measures and incentive levels offered under this sub-program, please refer to Section 4.b above.

For the information requested in Table 4, please see 5.b above.

For information on sub-program design to overcome market barriers, please see 5.c above.

For information on sub-program targets, please see 5.d above.

For information on how the sub-program advances the Strategic Plan, please see 5e above.

a) Statewide IOU Coordination
Consistent statewide specifications and rebate values make it easier for national chains and manufacturers to understand and support IOU rebate programs. Statewide coordination also includes regular meetings to share industry contacts, marketing strategies and lessons learned. Coordinated statewide participation at relevant industry events has reduced costs through sharing.

Please see Section 6.0.a for more details on statewide coordination for the overall Agricultural Program, which will be followed for this sub-program.

b) Program delivery and coordination

i. Emerging Technologies program
To meet California's future energy efficiency goals, both in terms of overall usage, greenhouse gas reductions, and peak demand usage, new technologies and new applications of technology are needed. The Deemed sub-program will seek support from ETP's incubation and development of new technologies to meet the needs of the marketplace. ETP provides the pipeline of new technologies that Deemed looks to incorporate to maintain a robust selection of energy savings equipment. The program will look to ETP to provide customers with technology information, validating effectiveness as an unbiased and neutral expert.

ii Codes and Standards program

The Deemed sub-program relies on Codes and Standards to maintain an updated and relevant list of measures that support savings. As Codes and Standards impact measures, the Deemed program will act to align itself with appropriate offerings.

iii WE&T

WE&T is a portfolio of training and information programs that showcase energy efficient equipment found on the list of measures offered in the Deemed sub-program. Dissemination of information takes place through energy centers, technology test centers, and information and training program offerings. During classes, time is dedicated to energy efficiency programs and how to participate. In 2009-2011, an Energy Efficiency representative will be available to deliver the EE message and answer questions.

iv. Program-specific marketing and outreach efforts
The following will be used as marketing and outreach channels:

- Non-contracted vendors are a key delivery channel of the Deemed sub-program. Emphasis will be placed on building awareness with more vendors in the territory. Training vendors on how to participate effectively in the program will also be a focus in the new program cycle.
- Community Based Organizations (CBO's), Faith Based Organizations (FBO's), Non-Profit Organizations, and Non-Government Organizations (NGO's) with unique access and following is expected to be emphasized as a delivery channel.
- Trade associations and industry networks
- Across enabling partners (financial institutions, trade associations, service providers, law firms, environmental organizations, etc.); and
- Unique channels that offer complementary value propositions from the customers' perspective (e.g. energy, water, materials management, recyclables, corporate citizenry, etc.).

v. Non-energy activities of program

See Section 6.0.b.v for details.

vi. Non-IOU Programs

The Deemed sub-program will continue to engage with Air Quality Management Districts, CEC, CARB, DOE, water agencies, and other government agencies responsible for regulating the various aspects and operations of customer facilities participating in the programs.

vii. CEC work on PIER

The Deemed sub-program will interact with the Emerging Technologies Program to leverage new technologies to increase the list of measures available for energy efficiency projects. The portfolio staff actively works to incorporate promising emerging technologies and PIER projects. The program will work with PIER on researching new technologies for evaluation and testing for application in mainstream projects.

viii. CEC work on codes and standards

See Section 6.b.viii.

ix. Non-utility market initiatives

Please refer to Section 6.0b.ix.

c) Best Practices

To maximize program effectiveness, best practices in Program Design and Implementation will be employed and shared amongst IOUs.

Best practices in Program Design:

- Regular communication amongst IOUs is critical to effective program design.
- Identify qualifying products simply and effectively (Examples; ENERGY STAR®, CEE, FSTC website).
- Seek input from industry in the development of new programs.
- Rewards customers that continually improve energy efficiency by offering rebates that lower the cost of leading edge technologies.
- Achieves market transformation by generating business for upstream manufacturers that develop highly efficient products.

Best practices in Program Implementation:

- Strives to simplify messaging and participation for the customer (ie, look for the ENERGY STAR label, purchase from a qualifying products list, etc.)
- Understands the key motivators that drive an industry and uses that information to market the program.
- Consistent statewide specifications and rebate values make it easier for national chains and manufacturers to understand and support IOU rebate programs. Statewide coordination also includes regular meetings to share industry contacts, marketing strategies and lessons learned. Coordinated statewide participation at relevant industry events has reduced costs through sharing.

d) Innovation: Describe any unique or innovative aspects of program not previously discussed. Why is this innovative?

SoCalGas is considering streamlining Deemed program applications to allow nonresidential customers to apply for and receive rebates online.

e) Integrated/coordinated Demand Side Management

Where possible, IOUs will use an integrated approach to address DSM opportunities. Innovative integrative aspects include merging energy efficiency and demand response offerings in the Deemed program application. Providing analytical information about applicable distributed generation solutions will maximize customer adoption rates for the most cost-effective energy management opportunities.

f) Integration across resource types
Integration across resource types (e.g., energy, water, and air quality) will be explored. Examples include working with Water Agencies to co-promote appliances that save water and energy and working with Air Quality Management Districts to co-promote Boilers and Water Heating measures that save energy and improve air quality.

g) Pilots:
There are no Pilots currently planned for this program.

h) EM&V

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

2009 – 2011 Energy Efficiency Programs
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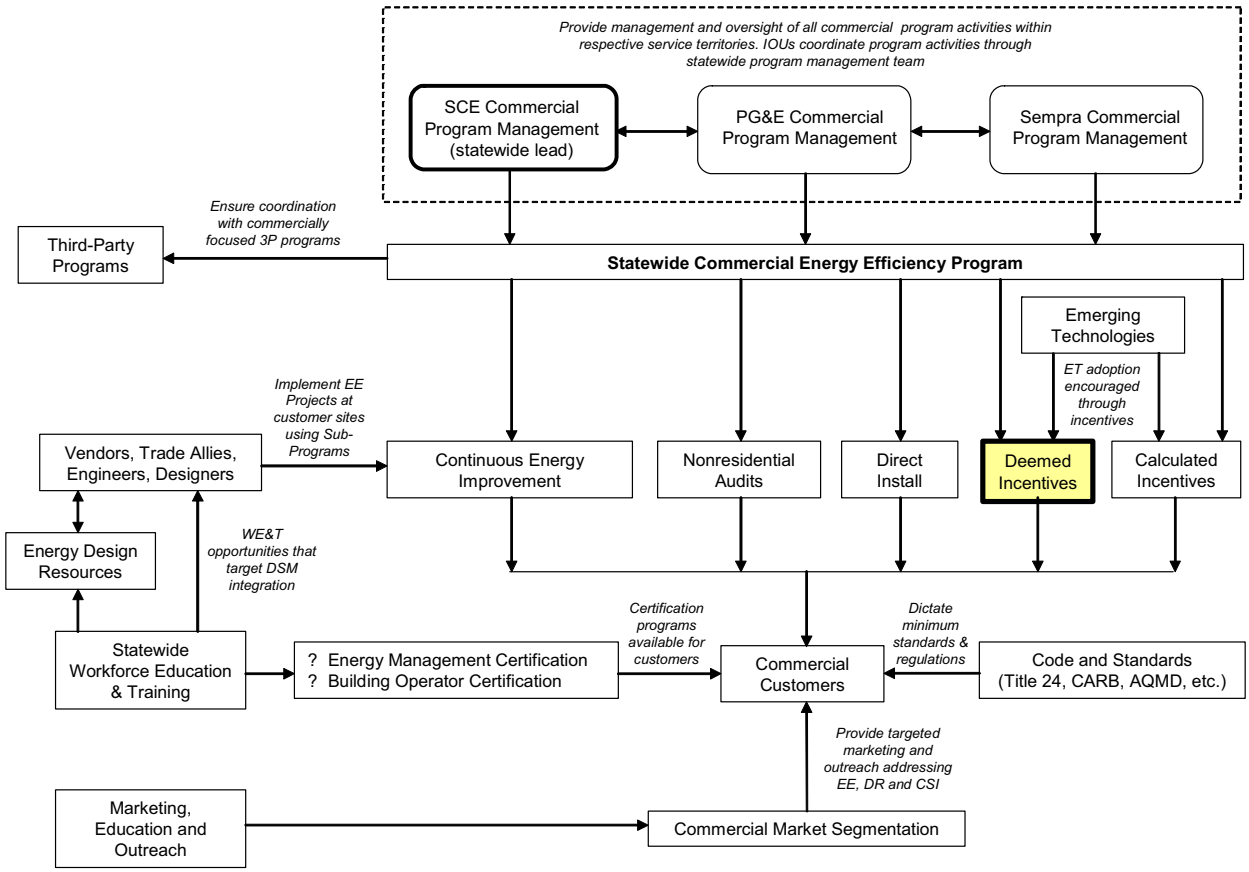
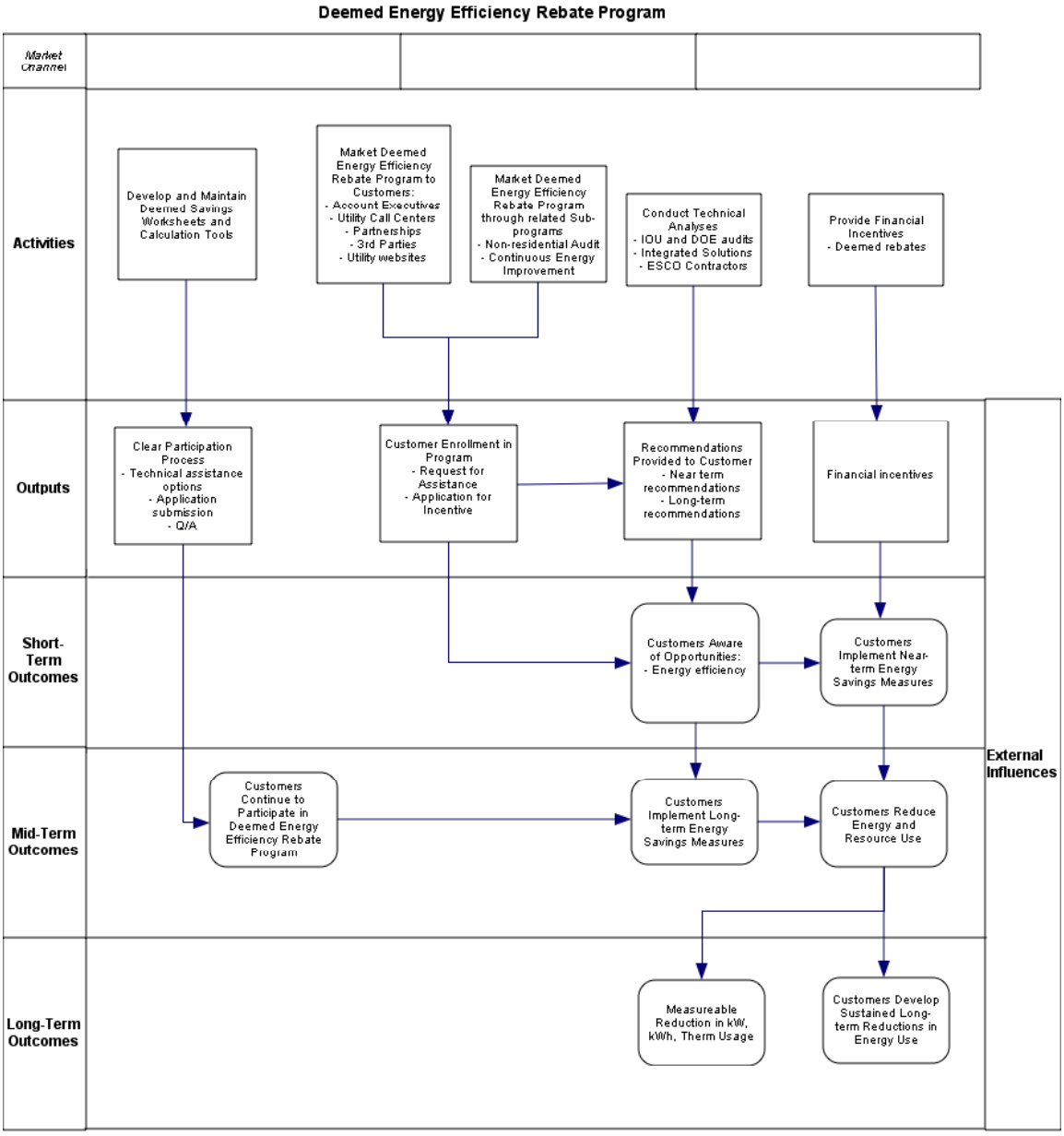
7. Diagram of Program:



8) Program Logic Model:



2009 – 2011 Energy Efficiency Programs
Commercial EE
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1. Program Name: Non-Residential Audits Program
   Program ID#: TBD
   Program Type: Sub-Program

2. Projected Program Budget Table

Table 1[1]

Program #	Main Program Name / Sub-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[2] – by calendar year

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

2009 – 2011 Energy Efficiency Programs
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Table 2

Program #	Program Name / Sub-Programs	2009 - 2011 Three-Year EE Program Gross kWh Savings	2009 - 2011 Three-Year EE Program Gross kW Savings	2009 - 2011 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 Non-Residential Audits (NRA) sub-program is designed to deliver a coordinated statewide integrated demand side management activity that promotes energy efficiency, demand response, distributed generation and emerging technologies. Within the Non-Residential Audit umbrella, there are three distinct elements:

- Remote Audit: The Remote Audit element is designed as a "do-it-yourself" audit tool that is offered to customers in various formats including, but not limited to, web-based, mail-in, and telephone-based. The audit results will be available in English as well as other languages based on particular demographics for each IOU service territory.

- Integrated Energy Audits: The Integrated Energy Audit (IEA) element is designed to help customers understand and identify their energy usage and provide concrete suggestions for maximizing energy efficiency, demand response, and distributed-generation options. The goal is to educate customers and offer implementation guidance to bridge the education/action gap. A full spectrum of energy management services will be offered to customers in support of the Integrated Demand-Side Management (IDSM) portfolio. In addition, IEA will provide Savings Calculation Assistance (SCA) targeted to specific end-uses and systems for retrofit applications in existing buildings. SCA will be provided by the IOU engineers or through contracted third-party energy engineering firms

and will help customers prepare and submit accurate, technically complete retrofit project applications to the Commercial Deemed and Calculated Incentive sub-programs. This technical assistance will expedite the process and reduce expensive and time consuming rework later in the process.

- Retro-commissioning: The Retro-commissioning (RCx) element is designed to optimize existing building or system performance by identifying operational deficiencies and making necessary adjustments to correct the deficiency. A "Master List of Findings" results from the initial assessment that identifies low-cost projects with simple payback periods of less than 4 years. These projects may involve resetting, repair or replacing of existing system controls and components. Larger scale retrofit projects that result from the assessment are referred to other sub-programs for completion (i.e. Calculated and Deemed Incentives).

The Non-Residential Audits program is designed to support the goals of the California Long Term Energy Efficiency Strategic Plan (CLTEESP) by providing customers with comprehensive building-specific information on cost-effective DSM opportunities. The IOUs believe this approach is the best way to influence market transformation, serve customers' needs, and increase adoption of DSM solutions.

The program strategy is designed to serve a diverse class of customers and will bridge offerings across different IOU programs. From a customer perspective, the audit analyses will appear as a single package, identifying comprehensive options (i.e., energy efficiency, demand response, and distributed-generation) that simplifies the customer decision-making process.

The primary program objectives are to:

- Support the Strategic Plan by offering integrated audits that address the full spectrum of energy solutions, including energy efficiency, demand response, and distributed generation (California Solar Initiative and distributed generation);
- Build upon established popularity and increased demand for audits to supplement delivery channel marketing efforts;
- Implement innovative processes and establish an infrastructure that will distinguish NRA from past programs;
- Maintain statewide consistency by offering the same set of energy audits and using them as instrument to offer customer best energy management practices and projects; and

- Offer additional products and services to bridge the gap between educating customers about energy and environmental issues and taking action. Guide and support customers as they implement technologies, processes and practices to achieve energy efficiency goals.
- Provide a channel to recommend new and/or emerging technologies appropriate for the customer's facility (e.g ultra low NOx combustion, fuel cells, superboiler, etc.)

b) List measures

The Non-Residential Audit sub-program is a non-resource, service program which does not offer measures/incentives, but provides an avenue for implementing measures through core commercial incentive programs (refer to the Commercial Deemed and Calculated Sub-Programs for specific information).

c) List non-incentive customer services

All activities conducted under the Non-Residential Audit sub-program are non-resource that with no associated incentives. Such activities include: marketing and outreach, retrofit project scoping, technical assistance, incentive application assistance, savings calculation assistance, etc.

5. Program Rationale and Expected Outcome

a) Quantitative Baseline and Market Transformation Information:

Refer to the overarching PIP section

Table 3

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

b) Market Transformation Information:

Refer to the overarching PIP section

Table 4

	Internal Market Transformation Planning Estimates		
Market Sector and Segment	2009	2010	2011
Metric A	Baseline	Baseline + TBD	2010 + TBD
Metric B			
Metric C			
Metric D			

c) Program Design to Overcome Barriers: The Non-Residential Audit sub-program will help overcome customer's lack of awareness of DSM opportunities by providing comprehensive energy solutions that the customer can implement through relevant IOU incentive and/or finance programs. The audit results summarize the cost/benefit of identified projects and include the effect of utility incentives on the first cost of the facility upgrade. The sub-program also addresses the hassle or transaction costs that prevent customers from acting upon the audit recommendation. This barrier is reduced through the Savings Calculation Assistance, which facilitates the customers completion of an incentive program application for their project(s)

d) Quantitative Program Targets: The sub-program will achieve the following targets:

Table 5

Program Name	Program Target by 2009	Program Target by 2010	Program Target by 2011
Number of Remote Audits			
Number of Integrated Audits			
Commissioned Building Square Footage			

e) Advancing Strategic Plan goals and objectives

The Non-Residential Audit sub-program is designed to promote DSM coordination and the integration strategies of the Strategic Plan. Foremost are recognition of the linkage between energy and environmental policy and the importance of integrating energy efficiency, demand response and distributed generation to support California's plan to reduce greenhouse gas emissions. .

Specific near-term strategies proposed by the CLTEESP that are addressed by the Non-Residential Audits sub-program include:

2-1: Ensure all State-Owned and Leased Buildings are Retro-commissioned – By offering a dedicated retro-commissioning program a mechanism is created whereby IOUs can facilitate the achievement of this goal as a coordinated effort with the IOU Government and Institutional Partnership Programs.

2-5: Strengthen Tool and Practices for Building Commissioning – Based on the IOUs experience with managing the 2006-08 Retro-commissioning program, lessons learned and best practices can be integrated into the 2009-11 offering. To increase market adoption of these program best practices, the IOUs will work in cooperation with the California Commissioning Collaborative to disseminate relevant information to the retro-commissioning community.

2-5: Identify New and Improved Tools and Strategies to Reduce Energy Consumption in Commercial Buildings – Starting with energy conservation and proceeding to distributed generation and demand response opportunities, the audits demonstrate to the customer a comprehensive, site-wide solution for near and longer term energy consumption and clearly state the positive greenhouse gas effects of their actions. Addressing customer energy needs through long-term solutions allows consideration of technologies and projects that benefit the state and planet for a decade or longer (e.g., HVAC systems, industrial processes and equipment, facility envelope upgrades and enhancements). Recommendations for retrofit opportunities within existing commercial building stock contribute to California's zero net energy goals. Recommendations for operation and maintenance (O&M) practices on on-going commissioning will ensure that customer facilities continue to operate in an efficient manner.[3]

In addition, Non-Residential Audits promote acceptable practices of accounting, auditing, and evaluation by:

- Offering targeted audits, savings calculation assistance and simplifying the audit-to-project documentation process to bridge the gap between educating customers about energy solutions to environmental issues and taking action.
- Guiding and supporting customers as they implement technologies, processes and practices to achieve energy efficiency savings.

Energy-saving results will be achieved by providing comprehensive follow up with customers who have received an energy audit. Follow up will include

[3] Note that recommended O&M solutions will be linked with Quality Maintenance principles established by the Statewide Residential and Commercial HVAC Program, thus supporting many of the goals of Chapter 6 of the CLTEESP.

targeted, end-use energy analysis and implementation of "audit to project" conceptual work.

6. Program Implementation

a) Statewide IOU Coordination: Maintaining statewide consistency in offering the same set of energy audits allows customers to benefit from the collective experience of the IOUs and receive best energy management practices. Specific areas of coordination include:

- Development of a Universal Energy Audit Tool (i.e. UEAT) and methodology: Currently, Remote Audits provided by the IOUs include education on various energy solutions. In an effort to enhance the offering, the IOUs will coordinate in the development and piloting of the UEAT. The tool will enable customers to conduct their own energy audits from the comfort of their home or office by logging onto the statewide IOU Web portal. It will be the primary tool to provide energy conservation, energy efficiency, demand-response and distributed-generation information to customers with load less than 50,000 therms.

- Implementation of IEAs (i.e. accounting guidance, regulatory interpretation, etc.).

- Development of marketing, outreach and education strategy.

- Strategies to support the Strategic Plan and various market transformations.

- Development of innovative audit approaches (i.e. retro-commissioning).

- Inter-utility coordination through regularly scheduled meetings to address concerns and problems that may develop during program cycle.

- RFP process for development of audit tools: This process will focus on consultants that have developed a simplified process that allows for better understanding of energy efficiency technologies.

i. Program Name: Non-Residential Energy Audits

i. Program Delivery Mechanisms: As an enhanced offering, the IOUs will glean best practices for the implementation of IEAs. The IEA will offer IDSM solutions to utility core customers to optimize energy consumption in California and deliver significant environmental benefits. Audit reports will offer an array of no-cost, low-cost and capital-intensive actions that lead customers to invest in energy efficiency, demand response and distributed

generation options. The program will integrate demand side energy management opportunities to ensure that the customer embarks on the most cost-effective, productive solution that meets his/her business requirements and goals.

ii. Incentive levels: N/A (this sub-program is a non-resource offering).

iii. Marketing and Outreach Plans: A comprehensive audit marketing plan will be aligned and coordinated with the marketing plans for each of the IOUs in order to maximize effectiveness, integrate offerings, and as appropriate refer customers to relevant DSM programs. The IOUs will look to partner with interested public and governmental bodies to proactively promote energy efficiency and environmental green actions, in partnership with programs such as the local government partnerships and green communities.

Non-Residential Audit program evaluation studies conducted for program cycles 2002, 2003, and 2004-2005 clearly identify energy audits as one of the most powerful tools in creating awareness, enforcing customers' implementation of energy conservation recommendations, and feeding energy efficiency savings realized from retrofit projects.

California's IOUs have been offering energy efficiency audits and other customer programs and services for more than 20 years. Customers have come to trust the IOUs for comprehensive, unbiased information to guide their energy decisions. The increasingly popular energy audits and information services provide the first no-cost and low-cost recommendations that lead customers to invest further in energy efficiency and other energy management programs. The audits help customers assess energy efficiency opportunities and directly link them to IOUs' energy efficiency incentives.

Energy audits are often the first step for customers who wish to improve the efficiency of their buildings and/or explore distributed generation options. They can serve as a gateway to other programs in the IOU portfolio, identifying customer options and recommending energy solutions.

iv. IOU program interactions with CEC, ARB, Air Quality Management Districts, local government programs, other government programs as applicable: Energy audit recommendations will be fully cognizant of the regulations required by other bodies. For example, information about GHG reductions resulting from AB 32 will be incorporated into the customer recommendations and factored into the cost-effectiveness.

v. Similar IOU and POU programs: Over the next three years, the IOUs will seek to increase their interactions with the POUs to better align IOU and POU Non-Residential Audits programs. This may involve the creation of periodic California energy efficiency program summits that seek to increase awareness of the CLTEESP and how programs could/should be designed to help meet its aggressive targets.

b. Program delivery and coordination: The sub-program will be coordinated with the following activities:

i. Emerging Technologies program: The IOU Non-Residential Audit Program Management Team will stay abreast of and incorporate relevant emerging technologies into Remote Audit recommendations. In addition, IOU field engineers, who deliver IEAs, are active contributors to the Emerging Technology process by their participation in ET Roundtable/Information meetings and continually seek to offer new technologies to customers.

ii. Codes and Standards program: Codes and Standards are not a central focus of Non-Residential Audits, but customer recommendations are consistent with the current governing energy codes.

iii. WE&T efforts: Energy audits can support Statewide WE&T efforts by including educational information about Certified Energy Manager (CEM) programs and requirements in the audit reports. Such materials could suggest to customers that passing the CEM exam will allow them to conduct facility audits at other facilities that they may have. In addition, increased retro-commissioning activities will create opportunities for third-party providers who deliver commissioning services such as project scoping, investigations and assessments, air balancing, HVAC quality maintenance, etc.

iv. Program-specific marketing and outreach efforts (provide budget): Marketing collateral and messages for energy efficiency will be integrated with other IOU programs. Through additional market segmentation and feedback from customers, IOUs will further adjust approaches based on the varied needs of targeted customers. Additional sub-program marketing will be accomplished by leveraging local third-party programs. Specific IOU marketing budgets are provided in Table 1.

v. Non-energy activities of program: The IOU's Non-Residential Audit program team will participate in statewide and national efforts to develop and enhance audit and retro-commissioning tools and practices. Such activities will likely occur in conjunction with ongoing industry efforts managed by the Consortium for Energy Efficiency (CEE) and the California Commissioning Collaborative (CCC).

vi. Non-IOU Programs: Non-Residential Audit reports shall include information on Non-IOU Programs to expose customers to funding, such as from air or water agencies to support integrated efforts. Non-Residential Audits will partner with programs offered by CEC, ARB, Air Quality Management Districts, and other government agencies to capitalize on opportunities to develop co-branded program information and marketing collateral target to commercial-sector customers. Conventionally, each government agency and utility has operated natural resource and energy programs independently, missing opportunities to serve customers who must manage more than one resource type. Closer alignment with these other programs will be achieved in order to deliver the customer a more comprehensive solution. With respect to water conservation, utility program managers will partner with the local water districts to co-brand marketing collateral, attend trade shows, co-release notices, for programs with interactive water and energy effects. Similarly, with ARB and Air Quality Management Districts, IOUs will offer customers Calculated sub-program incentives for energy efficient equipment that may also reduce air emissions

vii. CEC work on PIER: See Section 6.b.1

viii. CEC work on codes and standards: See Section 6.b.ii

ix. Non-utility market initiatives: N/A (this is not a focus of this sub-program).

c. Best Practices: The IOUs have been delivering energy audits for more than twenty years and through this coordinated statewide effort will leverage program best practices into the current Non-Residential Audit sub-program. Such best practices include regular statewide program management meetings to discuss program design and implementation issues, consistent RFP process for selecting third-party vendors to ensure that programs are delivered consistently and consistent audit approaches/report outputs to ensure that customers operating multiple facilities across IOU service territories receive the same information.

d. Innovation: For 2009-11, the IOUs are re-tooling their energy audit programs to focus on DSM integration opportunities. The IOUs have tried this at several levels over the years in various one-off or pilot program approaches. The most successful recent example of such integrated DSM has been PG&E's Integrated Audits Program. The lessons learned from this program will be applied statewide to benefit all California IOU customers. In addition, the IOUs are introducing a statewide Retro-commissioning effort that will help achieve several goals desired in the CLTEESP. This innovative approach will provide a cost-effective means of facilitating the retro-commissioning of all State-owned and leased facilities. Finally, the Non-Residential Audit sub-program provides a channel to recommend new and emerging technologies to customers that can lead to even greater energy

savings. One focus of the sub-program for 2009-11 will be to support the Office of the Future Consortium Phase 2 recommendations, "The 25% Solution." Audit recommendations for commercial office space will be geared towards driving customers to implement measures that reduce their energy usage 25 percent below Title 24-2005 as the a baseline.

e. Integrated/Coordinated Demand Side Management:

The IEA program will serve as the foundation for integrated offerings by offering a truly integrated audit to customers, seamlessly providing them with information and recommendations regarding energy efficiency, distributed-generation, demand response, greenhouse gas emissions and water energy savings, Customers will be referred to other IOU programs that will help them implement the recommendations resulting from the audit report and thus will be given a complete picture of their energy usage and options for reducing costs and using energy more efficiently.

f. Integration Across Resource Types: The core focus of the sub-program in the near-term is to implement DSM integration. Once this has been accomplished, the appropriateness of including water savings measures into the recommendations will be evaluated.

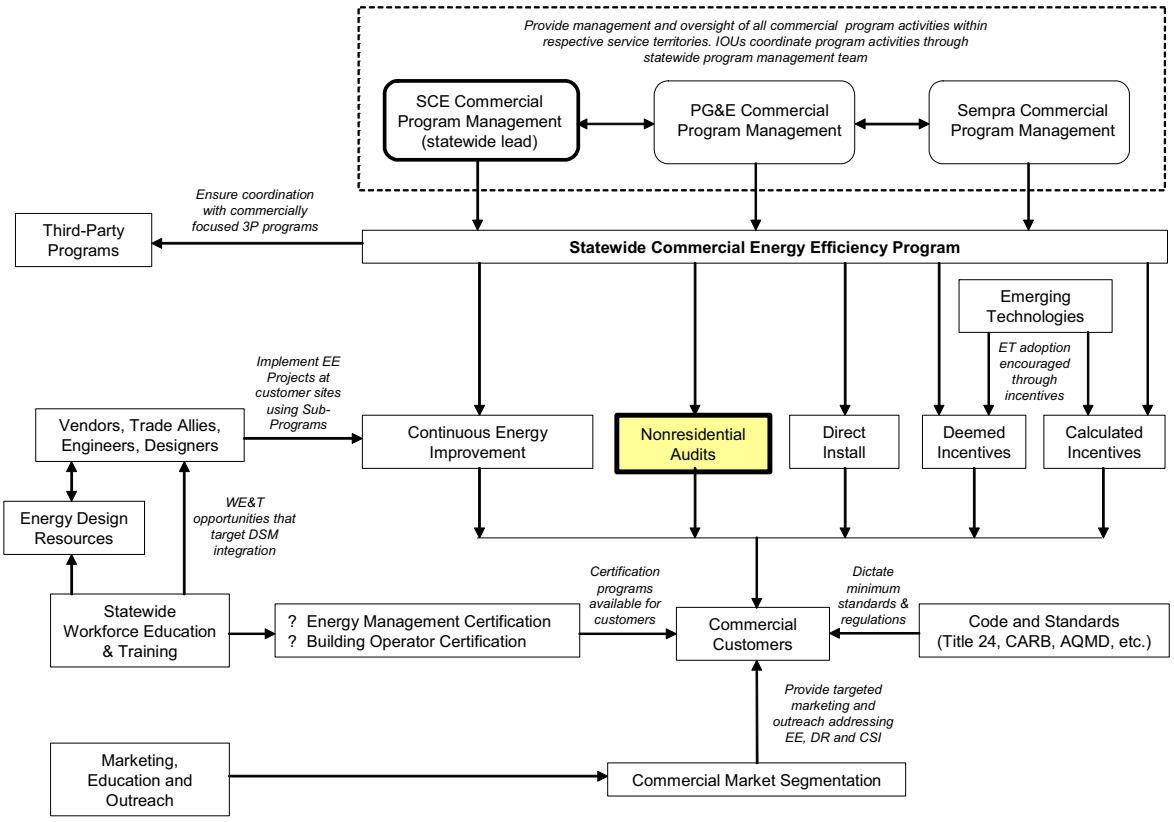
g. Pilots: N/A

h. EM&V:

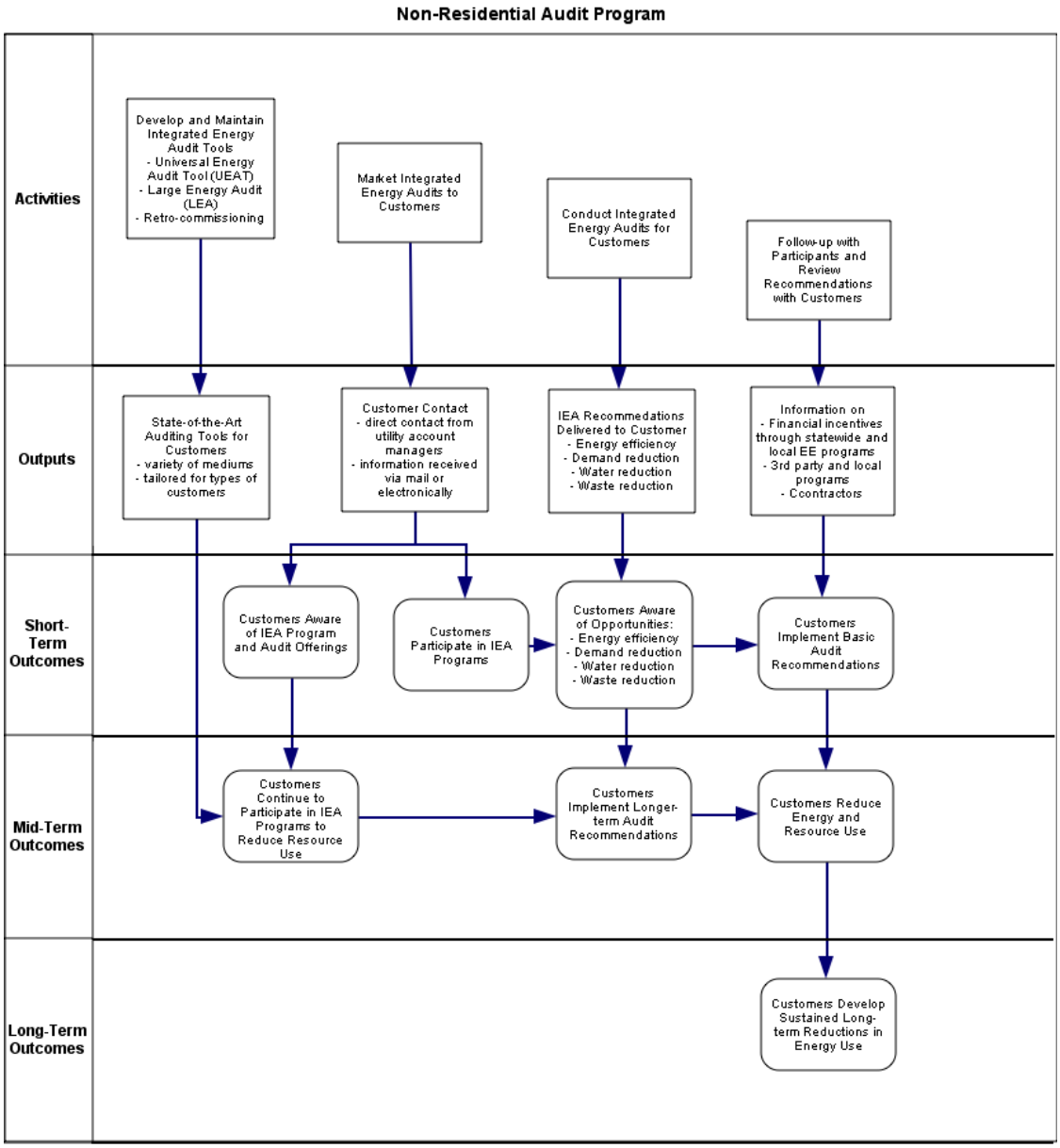
The utilities are proposing to work with the Energy Division to develop and submit a comprehensive EM&V Plan for 2009-2011 after the program implementation plans are filed. This will include process evaluations and other program-specific studies within the context of broader utility and Energy Division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

2009 – 2011 Energy Efficiency Programs
Commercial EE
Program Implementation Plan

7. Diagram of Program



8. Program Logic Model



2009 – 2011 Energy Efficiency Programs
Commercial EE
Program Implementation Plan

1. Program Name: Continuous Energy Improvement
   Program ID#: TBD
   Program Type: Sub-Program

2. Projected Program Budget Table

Table 1[1]

Program #	Main Program Name / Sub-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[2] – by calendar year

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

2009 – 2011 Energy Efficiency Programs
Commercial EE
Program Implementation Plan

Table 2

Program #	Program Name / Sub-Programs	2009 - 2011 Three-Year EE Program Gross kWh Savings	2009 - 2011 Three-Year EE Program Gross kW Savings	2009 - 2011 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

Continuous Energy Improvement (CEI) is a consultative service that is aimed at helping large commercial customers engage in long-term, strategic energy planning. Corporate energy management is not currently part of normal business operations for the majority of utility customers and with current economic pressures forcing customers to reduce costs and focus more on their core business, it is likely to be further marginalized. CEI proposes to reintroduce the importance of energy management by transforming the market (and reducing energy intensity) through a comprehensive approach that addresses both technical and management opportunities and creates sustainable practices through a high-level energy commitment from executive and board-level management. CEI applies the principals of well-known business continuous improvement programs, such as Six Sigma and International Standards Organization (ISO) standards, to facility and plant energy management: (1) Commitment; (2) Assessment; (3) Planning; (4) Implementation; and (5) Evaluation and Modification. At each stage of customer engagement, there are a variety of complementary utility and non-utility products and services that can be customized to fit different customer profiles and optimize the cost effectiveness of the delivered energy management solution.

Commitment
CEI begins with a high-level management commitment to improving energy performance, which increasingly can be combined with other environmental and regulatory commitments that large energy users are developing in response to market and political pressures. A corporate commitment sends the top-down message to employees, partners, shareholders and vendors that energy is a priority

issue requiring attention – like safety – and also paves the way for establishing the required company resources required to implement the steps of CEI. These resources can include capital, personnel like energy champions or teams, or technical systems and software required for energy management.

Gaining true customer commitment can take time, but is critical. In implementation, utilities will formalize the Commitment phase with larger or more intensive customers through a CEI participation agreement, which outlines the utility CEI services being offered as well as minimum customer expectations.

Assessment
Following Commitment, a comprehensive assessment is critical to identifying not only technical opportunities, but also systemic energy management practices and cultural shifts that can improve overall facility management practices and sustain continuous improvements towards long-term company targets.

There are many tools and resources - utility and non-utility, free and licensed – available to support comprehensive customer energy assessment. They include ENERGY STAR's Guidelines for Energy Management, customer energy management assessment software products like those developed by Envinta, benchmarking tools, Integrated Energy Audits, and local and third-party programs who can offer specialized technical expertise and assessment.

Based on screening criteria, utilities will offer comprehensive energy assessment services utilizing, but not limited to, vetted sources like those described below, to develop a customer specific strategic energy plan.

- ENERGY STAR's Guidelines for Energy Management is housed on the ENERGY STAR website and provides step by step guidelines to customers to support CEI in general, and also guides customers to ENERGY STAR's numerous assessment tools. This option is a low cost resource for smaller and medium customers interested in CEI.

- Energy Management Assessment Tools such as Envinta's One-To-Five, Achiever, and Challenger software products offer professionally facilitated energy management assessment with company decision makers and explores management practices and company priorities to develop a CEI roadmap for energy goals and actions.

- Integrated Energy Audits provide an inventory of technical facility end-uses and energy efficiency, demand response and self-generation investment opportunities. For a full description, see the Statewide Non-Residential Audits sub-program plan.

- Benchmarking can measure energy performance of a company, building, process, or piece of equipment to industry standards or comparable groupings. Benchmarking is a natural first step for the CEI process. Customers with multiple facilities find benchmarking useful to prioritize efficiency projects, track progress toward energy or green house gas (GHG) improvement goals or drive competition among similar benchmarked facilities. Units of measurement vary widely - for commercial buildings, the unit is energy used/square foot for a unit of time. Benchmarking can also be applied to other resources and environmental issues such as water use, CO2, and emissions.

Planning
Strategic energy planning involves setting energy goals and action plans around energy efficiency, demand response, and generation as appropriate. Implementation of the Planning stage of CEI can be undertaken independently by the customer, or with utility support. Planning for larger complex customers will typically involve Account Representatives and/or consultants. As is discussed in the CLTEESP and in the Section 6.e below, strategic planning can also include complementary non-energy considerations as well, such as greenhouse gas (GHG) reductions, water efficiency, and waste-stream minimization, all of which have embedded energy components.

Data and findings from a comprehensive customer Assessment are critical in developing any comprehensive energy plan, including the results from technical audits or assessments, facility benchmarks, energy management assessments, and assessments of company priorities. This information is analyzed and used to develop realistic and achievable company goals and prioritized shorter-term tactics needed to achieve them. Energy plans should be living documents revisited and revised regularly.

Energy goals can vary widely and include elements such as resource utilization (Company X will reduce it's overall energy intensity by 3% over the next 3 years"), carbon reduction goals ("Company X will be carbon neutral by 2012"), or management oriented goals ("Company X will implement energy teams by 2010"). Goals can be internal documents or can be made public through press releases as part of larger sustainability plans, which is increasingly important for large and public companies.

CEI will assist customers in developing and implementing action plans to execute the prioritized near-term activities in support of their company's energy goals, as well as the resources, staff and schedule for tracking. Action plans typically includes activities such as prioritizing process systems or facilities based on benchmarking or company drivers, identifying internal resources required to

implement plans, develop project justification and incentive application documentation lists and detailed schedules.

Implementation
In the implementation stage, utilities partner with customers to identify technical support and utility and non-utility resources available to support implementation of projects, such as rebates, incentives, third-party and government partnership programs, and state and national resources, including:

- Statewide Deemed rebates;
- Statewide Calculated incentives for new construction/tenant improvement, retrofit and retro-commissioning/repair;
- Third-Party and Government Partnership programs (described in the statewide and local third party filings);
- Non-utility financing options; and
- Owners engineer support

Evaluation and Modification
Like in any continuous improvement program, evaluation is an ongoing process of comparing actual performance against company goals, targets and action plans. It may include repeating the benchmarking and system or facility baseline process annually, assessing advancements in organizational and management practices that facilitate energy management improvements, or evaluating cost savings per unit of product. Regular evaluation will inform changes to goals and action plans moving forward.

b) List measures

CEI does not provide incentives to customers, but ultimately facilitates the customer's implementation of energy efficiency projects through statewide incentive programs.

c) List non-incentive customer services

CEI is a non-resource program that provides comprehensive strategic energy planning and consulting services for commercial customers. These services include: energy management assessments, energy planning, baselining and benchmarking, project implementation support, customer recognition (e.g. "corporate sustainability awards"), and web-based energy resources.

5. Program Rationale and Expected Outcome

a) Quantitative Baseline and Market Transformation Information:

Table 3

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

Refer to the overarching PIP section

b) Market Transformation Information:

Table 4

	Internal Market Transformation Planning Estimates		
Market Sector and Segment	2009	2010	2011
Metric A	TBD	Baseline + TBD	2010 + TBD
Metric B			
Metric C			
Metric D			

Refer to the overarching PIP section

c) Program Design to Overcome Barriers: CEI is intended to address several market barriers that prevent wider adoption of energy efficiency practices. These barriers include:
- Lack of information – The CEI evaluation and modification process provides data that customers can use to reevaluate their commitment and/or modify their energy goals.
- Performance uncertainties – Through CEI's comprehensive baselining and benchmarking assistance, customers will have access to real-time data that demonstrates how their facility is performing relative to their established goals.
- Organizational customs – The high-level customer commitment that is at the core of CEI increases the likelihood that corporate cultures that prevent successful implementation of comprehensive energy policies will be changed.

d) Quantitative Program Targets: CEI will achieve the following program targets:

Table 5

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

Customer Commitments to Develop Corporate Energy Plans			
Corporate Energy Plans Developed			
Benchmarked Facilities			
Projects Implemented through IOU Incentive Sub-Programs			

e) Advancing Strategic Plan goals and objectives: The program will help to achieve the following near-term strategic goals as identified in the Commercial chapter of the CLTEESP:

2-1: State/Local Governments and Major Corporations Commit to Achieve EE Targets – CEI seeks to (1) gain corporate level commitment to energy efficiency as a core business operation; (2) develop corporate energy policies that establish measurable goals; (3) develop a actionable plan to achieve these goals; (4) guide customers to IOU programs that can help implement cost-effective EE projects; and (5) provide a feedback loop to measure performance. This codified process is designed to support the significantly greater energy efficiency performance desired by the CLTEESP.

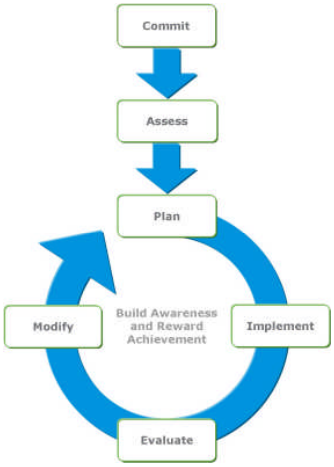
2-5: Develop Tools to Reduce Energy in Commercial Buildings – As part of the implementation of CEI, the utilities will partner with energy industry peers, industry associations and DOE/CPUC sponsored labs and consultants, to enhance the use of existing tools, and develop new tools to assist commercial customers initially reduce energy usage at their facilities and then continue to operate their facilities in a efficient and persistent manner. Current tools used for benchmarking tools and resources include those developed by the EPA for Energy Star and by Lawrence Berkeley National Lab with CEC funding:

- Energy Star Portfolio Manager Commercial Benchmarking: Benchmarks customer facility against a national database of similar NAICS codes for an Energy Star score (0-100), kBTU/sq ft-yr, lbs CO2/yr.
- Management Standard for Energy SME2000-2008
- LBNL Superior Energy Performance

2-7: Develop Business Models to Deliver Energy Management Solutions – CEI's fundamental purpose is to achieve corporate level commitments from commercial customers to change their existing business models to consider energy usage and sustainability as a core part of their daily operations. This level of commitment will help achieve greater penetration of energy efficiency in the commercial market sector.

6. Program Implementation

Continuous Energy Improvement (CEI) describes a statewide package of products and services aimed at helping customers engage in long-term, strategic energy planning. It proposes to transform the market and reduce energy intensity through a comprehensive approach that includes addressing both technical and management opportunities. A CEI approach applies the principals of well-known business continuous improvement programs, such as Six Sigma and International Standards Organization (ISO) standards, to facility and plant energy management: Commit, Assess, Plan, Implement, Evaluate, and Modify.



At each stage of customer engagement, there are a variety of utility and non-utility products and services that can be offered the support that can be customized to fit different customer profiles and optimize the cost effectiveness of each utility's portfolios.

In implementation, utilities will *screen customers* for certain CEI services based on factors such as customer energy use, complexity, number of facilities, energy decision making structure, environmental commitment or demonstrated motivation to take action. Screening criteria and specific product offerings will be utility-appropriate.

This screening allows the IOUs to target customers effectively. Implementing a CEI program requires significant time and resources for both the utility and the customer. Therefore, IOUs will consider the following and other factors when selecting customers:

- **The customer's current and past commitment to energy management and green policies:** Certain customers, such as WalMart, have already demonstrated a significant commitment to energy management as part of an overall green policy. IOUs will work closely with their strategic customer relationship managers to target such customers.

- **The ability to deliver cost-effective energy savings:** CEI programs focus on helping customers transform their energy management processes, with the expectation that the transformation will lead to energy savings. IOUs will target customers with the potential to transform relatively quickly and cost-effectively, so that delivery of energy savings begins within the 2009-2011 cycle. Such customers will be identified in close collaboration with the strategic customer relationship managers. Customer characteristics, such as energy use, complexity, number of facilities, and energy decision making structure will also be considered for their impact on cost effectiveness.

CEI begins with a high level management commitment to improving energy performance, which increasingly can be combined with other environmental and regulatory commitments that large energy users are developing in response to market and political pressures. A corporate commitment sends the top-down message to employees, partners, shareholders and vendors that energy is a priority issue requiring attention – like safety – and also paves the way for establishing the required company resources required to implement the steps of CEI. These resources can include capital, personnel like energy champions or teams, or technical systems and software required for energy management.

Gaining true customer commitment can take time, but is critical. In implementation, utilities will formalize the Commitment phase with larger or more intensive customers through a *CEI participation agreement*, which outlines the utility CEI services being offered as well as minimum customer expectations.

Following Commitment, a comprehensive assessment is critical to identifying not only technical opportunities, but also systemic energy management practices and cultural shifts that can improve overall facility management practices and sustain continuous improvements towards long-term company targets.

Many tools and resources - utility and non-utility, free and licensed – are available to support comprehensive customer energy assessment. They include:

- The U.S. Department of Energy's Industrial Technologies Program efficiency source books and guides. These sourcebooks include;
    - Improving Steam System Performance sourcebook,
    - Improving Process Heating Performance,
    - Improving Pumping System Performance,
    - Improving Motor and Drive System Performance,

  As well as other efficiency focused technical publications and software tools

- Energy Star's Guidelines for Energy Management, housed on the ENERGY STAR website, provide step-by-step guidelines to support CEI in general, and also guide customers to Energy Star's numerous assessment tools. This option is a low-cost resource for smaller and medium customers interested in CEI. (http://www.energystar.gov/index.cfm?c=guidelines.guidelines_index,)
- Customer energy management assessment software products like those developed by Envinta. *Envinta One-To-Five, Achiever, Challenger,* for example, lets company decision makers explore management practices and company priorities to develop a CEI roadmap for energy goals and actions.

Benchmarking tools, which measure the energy performance of a company, building, process, or piece of equipment against industry standards or comparable groupings. Benchmarking is a particularly useful tool to support a CEI process. Customers with multiple facilities can prioritize efficiency projects, track progress toward energy improvement goals or drive competition among similar benchmarked facilities. Benchmarking can also be applied to other resources and environmental issues such as water use, CO2, and emissions.

Existing benchmarking tools include those developed by the DOE and by the EPA for Energy Star and by Lawrence Berkeley National Lab (LBNL) with CEC funding. These include tools for commercial facilities, cement, auto assembly, and an LBNL winery benchmarking tool. Under development are ENERGY STAR benchmarking tools for food processing, glass manufacturing, and pharmaceutical manufacturing, as well as an LBNL tool for dairy processing. Benchmarking and establishing baselines are an important component of the Management Standard for Energy SME 2000-2008, the DOE sponsored ISO Plant Certification, and LBNL Superior Energy Performance.

- Simple or integrated energy audits provide an inventory of technical facility end uses and energy efficiency, demand reduction and self-generation investment opportunities. For a full description, see the Statewide Integrated Audits sub-program description.

Based on screening criteria, utilities will offer comprehensive energy assessment services utilizing, but not limited to, vetted sources like those described above, to develop a customer specific strategic energy plan. In implementation, the statewide Agricultural program will continue to partner with energy industry peers, industry associations and DOE/CPUC sponsored labs and consultants to enhance the use of existing tools and develop new tools to improve key California agricultural sectors.

CEI Planning
Strategic energy planning involves setting energy goals and action plans around energy efficiency, demand response, and generation as appropriate. Implementation of the Planning stage of CEI can be undertaken independently by the customer, or with utility

support. Planning for larger complex customers will typically involve Account Representatives, field engineering and/or consultants. As is discussed in the Long Term Strategic Plan and in the PIP Integration Chapter, strategic planning can also include complementary non-energy considerations as well, such as greenhouse gas (GHG) reductions, water efficiency, and waste-stream minimization, all which have embedded energy components.

Data and findings from a comprehensive customer Assessment are critical in developing any comprehensive energy plan, including the results from technical audits or assessments, facility benchmarks, energy management assessments, and assessments of company priorities. This information is analyzed and used to develop realistic and achievable company goals and prioritized shorter-term tactics needed to achieve them. Energy plans should be living documents revisited and revised regularly.

Energy goals can vary widely and include elements such as resource utilization (Company X will reduce it's overall energy intensity by 3% over the next 3 years"), carbon reduction goals ("Company X will be carbon neutral by 2012"), or management oriented goals ("Company X will implement energy teams by 2010"). Goals can be internal documents or can be made public through press releases as part of larger sustainability plans, which is increasingly important for large and public companies.

CEI will assist customers in developing and implementing action plans to execute the prioritized near-term activities in support of their company's energy goals, as well as the resources, staff and schedule for tracking. Action plans typically includes activities such as prioritizing process systems or facilities based on benchmarking or company drivers, identifying internal resources required to implement plans, develop project justification and incentive application documentation lists and detailed schedules.

CEI Implementation

In the implementation stage, utilities partner with customers to identify technical support and utility and non-utility resources available to support implementation of projects, such as rebates, incentives, third party and government partnership programs, and state and national resources, including:

- Statewide Deemed rebates
- Statewide Calculated incentives for new construction/tenant improvement, retrofit and retro-commissioning/repair
- Third Party and Government Partnership programs (described in the statewide and local third party filings)
- Non-utility financing options and owners engineer support

CEI Evaluation and Modification

Like in any continuous improvement program, evaluation is an ongoing process of assessing actual performance against company goals, targets and action plans. It may include repeating the benchmarking and system or facility baseline process annually, assessing advancements in organizational and management practices that facilitate energy management improvements, or evaluating cost savings per unit of product. Regular evaluation will inform changes to goals and action plans moving forward.

For information on measures and incentive levels offered under this sub-program, please refer to Section 4.b above.
For information on measures and incentive levels offered under this sub-program, please refer to Section 4.b above.

For the information requested in Table 4, please see 5.b above.

For information on sub-program design to overcome market barriers, please see 5.c above.

For information on sub-program targets, please see 5.d above.

For information on how the sub-program advances the Strategic Plan, please see 5e above.

a) Statewide IOU Coordination:

The Statewide IOU Coordination process for the Agricultural Program is described in Section 6.0.a, and will be followed in this sub-program.

b) Program Delivery and Coordination

i. Emerging Technologies Program
CEI implementation shall include identification and project development at specific customer sites with potential for Emerging Technologies program participation, demonstrations and incentives.

ii. Codes and Standards Program
CEI implementation shall include information about pending new Codes and Standards program that may affect planning or prioritization of retrofit or new construction projects.

iii. WE&T

CEI implementation shall integrate with Workforce Education and Training efforts by providing CEI process and case study input to "energy engineer" curriculum designers for Community Colleges and Universities.

iv. Program-specific marketing and outreach efforts (provide budget)
CEI's marketing and outreach effort and budget have not been determined at this time. Once the 09-11 funding levels, which include Marketing funds, an allocation to CEI will be determined. The CEI sub-program will be marketed through Account Executives, as well as through educational, outreach and other marketing activities. Marketing activities will target business customers, ESCOs, trade associations, local business groups and government entities to generate interest and program participation.

In 2009-2011, Marketing campaigns will provide a wide range of action-oriented solutions targeted to "personas" identified through segmentation research. In addition, marketing efforts will be "bundled". That is, a menu of demand response, energy efficiency and conservation programs will provide customers a full array of EE and DR options. By providing packaged energy management solutions for each industry segment the IOUs will be better able to communicate with and serve customers.

Marketing efforts will incorporate a variety of marketing tactics/activities to promote the CEI Sub-Program. Education, awareness and outreach efforts will rely on a combination of mass media communication channels and targeted communication channels to ensure the messages reach the intended audiences with enough frequency to motivate attitude and behavior changes. The marketing strategies may include, but are not limited to, a mix of print, radio, TV, direct mail, e-mail, personal contact, trade shows, trade association meetings, customer workshops and seminars, energy related and other community events and partnerships with business and industry organizations, specialized collateral, case studies, website links and information with regular updates, bill inserts, press releases, and newspapers.

v. Non-energy activities of program
CEI implementation shall include Non-resource activities such as recognition awards, local area or sector competitions, awareness campaigns, education about non-energy related LEED points and definitions, use of computerized financial analysis tools and cost estimating and forecasting tools. In addition, the CEI sub-program will help customers learn about and access the many certification programs available, such as EnergyStar, LEED, and ISO.

vi. Non-IOU Programs

CEI implementation shall include information on Non-IOU Programs to expose customers to funding, such as from air or water agencies to support efforts. The CEI sub-program managers will scan the programs offered by CEC, ARB, Air Quality Management Districts, and other government agencies to capitalize on opportunities to share program information and marketing collateral with Agriculture-sector customers. Conventionally, each government agency and utility has operated natural resource and energy programs independently, missing opportunities to serve customers who must manage more than one resource type. For customers who are regulated by or interested in more than one resource issue, Interactive Program Presentment (IPP), will benefit the customer to the mutual advantage of the single resource programs.

vi. CEC work on PIER
CEI implementation shall include information on the CEC's work on PIER to expose customers to demonstration or research projects and funding.

vii. CEC work on codes and standards

viii. Non-utility market initiatives
Non-utility market initiatives such as education about Federal Tax incentives for energy efficiency investments is an example of a non-utility information and guidance that CEI sub program will provide customers.

c) Best Practices:
The CEI approach applies the principals of well-known business continuous improvement programs, such as Lean Six Sigma and ISO standards, to facility and plant energy management: Commit, Assess, Plan, Implement, Evaluate, and Modify. This approach can now be successfully implemented given the 3 year programs cycle allowing longer term and deeper project development engagements with customers.

d. Innovation:
Continuous Energy Improvement is a new way of packaging energy efficiency, demand response and self-generation products and services aimed at helping customers engage in long-term, strategic energy planning. It proposes to transform the market and reduce energy intensity through a comprehensive approach that includes addressing both technical and management opportunities.

e. Integrated/coordinated Demand Side Management**:**

CEI includes project analysis and implementation support of recommendations of Integrated Energy Audits which provide customers with an inventory of facility end-use breakdown and energy efficiency, demand response and self-generation investment opportunities. Over the last few years, traditional DSM programs have learned that successful customer participation in one program leads to a likelihood of

repeat participation in the same program. Additionally, this successful participation makes these customers likely candidates for other similarly related types of programs. While a successful program experience leads to repeat participation, there has been difficulty in cross pollinating similarly related types of programs with these candidates due to program-specific silos. To overcome the historic silo effect plaguing DSM, the CEI sub-Program will leverage lesson's learned from IDSM efforts by offering comprehensive, coordinated marketing and program delivery.

A primary issue when integrating energy efficiency and demand reduction is that these two efforts, in many cases, cross "traditional" energy efficiency program lines and, while considerable energy and societal benefits may be gained from an integrated project, the project doesn't necessarily fit into an existing incentive program structure. For example, a process may have a high temperature waste heat stream that could be used in a cross cutting technology to provide process cooling or generate steam to provide shaft work. However, since the recovered waste heat doesn't reduce the energy use of the process from which the waste heat is recovered or may reduce grid demand instead of gas consumption, the project doesn't fit neatly into existing incentive program structures. SoCalGas will continue to make these types of recommendations in their integrated assessments because it is the best course of action for our customers, provides the greatest benefits for the environment and is aligned with California Energy Efficiency Strategic Plan's loading order.

> SoCalGas will record these integrated energy efficiency/conservation recommendations and share the information with the other IOU's, the CEC and the CPUC so that the benefits offered and GHG reductions achievable by these types of projects can be examined and a potential energy efficiency incentive option can be developed.

Through bundling program elements and offering one program application, customers will have the opportunity to enroll in demand response programs in addition to energy efficiency programs.

To support the integration of energy efficiency and demand response programs, the Program will focus on several tactics:

- Promotion and incentivizing of demand response enabling energy efficiency measures to ensure that energy efficiency is completed first to maximize potentials
- Integrated and coordinated year-round marketing (e.g. Applications, collateral, web sites, and events)
- Linking of program eligibility requirements (e.g. Customer size)
- Provide unified technical assistance through enhanced EE/DR Audits through the TA Program to allow for cross-harvesting opportunities

- Integrated presence on utility websites
- Regular coordination meetings between energy efficiency and demand response program management
- Open discussion about how an integrated incentive funding element that would assist customers with cross cutting energy efficiency options could be worked into a statewide program.

During the current cycle, it is expected that this will be examined and considered by the IOU's, the CEC and the CPUC to see how to integrate cross cutting energy efficiency and demand reduction technologies into a statewide incentive opportunity for California businesses.

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

CEI implementation shall include information on Non-IOU programs to expose customers to funding, such as from air or water agencies to support efforts. IOU CEI sub-program managers will scan the programs offered by CEC, ARB, Air Quality Management Districts, and other government agencies to capitalize on opportunities to share program information, marketing collateral and financial incentive analysis with customers. Conventionally, each government agency and utility has operated natural resource and energy programs independently, missing opportunities to serve customers who must manage more than one resource type. For customers who are regulated by or interested in more than one resource issue, CEI will inform customer about the mutual benefit of combining complementary resource programs.

In the effort to promote CEI, IOUs will seek out customers interested in complementary resource programs such as provided by water and air quality agencies. With respect to water conservation, utility program managers will contact the local water districts to share marketing collateral, attend trade shows, co-release notices, for programs with interactive water and energy effects. Similarly, with ARB and Air Quality Management Districts, IOUs will offer customers Calculated sub-program incentives for energy efficient equipment that may also reduce air emissions.

g. Pilots:

If appropriate, based on lessons learned and new developments, pilots will be expanded or added throughout the cycle. Best practices from pilots will be communicated through the Integration Task Force and appropriate customer communication processes.

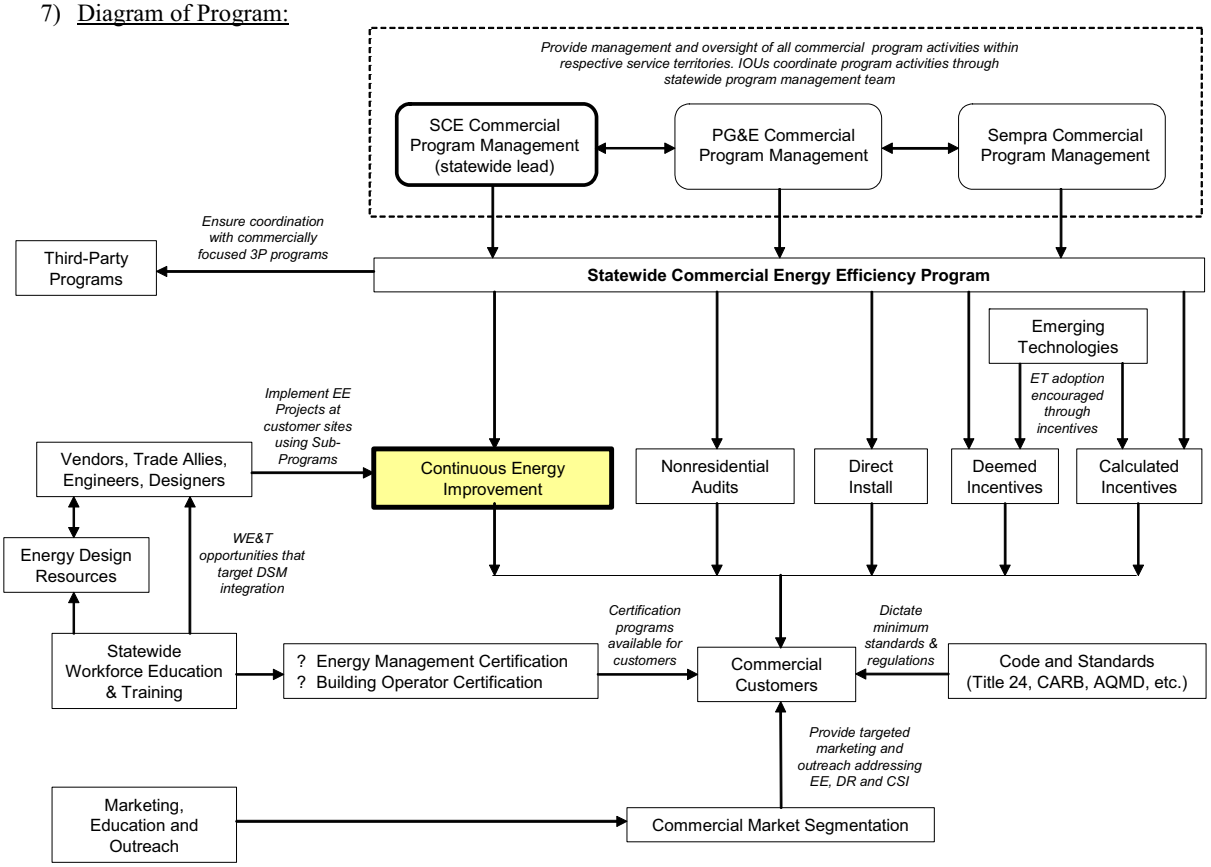
h. EM&V:

2009 – 2011 Energy Efficiency Programs
Commercial EE
Program Implementation Plan

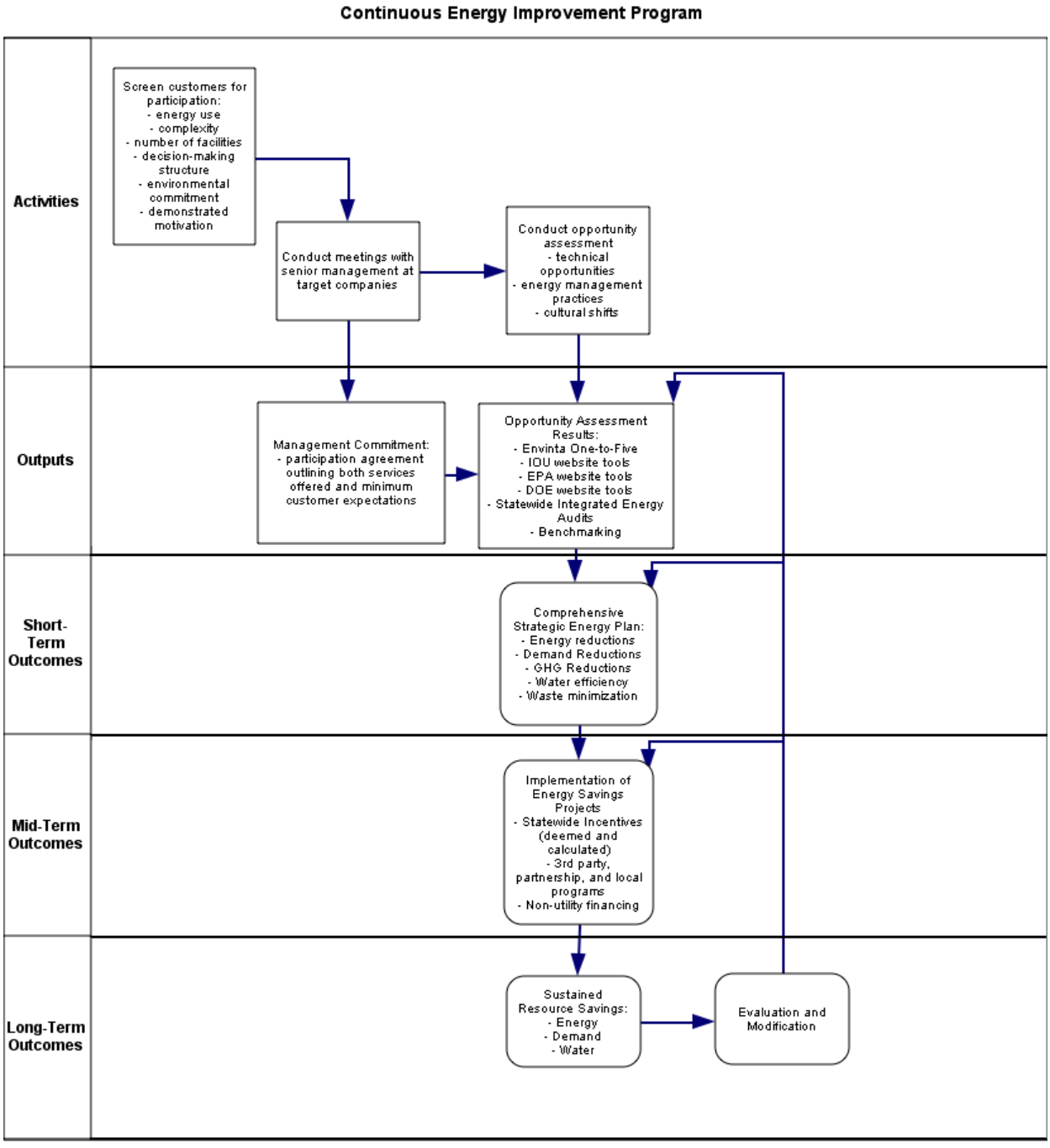
The utilities are proposing to work with the Energy Division to develop and submit a comprehensive EM&V Plan for 2009-2011 after the program implementation plans are filed. This will include process evaluations and other program-specific studies within the context of broader utility and Energy Division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

2009 – 2011 Energy Efficiency Programs
Commercial EE
Program Implementation Plan

7) Diagram of Program:



8) Program Logic Model:



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2009 – 2011 Energy Efficiency Programs
Industrial EE
Program Implementation Plan

1) Program Name: Industrial Energy Efficiency Program

Program ID: TBD

Program Type: This is a core program

2) Projected Program Budget Table

Table 1[1]

Program #	Main Program Name/Sub-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					
	SCG SW Industrial Energy Efficiency Program					
	#SW-IndA - Calculated	$ 3,546,910	$ 2,142,955	$ 85,281,890	$ -	$ 90,971,754
	#SW-IndB - Deemed	$ 755,629	$ 700,216	$ 14,782,368	$ -	$ 16,238,213
	#SW-IndC - Nonresidential Audits	$ 292,955	$ 19,500	$ 1,596,925	$ -	$ 1,909,380
	#SW-IndD - Continuous Energy Improvement	$ 211,242	$ 87,143	$ 1,039,500	$ -	$ 1,337,885
	TOTAL:	**$ 4,806,736**	**$ 2,949,813**	**$ 102,700,683**	**$ -**	**$110,457,232**

These budget numbers are presented in Appendix C: Energy Division Tables, Graphs Pie Charts:
Table 7.1 - 2009 - 2011 IOU Strategic Planning Program Budget

3) Projected Program Gross Impacts Table

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

Table 2

Program #	Main Program Name/Sub-Programs	2009-2011 Three-Year EE Program Gross kWh Savings	2009-2011 Three-Year EE Program Gross kW Savings	2009-2011 Three-Year EE Program Gross Therm Savings
	Market Sector Programs			
	SCG SW Industrial Energy Efficiency Program			
	#SW-IndA - Calculated	0	0	33,990,996
	#SW-IndB - Deemed	0	0	7,206,545
	#SW-IndC - Nonresidential Audits	0	0	0
	#SW-IndD - Continuous Energy Improvement	0	0	0
	TOTAL:	**0**	**0**	**41,197,541**

These savings values are presented in Appendix C: Energy Division Tables, Graphs & Pie Charts: Table 7.2 - IOU 2009 - 2011 Program Savings Estimates

4) Program Description

a) Program Summary

California's industrial sector is a major consumer of energy resources, as shown in the table below, taken from the California Long-Term Energy Efficiency Strategic Plan (Strategic Plan). This numbers clearly indicate a significant opportunity for energy efficiency—yet challenges to implementing energy efficiency are many.

Contribution of the Industrial Sector	(% of total in CA)
Electricity use	16
Natural gas use	33
Energy use	22
End-se CO_2	20

To begin, this sector shows high diversity across customer type, company and facility size, and operation. Customer types include printing plants, plastic injection molding facilities, component fabrication plants, lumber and paper mills, cement plants and quarries, metals processing plants, petroleum refineries, chemical industries, assembly plants, and water and wastewater treatment plants, to name a few. While these customers often share an emphasis on process technologies and systems, implementation strategies vary based on end-use requirements, and one-size-fits-all solutions rarely fit the bill.

Further, industries operating in California are typically subjected to multiple policies and regulations regarding environmental impacts (waste water, air quality, greenhouse gas (GHG) reduction, energy efficiency, and waste management) and use of water and other

resources. Compliance can create competing objectives, which in turn impede the implementation of energy efficiency.

To address these and other challenges, the Statewide Industrial Program offers California's industrial segment a statewide-consistent suite of products and services designed to meet customer needs, overcome market barriers to optimized energy management, enhance adoption of integrated demand-side management (IDSM) practices, and advance the industry toward achieving the goals of the Strategic Plan. The program overcomes barriers through strategies that provide an integrated solution to the customer; create heightened awareness through education and outreach; and foster continuous energy improvement (CEI). The program also promotes use of commonly accepted standards—such as those established by the ISO or DOE SEP program to document a facility's attainment of high resource management levels—and branding and certification to garner market recognition for this achievement. In addition, it supports training to create a highly skilled energy efficiency workforce that is accessible to industry.

The four statewide sub-programs described below—Non-Residential Audits, Calculated, Deemed, and Continuous Energy Improvement—comprise the core product and service offerings for the Industrial market. Each utility also offers local program elements that complement and enhance these core offerings in their region. As described below, as well as in complete detail in the Sub-Program descriptions (see 6.1 through 6.4), these offerings together are designed to not only overcome the traditional market barriers to energy efficiency, but also use efficiency to advance demand reduction (DR) and distributed generation (DG) opportunities (including Solar and renewables) uniquely suited to the Industrial segment.

1. Nonresidential Audits, including basic audits, Integrated Audits, and Retro Commissioning (RCx) audits (see the PIP section on Audits for details), provide an inventory of technical project opportunities and financial analysis information that can populate a customer's short- or long-term energy plan, as well as overcome informational and technical customer barriers.

2, The Calculated program offering provides standardized incentives—as well as comprehensive technical and design assistance—for customized and integrated energy efficiency/DR initiatives in new construction, retrofit, and RCx projects (see CEI sub-program description for details). This sub-program overcomes information, technical, and financial barriers, and because it presents a calculation method that can consider system and resource interactions, will become the preferred approach for supporting the integrated, whole system, and multi-resource management strategies of the Strategic Plan.

3, The Deemed rebate offering provides utility representatives, equipment vendors, and customers an easy-to-use mechanism to cost-effectively subsidize and encourage adoption of mass market efficiency measures

through fixed incentive amounts per unit/measure for installed energy-saving projects.

4, Continuous Energy Improvement (CEI), a non-resource sub-program, describes a collection of strategic planning tools and resources that lay the groundwork for long-term integrated energy planning and provide a platform for launching other utility and non-utility programs and services. Through analysis, benchmarking, long term goal setting, project implementation support, performance monitoring, and ultimately energy management certification, CEI aims to transform the market away from a "project-to-project" approach toward a continuous improvement pathway. In support of the Strategic Plan, CEI also sets the stage for integration of non-energy resources, such as GHG reduction, water conservation, and regulatory compliance.

When developing program metrics and targets for the sub-program elements, each utility will consider market potential as available, past program participation rates, market progress, current economic conditions, work-paper and baseline updates, and customer mix and penetration. Statewide coordination and planning will facilitate inter-utility sharing of successes, lessons learned, and best practices in the pursuit of those targets and metrics.

Statewide coordination and planning between utility program planning staff, utility functional departments, government agencies, and other key partners and stakeholders will also be critical to the advancement of the Strategic Plan. In addition, leveraging national and state initiatives, tools, and resources to manage energy, use and protection of natural resources and environmental impacts will be key to optimizing the potential for California's industrial segment. The Statewide Industrial Program includes the staged integration and coordination with existing initiatives and regulations today, and later will drive or support advancements in integrated resource planning, energy management certification, industry benchmarking, workforce education and training, and sharing of industry best practices towards a goal of optimized energy utilization.

Industries are uniquely suited to integrated energy strategies, and an integrated approach should be an effective way to help customers meet overall economic and green goals. In alignment with California's preferred loading order, however, the utilities will continue to aggressively market and support energy efficiency first as the most cost-effective energy resource through education and training, as well as when pursuing strategic energy planning with customers.

b) List of Measures

The key technology categories addressed through the Statewide Industrial Program are pumping, motors, heat recovery systems, process steam, loads, and heating, air compressors, hot water systems, insulation, and lighting. Incentive levels will be aligned with those of the Calculated and Deemed sub-programs.

For the Calculated Offering, statewide incentive levels are as follows (see Calculated Sub-program description for details):

Measure Type	Incentive level (kWh/kW)
Lighting	5 cents per kWh + $100/pk kW
AC & Refrigeration	15 cents per kWh + $100/ pk kW
Motors and Others	9 cents per kWh + $100/ pk kW
Gas measures	$1 per therm

The Deemed sub-program offers itemized retrofit measures that have prescribed energy savings and incentive amounts (see Deemed Sub-program description for incentive amounts). These measures are categorized under the following end uses:

- High efficiency water heating
- Pipe and tank insulation
- Greenhouse curtains and infrared film
- Steam traps
- Food service
- Refrigeration
- Industrial Process

c) List of Non-Incentive Customer Services

Non-incentive customer services offered through the Statewide Industrial Program will include the following:

- Non Residential Audits
    - Basic audits
    - Integrated audits
    - Retro commissioning audits
- Continuous Energy Improvement (CEI)
    - Energy management assessments
    - Energy planning consulting
    - energy use baselines establishment
    - Facility/customer benchmarking
    - CEI education and training
    - CEI resources on www.energydesignresources.com
    - Customer recognition

- Plant certification

- Education and Training
  - System-assessment DOE training
    - Basic, Intermediate and Specialist Training (in support of ANSI Certification) in industrial process steam, process heating, pumps, motors and compressed air
  - Other system-specific training
    - One day Steam system and process heating seminars
    - One day compressed Air systems seminars
  - Industry-specific integrated energy management workshops and seminars developed by the IOUs
    - Control systems
    - Energy Management systems
  - Workforce Training and Education (WE&T)
    - Training to build team of highly skilled personnel to perform plant certification and assessment.

5) Program Rationale and Expected Outcome

a) Quantitative Baseline and Market Transformation Information

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

Market transformation is embraced as an ideal end state resulting from the collective efforts of the energy efficiency field, but differing understandings of both the MT process and the successful end state have not yet converged. The CPUC defines the end state of MT as "Long-lasting sustainable changes in the structure or functioning of a market achieved by reducing barriers to the adoption of energy efficiency measures to the point where further publicly-funded intervention is no longer appropriate in that specific market."[1] 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[2].

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

[1] California Public Utilities Commission Decision, D.98-04-063, Appendix A.

[2] California Public Utilities Commission (2008) *California Long Term Energy Efficiency Strategic Plan,* p. 5. Available at http://www.californiaenergyefficiency.com/docs/EEStrategicPlan.pdf

relationships, and 9) market structures[1]. Markets are social institutions[2], 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[3] 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[4]. According to York[5], "Market transformation is not likely to be achieved without significant, permanent increases in energy prices. From an economic perspective, there are 3 ways to achieve market transformation: (1) fundamental changes in behavior, (2) provide proper price signals, and (3) permanent subsidy."

The question of what constitutes successful transformation is controversial because of a Catch-22: Market transformation is deemed successful when the changed market is self-sustaining, but that determination cannot be made until after program interventions are ended. Often, however, the need for immediate energy and demand savings or immediate carbon-emissions reductions will mean that program interventions may need to continue, which would interfere with the evaluation of whether MT is self-sustaining. Market transformation success has also been defined in terms of higher sales of efficient measures than would have otherwise occurred against a baseline absent of program interventions. The real world, however, provides no such control condition. Evaluators must estimate these baselines from quantitative factors such as past market sales that may be sparse and/or inaccurate - particularly for new products. Evaluations must also defer to expert judgments on what these baselines may have been as well as on the degree of successful market transformation[6]. 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[7], with the state of a market usually characterized by adoption rate plotted against time on the well-

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[1] 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

[2] 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/

[3] 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.

[4] 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.*

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

[6] 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

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

known S-shaped diffusion curve. In practice, however, the diffusion curve of products may span decades[1]. 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[2]. 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.)[3]" The Strategic Plan recognizes that regulatory policies are not yet in place to support the success of market transformation efforts[4], but also reflects the CPUC's directive to design energy efficiency programs that can lay the groundwork for either market transformation success or for codes and standards changes.

Above all else, the hallmark of a successful market transformation program is in the coordination of efforts across many stakeholders. The most successful MT programs have involved multiple organizations, providing overlapping market interventions[5]. 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[6] 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

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[1] Example in bottom chart of this graphic from NYTimes: http://www.nytimes.com/imagepages/2008/02/10/opinion/10op.graphic.ready.html

[2] Sebold et al (2001) p. 6-5,

[3] 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.

[4] CPUC (2008) Strategic Plan, p. 5.

[5] Nadel, Thorne, Saches, Prindle & Elliot (2003).

[6] Peloza & York, (1999).

requisite information and expertise for this huge effort. This truly needs to be a collaborative approach from the start.

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

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

The Statewide Industrial Program is proposing two measure-based market transformation metrics:
The ratio of high efficiency motors sold over base case
The ration of high efficiency boilers to the base case

These metrics are important indicators of overall market changes because both motors and boilers are ubiquitous throughout the range of diverse process industries. Tracking their overall efficiency would therefore provide a view into the entire market; seeing improvement in their efficiency overall would reflect positively on the industrial market as a whole.

Evaluators could gather baseline for the ratio of high efficiency motors sold over the base case by examining distributor sales in late 2009 or early 2010. Evaluators could go back to these data at prescribed intervals to determine whether the trend moves upward over time. Baseline data on boiler efficiency could be obtained by an industry survey in late 2009 and 2010; a follow-up survey could track changes over time.

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

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

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

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

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

Table 3

Metric A	Metric B	Metric C	Metric D
The ratio of high efficiency motors sold over base case	The ratio of high efficiency boiler sold over base case	Change in AKA of sector toward EE based on a survey of audit participants "What EE practices have you built into your business model when considering capital improvements?"	Change in behavior of sector based on a scale developed to measure EE behaviors in businesses

b) Market Transformation Information

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

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

Table 4

	Industrial Sector Internal Market Transformation Planning Estimates		
	2009	**2010**	**2011**
Metric A	Upward moving average over time	Upward moving average over time	Upward moving average over time
Metric B	Upward moving average over time	Upward moving average over time	Upward moving average over time
Metric C	Upward moving average over time	Upward moving average over time	Upward moving average over time
Metric D	Upward moving average over time	Upward moving average over time	Upward moving average over time

c) Program Design to Overcome Barriers

The multitude of primarily institutional and behavioral—rather than technical--barriers that prevent the industrial sector from achieving its full technical or economic potential in energy efficiency include the following:

- Lack of awareness of energy efficiency opportunities
- Difficulty in accessing industry specific technical assistance
- Unavailability of plant personnel trained in energy use management
- Prioritization of production over energy management
- Aversion to the risk of investing in new technologies and processes with unknown impacts to industrial output or quality
- Limited capital and labor resources for assessing and implementing energy efficiency projects

Further, the industrial sector faces an array of barriers common to all nonresidential customers:

- A high percentage of building developers, owners, managers, and contractors build or retrofit to current standards (Title 24). Likewise, architects and engineering (A&E) firms tend to specify known and familiar equipment and designs.

- Because viable high efficiency emerging technologies are unknown to facility owners and system designers, these technologies are slow to penetrate the market, causing lost energy efficiency opportunities.

- Insufficient access to information about operating best practices; energy efficiency opportunities, and impacts of an energy efficiency project on emissions, resource consumption, or waste discharge streams; difficulty in obtaining technical assistance; inadequate availability of qualified industry specialists can all impede adoption of energy efficiency.

The Calculated sub-program includes numerous features designed to overcome these barriers:

- Integrated Demand Side Management Approach

  The Statewide Industrial Program offers California's industrial segment a statewide suite of products and services to overcome market barriers to optimize energy management and meet the goals of the Strategic Plan. It overcomes multiple barriers identified above through the implementation of strategies that provide an integrated solution to the customer, offer education and outreach to create awareness and promote continuous energy efficiency improvement. The program also enables a facility to attain resource management levels that exceed industry standards and gain them market and world wide recognition.

- CEI Program Offering

  CEI offerings help customers to implement energy efficiency measures that have been identified through energy efficiency audits or in-depth facility/process assessments. Such assessment may be jointly provided by the IOUs and the U.S. Department of Energy (DOE) or ANSI. It focuses on improving production and optimizing energy efficiency and provides integrated resource management solutions including GHG reduction. This approach overcomes such barriers as lack of awareness of energy efficiency opportunities and provides highly skilled workforce of energy efficiency, process optimization, and resource management.

- Marketing and Outreach

To increase awareness of the program, a statewide centralized clearinghouse will be developed to give customers access to information on operating best practices in energy efficiency, industry relevant technical assistance, baselines, case studies, tools and computer based training. This clearinghouse addresses the issue of availability of information and qualified industry specialists to fully assess a building, system or process and help customers understand how energy efficiency can impact their emissions, resource consumption or waste discharge streams. It helps alleviate the problem often run into by non-residential customers of getting incorrect or out-of-date information from some local networks. It will also enable design engineers to specify energy efficient measures to exceed industry accepted baseline standards when constructing new or retrofitting existing buildings or systems, instead of specifying only what they know or what they are familiar with.

- The Statewide Program information and services will primarily be delivered through account representatives, utility call centers hotlines, local government partnerships, third parties, and utility internet sites. Information will also be made available through industry events, such as the Plant Engineering Expo, through industry organizations, such as the California Manufacturing Association, and the Building Owners and Managers Association (BOMA); and through advertising in industry and trade publications. Other avenues to reach out to customers and identify energy efficiency opportunities include non-resource programs that provide Education and Outreach, Workforce Education and Training, or through IOU Emerging Technologies Programs.

- Education and Training

  Highly skilled Energy Management Professionals may conduct technical training and seminars to educate the public as well as develop a highly trained energy efficiency workforce that is accessible to industry.

- Emerging Technologies

  In collaboration with ET and the CEC, ET may conduct studies, pilots, and demonstrations to prove the viability of promising emerging technologies and lower the risk of investment which in turn will speed up market penetration.

- Financial Assistance

  Rebates and incentives properly priced and based on energy savings quantified through technical assessments or basic audits, can help customers overcome internal financial hurdle rates. Skilled energy efficiency personnel may also assist customers and provide additional information about other opportunities for project assistance, such as State or Federal funds available

for energy efficiency projects, tax incentives or other local sources of project funding.

d) Quantitative Program Targets

Table 5

SW Industrial Sector Program	Program Target by 2009	Program Target by 2010	Program Target by 2011
Calculated	6.5M Therms	7.1M Therms	7.7M Therms
Deemed	700k Therms	760k Therms	881k Therms
Audits	200 Audits	350 Audits	400 Audits
CEI	Development	10 Commitments	15 Commitments

e) Advancing Strategic Plan goals and objectives

In accordance with the Strategic Plan, the goals for industry are as follows and are summarized in Appendix 1:

Goal 1: Support California Industry's adoption of energy efficiency by integrating energy efficiency savings with achievement of GHG goals and other resource goals.

To address this goal, the strategy adopted is to develop an interagency framework that could combine energy efficiency incentives to achieve measured performance improvements in resource management, including water, air quality, GHG emissions, and energy efficiency. This first goal focuses on developing a minimum regulatory energy efficiency requirement for individual company or industrial sub-sectors as a whole. One example could be to integrate AB32 requirements to allow industries to use energy efficiency to meet or exceed regulatory requirements for GHG emission reductions. An IOU – CARB AB32 team will be formed to study the feasibility of implementing negotiated agreements between agencies. Along the same lines, the IOUs are also undertaking a pilot program with the food processing industry, under the Agriculture program.

Goal 2: Build market value and demand for continuous improvement in industrial efficiency through branding and certification.

This second goal focuses on companies that want to exceed a minimum regulatory requirement by actively managing their energy use over time. To this end, this program offers CEI options that include participation in a recognized national effort to certify industrial facilities for energy efficiency. Industries will then be able to reach their GHG emission reductions targets via a supported, structured program based on best practices and develop worldwide recognition for their efforts through third-party certification, such as DOE's SEP program, based on

proven best practices. The IOUs will be partnering with DOE's Industrial Technologies Program or EPA Technologies program, for example, to gain access to highly skilled professionals in energy management systems.

Goal 3: Provide centralized technical and public policy guidance for California industrial energy and resource efficiency.

The primary goal here is to provide a clearinghouse of technical knowledge and information so that industry personnel can access information on emerging technology and industry specific research. The clearinghouse will leverage extensive knowledge on energy efficiency developed by other organizations like DOE and EPA. In alignment with the Strategic Plan, the statewide team will be developing this clearinghouse on the EDR website which is an existing statewide website.

6) Program Implementation – Overview

a) Statewide IOU Coordination

The Statewide Industrial Program will be coordinated on a statewide level to ensure the program is continuously updated and enhanced throughout the three-year implementation cycle and beyond. In addition, the four Industrial Sub-Programs will be coordinated on a statewide level to unify the implementation of program aspects such as Program name, Program delivery mechanisms, Incentive levels, Marketing and outreach plans, and IOU program interactions. (For a detailed description of each of these program aspects and how they will be coordinated statewide, please refer to the Industrial Sub-Program descriptions). The two coordination systems (one for the broad programmatic level and one designed for the sub-program level) will interact with and support one another. The broad, high-level coordination effort will be described below, focusing on how the IOUs will work together to effect the continuous improvement of the Statewide Industrial Program.

The Statewide IOU Coordination process for the Statewide Industrial Program will be as follows:

- Designate an IOU Program "Lead" – The coordination process will begin with each IOU designating a Statewide Industrial Program "lead". The IOU lead will represent one Industrial sub-program, investigating new innovations, special accomplishments, and challenges experienced by sub-program managers in all IOUs. Where such innovations or challenges show potential for impacting the Statewide Industrial Program across multiple sub-programs or the Statewide program as a whole, the IOU lead will present such information to a quarterly Steering Committee meeting.

- Hold Periodic Steering Committee Meetings – The Industrial Steering Committee will comprise all designated IOU leads (including at least one lead for each of the four sub-programs), and possibly other contributing stakeholders identified by the IOUs. At the periodically Steering Committee meeting, individual innovations, challenges, and accomplishments experienced in one IOU or by one sub-program will be transmitted to all IOUs. The Steering Committee will evaluate these individual IOU and sub-program experiences, hear ideas for course corrections and overcoming challenges, replicate successful innovations for consistency statewide, resolve differences in implementation to stay unified, and measure the Industrial program's progress against statewide metrics and goals.

- Adopt Program Enhancements - Once the Steering Committee agrees that a particular implementation policy or innovation has merit on a statewide level, each IOU lead will distribute the information to their sub-program managers for adoption and integration. Therefore, the IOU lead will act as a conduit, feeding sub-program information up to the statewide Steering Committee and distributing measures for adoption back to the sub-program managers. This feedback loop will assure consistency and unity in programmatic improvements across the IOUs. In some

cases, it may be necessary to invite the sub-program managers to the Steering Committee meeting to get their feedback and ensure they receive the same message.

- Evaluate Program Enhancements Against Statewide Targets – To complete the adaptive management loop, the Steering Committee will track the program's accomplishment of statewide targets and goals to ensure that adopted program enhancements are generating their intended results. The Steering Committee will determine whether further course corrections are needed, and if so, rely on the above coordination process to generate the improvements necessary to stay on track.

The high-level focus of this statewide coordination effort will enable the capture of new innovations and opportunities for program improvement, correct program weaknesses that reveal themselves during implementation, and ensure achievement of statewide targets across IOU service territories. Therefore, statewide focus on program unity and continuous program improvement over the course of the three year implementation cycle will be assured. The details of actual implementation of these coordination activities are to be determined by the IOU's industrial program managers.

b) Program delivery and coordination

i. Emerging Technologies program

The long-term EE vision of California can only be attained through the long-term and continuous development, verification, and acceptance of new technologies into the market. The achievement of long-term goals requires new technology as well as information, training, and market development to maximize the EE benefits of cutting-edge technologies. In recognition of the importance of emerging technologies, the program is poised to adopt the efficiency potential of new technologies through its programs. In addition, portfolio staff actively works to incorporate promising emerging technologies and PIER projects

ii. Codes and Standards program

The program relies on the Codes and Standards program to maintain an updated and relevant list of measures that will support savings. As Codes and Standards impact measures, the program will act to align itself with appropriate offerings. Programs will include new offerings that will allow flexibility in adapting to changes in codes and standards, market trends, and technologies. Planned enhancements to Title 24 will be reflected in incentive levels and eligible measures and services. As the market moves toward "low energy" or "zero net energy" buildings, specific changes to each element of the bundling will be made to ensure the latest cost effective technologies/services (e.g., superboiler) made available as these technologies transition from 1) R&D to 2) Emerging technologies to 3) Incubation to 4) Mainstream.

iii. WE&T efforts

WE&T efforts support the education and training of a robust network of industry trade allies, vendors, engineers, design teams and others who can support the market transformation strategies of the Strategic Plan. In the Industrial Programs, WE&T efforts will focus in the near term on supporting national ANSI Energy Management Certification development efforts, as outlined in the Strategic Plan. Programs will closely coordinate with key stakeholders to ensure that California is poised to adopt this national standard and be a leader in this effort. Specifically, prerequisite trainings will be offered in DOE systems trainings to lay the groundwork for certification level trainings. These education and training takes place through utilities energy centers and technology centers.

iv. Program-specific marketing and outreach efforts (budget provided in Table 1)

To reach out to the diverse customers segments, utilities will continue to foster strategic partnerships with industry and community groups, as well as trade professional associations, to engage in a multi-faceted approach to marketing energy efficiency practices and programs to targeted users. Specific efforts will include:

- Participation in trade association meetings to market the industrial program
- Close partnerships with key industry associations, and participation in their annual conferences, with an effort to develop conference speaking engagements
- Targeted integrated education and training to specific market sectors to support peer-to-peer interactions and industry advancement.
- Ads and articles, with program information and case studies, in trade magazines
- Targeted customer efforts through utility account representatives, program engineers, third parties, and government partnerships
- Phone and web-based customer support and outreach.
- Development of coordinated industrial resources into a centralized “one stop shopping” clearinghouse
- Development of marketing collateral that drives customers to account representatives and websites for additional support.

The utilities will raise awareness of EE programs available using a number of strategies, including:

- Utility representatives will make a regular and consistent customer calling effort to key customers within this sector;

- Utility representatives, Energy Efficiency program management representatives, and field engineers will be available to provide additional expertise;

Additional market outreach initiatives for the Industrial Sector will include:

- Participation and membership in one or two key trade associations affiliated with each high priority sub-segment within the Industrial Sector;
- Attendance at key trade shows within the Industrial Sector;
- Utility-sponsored training events at the utilities Customer Training Centers and other convenient locations within the utilities service territory;
- Hosting of utility-sponsored Webinars that provide sub-segment training and program adoption; and
- Development of case studies, web pages, and marketing material that provide an overview of the utilities' Energy Efficiency programs .

To further ensure that utilities are marketing the right products to the right customer at the right time through the right channels, the IOUs need to be able to segment customers based upon their individual characteristics and energy needs. The IOU's efforts to collect this customer data will guide the development and implementation of its IDSM marketing and outreach activities.

This customer segmentation will help the utilities develop an understanding of customers' needs and respond accordingly with products and services that customer's want. The segmentation analysis looks at what the customer requires and how the customer is engaged with each IOU. This foundational segmentation will evolve with incremental insight into customer mindsets, behaviors, responses and motivations to achieve the most effective level of energy use. Based upon this evolving segmentation, the utilities will be able to identify what integrated product offerings are specific to individual customer needs, and offer those products through the most relevant channels.

Based on the segmentation analysis, the utilities will be able to focus on providing consistent marketing and overall messaging focused on customers':

- Business/personal goals;
- Unique needs; and
- Green/global climate change goals

v. Non-energy activities of program

The program provides a significant challenge to integrating DSM initiatives to non-energy activities due to the general industry structure, the nature of market sector resource use, limited resource savings potential with smaller

businesses, and limits to small business owner and operator bandwidth. Therefore, integrated audits that look across the various EE program offerings, as well as complementary options available through other entities (e.g., water agencies) will be used to identify the opportunities to be recommended to the specific commercial customer.

The ongoing Water Efficiency Pilot Program that was approved in 2008 and implemented in 2009 will provide potential opportunities to reduce water use and the potential for associated Energy Efficiency savings. Since some customers within the program sectors are major water users, this sector is well positioned to realize linked water/electricity benefits through the Water Efficiency Pilot Programs.

vi. Non-IOU Programs

A variety of programs—yet to be determined--will be coordinated and leveraged to support program objectives. These include:

- Connecting customers with The Climate Registry which supports AB32 through CO_2 tracking in program resources
- Regulatory program coordination, including EPA air quality standards, water quality standards, and new refrigerant regulations
- Non-utility financing resources, including from water utilities, industry and private banking, state and federal incentives, funds, grants, and loan products to support energy and other resource management objectives
- Water/Energy efforts within California
- ANSI standard (see CEI section)
- ISO international energy management standards (see CEI section)

The Program will continue to engage with Air Quality Management Districts, CEC, CARB, DOE, water agencies, and other government agencies responsible for regulating the various aspects and operations of customer facilities participating in the programs.

vii. CEC work on PIER

The Program will interact with the Emerging Technologies Program to leverage new technologies to increase the list of measures available for energy efficiency projects. The portfolio staff actively works to incorporate promising emerging technologies and PIER projects. The program will work with PIER on researching new technologies for evaluation and testing for application in mainstream projects.

viii. CEC work on codes and standards

See Statewide Section 6.b.ii.

ix. Non-utility market initiatives

The program will support, educate customers, and/or enforce such initiatives as AB32, renewables, ANSI certification, facility benchmarking, Continuous Energy Improvement, California Green Building Initiative, and other initiatives as directed. The IOUs will remain engaged in these efforts and work to influence the development of increasingly higher standards.

c) Best Practices

As described in prior sections, the Industrial Program reflects the best of each utility program's successful components of statewide Industrial program offerings, and introduces new elements from other utilities and national efforts as well. Best practices include:

- Continuous Energy Improvement: This approach proposes to transform the market and reduce energy intensity through addressing technical and management opportunities.
- Technical Assistance: Recognizing the need for personalized assistance for customers, the IOUs will offer a full-service approach starting from audits/pump tests to design and technical assistance, presentation of recommendations, resources to develop a long term plan, and potential of project management assistance, with financial incentives.
- Vendor Partnerships: This strategy will be coupled with vendor support and educational workshops and classes to provide the full breath of support customers may need to influence their decision to implement energy efficient equipment and practices.
- Statewide Coordination: In order to take advantage of the statewide implementation of the program, the IOU program representatives will meet on a quarterly basis to improve program operations by sharing successes and areas of operational concerns.
- Leveraging Industry-Specific Resources: We will make full use of resources available, such as industry trade and professional associations.

d) Innovation

The IOU innovative program approach focuses on energy efficiency savings through not just hardware installation but also documented permanent changes in operations. Further, it covers all energy resources including energy efficiency, demand response, energy storage, combined heat and power, distributed generation, renewables, and emerging technologies. The products and services are bundled in an integrated fashion to serve the customer's need and are geared

towards a value creation solution that helps customer to realize that they can run their operations efficiently and also meet their business and regulatory objectives. This approach brings to market a more customer-centric energy solution that takes into account their short- and long-term energy usage management and planning and helps overcome some of the barriers to making energy efficiency a priority. It also helps industrial customers identify, develop and document energy efficiency improvements and their economic benefits.

With the introduction of the new CEI product and services, the customer now plays a more active role in managing their energy usage and GHG reduction. Bundling the program offerings (calculated, deemed, audits, and CEI) makes it easier for customer to participate in a one-stop shop program. Integrated offerings approach will also garner significant gains in energy efficiency and make the goals envisioned in California's long term energy efficiency strategic plan a reality. This approach will also enable industry to integrate AB32 requirements such that industrial facilities can use energy efficiency to meet and exceed regulatory requirements for GHG emissions and can also aid in water conservation, waste disposal and improve air quality. It also moves us towards a more holistic approach in managing all energy resources utilization which includes energy efficiency, demand response, energy storage, combined heat and power, distributed generation, renewables and emerging technologies.

Another innovation used in our program design is the creation of the infrastructure for a statewide centralized technical resource to enable customers to seek energy efficiency information and best practices to manage their energy resource. It provides a resource otherwise unavailable due to business resource limitations. We envision the web based technical resource to also contain tools to help customers calculate their energy savings and it may offer web based training in energy efficiency and energy management. It would also link the customer to industry sites that may offer industry specific information e.g., the latest trends in industry for energy efficiency. This resource center will be developed on the existing EDR (Energy Design Resource) website and will be readily available to customers. It is another avenue to increase awareness of energy efficiency opportunities by customers, industry consultants and suppliers that was identified as a barrier to the adoption of energy efficiency.

Some of the outcomes from this innovative program approach are listed below:

- Application process improved for statewide consistency, making it easier for customers to participate in the program.

- IOUs establish a stronger presence with trade associations and community groups enabling a deeper understanding of customer needs and how energy efficiency can be a part of their solution to their primary concerns. This will

enable a deeper and more effective penetration of energy efficiency solutions to a broader base of customers.

- Integrated Energy Efficiency Assessments are offered to provide targeted Industrial, food processing, and water customers with a holistic approach to maximizing energy efficiency, maximizing investment efficiency and maximizing GHG reductions.

- IOU assistance makes customers aware of renewable energy opportunities, with emphasis on system available for California Solar Initiative, Renewable Generation, Federal and State tax credits and other incentives, grants and rebates.

- Web-based services, including energy efficiency information, training, and modeling tools, are available to help customers with retrofit or new construction projects, via a new enhanced "Energy Design Resources" website.

- Training is designed to strategically target internal personnel, vendors and trade associations, and customers in a focused alignment, which will create a synergistic effort that will overcome many informational and transactional barriers.

- Seminars are offered to train customers on how to identify energy efficiency opportunities at their facility/in their process. Class room software tool training is available on modeling and quantifying savings opportunities. Utilities may also provide a PDA energy efficiency tool or tools from the statewide utility tool lending library that customers can use at their sites.

- Energy measuring and benchmarking assistance/services are offered to customers so they can see how their facility/process measures up to "best in class" systems utilizing tools such as the U.S. EPA's Energy Star Benchmarking tool.

- Information on "green" energy opportunities is provided when doing basic audits or in-depth assessments. Education and training on green and renewable energy opportunities are be available on the EDR website.

- Assistance is offered to help customers quantify the carbon emissions savings that EE opportunities identified during audits and assessments offer.

- A web link will be developed between customers and the California Climate Registry to document a plant's carbon footprint.

- Trained personnel help identify, assess and make available to customers an integrated assessment tool and train customers on the use of the tool to empower customers to identify the best EE opportunities at their facilities.

e) Integrated/coordinated Demand Side Management

Integrating the portfolio of utility offerings to include energy efficiency, demand reduction and distributed generation—as well as other resources, such as air and water as they connect to energy—supports not only cost effectiveness of the portfolio and the CA Loading order, but also the needs and wants of our customers, who are interested in any energy solution that solves their problems and meets their business needs. It also advances significantly the goals of the Strategic Plan. On a broader scale IDSM also includes the integration of Third-Party programs and Local Government Partnerships (LGP) delivery channel with the statewide industrial program.

Customers prefer a single utility point of contact who has an established business relationship with the customer, has an interest in their long term economic viability, knowledge of the issues that the customer is facing and understands all of the options available to meet the customers' needs. The customer benefits from a single, coordinated planning process that helps them prioritize integrated investment decisions based on their unique needs. To that end, the statewide utilities have made tremendous progress in advancing integrated solutions. These include:

Marketing: In marketing integration, the IOUs are placing major emphasis on getting the right message to the right customer at the right time. Advanced customer segmentation is being used to develop detailed integrated marketing and outreach plans which outline multiple tactics, delivery channels and key messages to target to specific customers based on their specific needs. he account representatives, who serve as the key customer point of contact, will be trained to ensure consistent delivery of portfolio offerings.

Education and training: Workshops organized around a customer segment provides an ideal situation to integrate customer energy solutions. Building on past successes providing integrated workshops to customers, the utilities will offer workshops that provide opportunities cross-sell solutions and share key information from other utility departments. As appropriate, Workforce Education and Training will also cover integrated energy and system solutions, which will be increasingly important as Critical Peak Pricing matures.

Integrated Audits: These will combine funds and resources of energy efficiency and water conservation programs to provide integrated recommendations to customers that emphasize energy management in proper sequence, as supports the CA Loading Order, which calls for permanent reductions through energy efficiency before implementing demand response. Incentives from both programs can help reduce payback cost and support advanced energy management decisions. SoCalGas will refer demand response opportunities to the appropriate electric utility when identified. Energy efficiency and Demand reduction opportunities will be recommended when they improve total plant resource efficiency.

As required, utility distributed generation programs require that customers receive an energy audit before being eligible to receive solar audits.

Emerging Technologies and CEC-PIER – Program collaboration with Emerging Technologies and CEC is expected to include pilot projects and market acceleration assistance for market-ready products in the general categories of waste heat recovery systems, hybrid refrigeration systems, hybrid cooling systems, steam turbine drive applications, ultra low emission burners, HVAC, controls, and building envelope improvements.

Over the last few years, traditional DSM programs have taught us that successful customer participation in one program often leads to repeat participation in the same program or other similarly related types of programs. Nonetheless, cross-marketing DSM programs with these customers remains a challenge due to program-specific silos. To eliminate these silos, the Program will leverage lessons learned from past program experience and offer comprehensive, coordinated marketing and program delivery.

A primary issue when integrating energy efficiency and demand reduction is that these two efforts, in many cases, cross "traditional" energy efficiency program lines and, while considerable energy and societal benefits may be gained from an integrated project, the project doesn't necessarily fit into an existing incentive program structure. For example, a process may have a high temperature waste heat stream that could be used in a cross cutting technology to provide process cooling or generate steam to provide shaft work. However, since the recovered waste heat doesn't reduce the energy use of the process from which the waste heat is recovered or may reduce grid demand instead of gas consumption, the project doesn't fit neatly into existing incentive program structures and thus represents a significant "lost opportunity" for energy efficiency, GHG reductions and demand reduction. Despite this fact, SoCalGas will continue to make these types of recommendations in their integrated assessments because it is the best course of action for our customers, provides the greatest benefits for the environment and is aligned with California Energy Efficiency Strategic Plan's loading order.

SoCalGas will record these integrated energy efficiency/conservation recommendations and share the information with the other IOU's, the CEC and the CPUC so that the benefits offered and GHG reductions achievable by these types of projects can be examined and a potential energy efficiency incentive option can be developed.

In summary, the Program seeks to overcome the many issues raised by integration of energy efficiency and demand reduction by focusing on several tactics:

- Promotion and incentivizing of energy efficiency measures to ensure that energy efficiency is completed first to maximize potentials.
- Integrated and coordinated year-round marketing (e.g. Applications, collateral, web sites, and events)
- Linking of program eligibility requirements (e.g., Customer size)
- Provision of unified technical assistance through enhanced EE/DR Audits through the TA Program to allow for cross-harvesting opportunities
- Integrated presence on utility websites
- Regular coordination meetings to present the relationship between energy efficiency and demand reduction

- Open discussion about how an integrated incentive funding element that would assist customers with cross cutting energy efficiency options could be worked into a statewide program.

During the current cycle, it is expected that this will be seriously considered and examined by the IOU's, the CEC and the CPUC to see how to treat these types of projects and how to integrate this into a statewide incentive opportunity for California industry.

f) Integration across resource types

California's Industrial sector faces a multitude of environmental and regulatory challenges that threaten their survival and competitiveness. New regulations aimed at improving air quality, water quality and reducing toxic environmental pollutants are proving to be expensive and disruptive to business as usual, and in many cases will have the impact of increasing energy use in compliance.

The Industrial Program will coordinate with electric and water utilities, regulating agencies and the programs they are operating to support mutually advantageous program designs, customer incentives, marketing opportunities, and implementation opportunities. Utilities will continue to offer targeted trainings to customers who share common regulatory challenges in an effort to educate customers on impending regulatory requirements for their business operation, and the most efficient solution options to consider for compliance. Future workshops may look at wastewater treatment options, steam system upgrades, and energy efficiency to meet AB32 industrial targets.

SoCalGas is currently working with water agencies to offer joint energy and water conservation incentives to support projects that would reduce both resources. Partnering with other utilities helps reduce administrative cost and has a greater impact on societal benefits. Currently the utilities are participating in the CPUC water/energy pilots with several water agencies. The results from this pilot may spur more partnerships between the utilities.

Where applicable, the Program will integrate topics such as GHG reduction and water conservation into targeted customer workshops, and marketing and communications, building on a strong track record from the past program cycle. Marketing and communications material will include savings opportunities and messaging.

g) Pilots

The Statewide Industrial Program will coordinate on a statewide level to ensure the program is continuously updated and enhanced throughout the three year implementation cycle. Pilots may be developed at that time in response to customer's needs or to further advance the goals of the Strategic Plan. Please note that the water energy pilot mentioned above is ongoing and had been approved in 2008.

h) EM&V

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

6.1) Subprogram Implementation – Non Residential Energy Audits.

(please refer to Audit PIP for details of implementation)

The Nonresidential Audits sub-program features basic audits, integrated audits and RCx. Audits are technical surveys of energy utilization that occurs throughout a customer's

facility. They provide a system view of equipment and processes that consume energy. In this holistic system view, four discrete components of the California Long Term Energy Efficiency Strategic Plan (Energy Conservations, Energy Efficiency, Demand Reduction and Self Generation) are evaluated in various combinations. Each combination will be reviewed for their societal benefits, logical order, and customer benefits, and then presented to the customer in the recommendations section of the final audit report.

As described below, the Nonresidential Audits sub-program will offer basic, integrated and RCx audits during the 2009-11 program cycle.

Basic Audits:

Three types of basic audits will be offered.

- Focused – This on-site audit will be equipment focused. The report will provide a written summary of existing equipment, proposed equipment, and a description of the value of proposed equipment in terms of calculated energy savings. The report will also refer customers to appropriate EE programs such as the Deemed and Calculated offerings.
- Walk-through – This on-site audit will be systems focused. The report will provide written recommendations on a standardized form that have one or more single line recommendations. Customers will be informed of savings potential and referred to appropriate EE programs.
- Remote – This type of audit will offer the same customer benefits as the on-site audits, but differs in that it is a web-based service appropriate for small to medium-sized nonresidential customers.

Integrated Audits

Integrated audits will be conducted for business customers that require more in-depth detailed information, and usually involves complex processes with an operational assessment that includes customized energy savings calculations. SoCalGas will continue to offer integrated audits to large customers. These audits will provide customers with EE and demand reduction recommendations and also provide general feasibility assessments for distributed generation.

Retrocommissioning (RCx)

The Nonresidential Audits sub-program uses Retrocommissioning (RCx) as a resource to delivering energy savings. RCx is a systematic process to identify and correct operational problems or inherent repair and maintenance deficiencies that lead to excessive energy use. Unlike retrofits, which focus on equipment replacement, or O&M, which focuses on routine maintenance, RCx focuses on identifying and correcting problems that may not

be readily identified by a standard energy audit. O&M items with an effective useful life greater than 3 years will also be identified through this assessment. Additionally, opportunities often exist to optimize existing systems to operate more efficiently than originally designed with minimal new capital outlay. The RCx program builds upon the initial feedback from the current RCx program and expands its reach into the Industrial segment. Additionally, the utilities will improve existing tools and practices for building retrocommissiong to reduce energy consumption in commercial buildings per the Strategic Plan.

RCx will be offered as a bundle of products/services. RCx providers will perform several tasks to identify measures. These tasks include, but are not limited to:

- Initial benchmark
- Collect data to quantify the owner's operational requirements
- Perform detailed on-site audits to evaluate operational deficiencies and/or operational optimization opportunities inclusive of improved and enhanced preventive maintenance and repair programs
- Define measures, quantifying implementation costs and savings
- Assist customers with measure implementation
- Verify completion of measures
- Provide post installation documentation and training as well as other persistence techniques
- Post project benchmark

The Nonresidential Audits sub-program will offer Integrated Demand Side Management (IDSM) solutions to SoCalGas customers to optimize energy consumption in California and deliver significant environmental benefits. Audit reports will offer an array of no-cost, low-cost and capital-intensive actions that lead customers to invest in energy efficiency, demand reduction and distributed generation options. The program will integrate demand side energy management opportunities to ensure that the customer embarks on the most cost-effective, productive solution that meets his/her business requirements and goals.

The sub-program will also help customers overcome first-cost barriers that typically prevent customers from implementing IDSM measures by guiding customers to relevant IOU incentive and/or finance programs. Benefits from non-IOU programs will be presented as well. Both basic and integrated audits will summarize the potential impact of IOU incentives on the first cost of energy efficiency upgrades to their facilities. They illustrate how many more dollars a customer will save in the long term by spending slightly more to upgrade end use equipment to more efficient technologies in their facilities. The impressive reductions in long-term energy expenses are often surprising to customers. In addition to environmental concerns, reducing the cost of operations is another priority to customers that is addressed by the Nonresidential Audit sub-program.

To support the core utility programs, Nonresidential Audits will provide Savings Calculation Assistance (SCA), targeted to specific end uses and systems, to support

nonresidential retrofit applications. SCA will be provided by SoCalGas engineers or contracted energy engineering firms and will help customers submit accurate, technically complete nonresidential retrofit applications. This assistance will speed the process and reduce expensive, time consuming rework later in the process.

For medium to large-sized customers, SoCalGas may provide walk through audit services using SoCalGas contractors, third-parties, and other representatives depending on the complexity of the facility and the estimated savings potential. Less complex facilities will be provided with online audit tools.

IOUs will consider additional customer recognition options for customers who utilize audit results to move forward with energy efficiency, demand reduction and distributed generation measures. Such options may include, but not be limited to, co-payments, rewards, case studies, or additional incentives.

For information on measures and incentive levels offered under this sub-program, please refer to Section 4.b above.

For the information requested in Table 4, please see 5.b above.

For information on sub-program design to overcome market barriers, please see 5.c above.

For information on sub-program targets, please see 5.d above.

For information on how the sub-program advances the Strategic Plan, please see 5e above.

a. Statewide IOU Coordination:
The NonResidential Audit sub-program will follow the process for Statewide IOU Coordination described in Statewide Section 6..a. The Energy Audit has been a Statewide program since 2002, and all IOUs use the same types of energy audits targeting the same type of customer segments.

b. Program delivery and coordination:

i. Emerging Technologies program
Consistent two-way communication between the Emerging Technologies program and the Nonresidential Audits program will accelerate implementation of pilot programs for demonstrating promising new EE technologies and practices. Additionally, Nonresidential audits will add scope to the audits to enable auditors to seek potential applications among targeted customer segments so that ET may gauge potential for promising technologies.

ii. Codes and Standards program
As noted in Statewide Section 6.b.ii, the Nonresidential Audits program will work closely with Codes and Standards to recommend appropriate technologies and products to customers.

iii. WE&T efforts
For information on how this sub-program links to WE&T, please see Statewide Section 6.b.iii.

iv. Program-specific marketing and outreach efforts (budget provided in Table 1)
A broad range of marketing activities will be used to promote all audit offerings and elevate customer engagement. Marketing plans will incorporate the results of EM&V studies, which specify necessary steps for program enhancement.

Nonresidential Audits will be promoted via direct communication between customers and Account Executives. In addition, IOUs will use traditional advertising activities such as trade publications, utility websites, bill inserts, brochures, and Trade Shows.

i. Non-energy activities of the program
Integrated audits are a key tool for identifying non-energy opportunities for specific customers, as noted in Statewide Section 6.b.v.

ii. Non-IOU Programs

Please refer to Statewide Section 6.b.vi.

iii. CEC work with PIER

See Statewide Section 6.b.vii.

iv. CEC wok on codes and standards.

See Statewide Section 6.b.viii

v. Non-utility market initiatives

See Statewide Section 6.b.ix.

c. Best Practices:

The Nonresidential Audits program leverages Workforce Education & Training efforts to expand the reach of the audit program to external resources such as third-parties, University internship programs, and municipal utilities. In conjunction with the Energy Resource Center, the sub-program will help to develop a workforce that is trained to

identify energy efficiency and demand reduction opportunities. These best practice efforts have made the IOU audits program successful in the past, as evidenced by the evolution and progression of the private-sector energy services industry.

In addition, the Nonresidential Audits program will improve the adoption rate of energy efficiency and demand side management opportunities recommended by audits. IOUs will provide comprehensive support and establish an extended follow-up plan. For example, customers who complete an online basic audit (using the Utility Energy Audit Tool) will get a printout of recommendations specific to their facility and information on rebates and incentives, which simplifies measure adoption. Following on-site audits for large customers, assigned account managers will contact customers to review audit recommendations and present technical and financial assistance to help them implement the measures.

d. Innovation:

The discussion below presents the innovative aspects of the Nonresidential Audits sub-program.

Integration with RCx

Energy Efficiency measures recommended in audit reports comprise three categories defined by their relative cost for implementation – no cost, low cost and capital projects. Integrated audits will be a primary source of leads for potential RCx projects, which assist customers with implementation of no cost and low cost EE measures. In return, RCx contractors, as appropriate, will also recommend that customers pursue a full Integrated Energy Audit before embarking on RCx efforts. In the 2009 – 2011 Nonresidential Audits sub-program, cross training and coordination between Integrated Audits and RCx will be increased to encourage optimum effectiveness in achieving an integrated offering.

To ease implementation of energy audit recommendations, SoCalGas and the IOU's will also provide information to customers, such as contractor lists, financial resources and technical assistance, to make it easier for customers to take action in response to audit recommendations.

Energy Challenger Audit Tool

To implement the integrated audits for smaller customers, SoCalGas has developed a Web-based audit (do-it-yourself or auditor-performed) that includes education on various demand side management solutions as well as greenhouse gas calculations. The Energy Challenger Tool will enable customers to conduct their own energy audits from the comfort of their home or office by logging onto the SoCalGas Website. It will be the primary tool to provide energy efficiency and greenhouse gas information and analyses to

small to medium-sized customers. Customers will supply account information, zip code or a telephone number, which will calibrate the tool for their specific climate zone. Energy Challenger will specifically address potential measures that qualify for rebates and incentives and provide simple payback information.

Additional questions, presented through the latest online graphic interface, will provide robust customization of their end energy use (e.g., type of business, type of residential building, hours of operation, number of inhabitants, etc.).

SoCalGas is planning to participate in the development of the Universal Energy Audit Tool (UEAT) with SoCalGas. The UEAT will provide a portfolio of audits that are easily accessible to SoCalGas program managers. It will provide them with unified data resources, a central repository of recommendations and algorithms, and an interface to enable customization of energy audit formats to meet specific customer needs.

Historical data from the UEAT, from previous energy audits and efficiency projects implemented at their own facilities, will be accessible to all residential and nonresidential SoCalGas customers via Web-based tools.

e. Integrated/coordinated Demand Side Management:
The Nonresidential Audit sub-program is a core strategy of an overall integrated customer approach. It features a technical and comprehensive survey of energy utilization throughout the customer facility, providing a system view of equipment and processes that consume energy. In this holistic system view, four discrete components of the California Energy Efficiency Strategic Plan (Energy Conservation, Energy Efficiency, Demand Reduction and Self Generation) are blended and evaluated in various combinations. These combinations will be reviewed for their logical order and customer benefits, and then presented to the customer in the recommendations section of the integrated audit's final report.

The audit will be composed of a site survey, plant operating parameters, and customer input to produce a final energy audit report. The report's recommendations are optimized to achieve reduced energy consumption, reduced environmental impacts and increased productivity and economic viability for the California economy.

During the integrated audit process an auditor analyzes and describes multiple energy efficiency, time-of-use management, demand reduction, and self-generation measures and recommendations. Then, working with the customer, the auditor will optimize a course of action utilizing the SoCalGas portfolio to craft an integrated solution that is tailored to the customer's specific business needs and requirements.

The following examples illustrate how the integrated process will be implemented utilizing available programs and services:

- After Integrated Audit is completed, no-cost/low-cost energy conservation measures may be transferred to the Retro-commissioning program for implementation.
- Capital investment measures selected by a customer will become a subject to a more rigorous calculation of energy savings under Saving Calculation Assistance service. These calculations may accompany the application for a retrofit project filed with incentive program to fulfill technical support requirements.
- Demand reduction measures can be evaluated for their applicability for daily use (they may eventually become an energy efficiency measure), load shifting and occasional response to demand reduction events.
- Distributed generation opportunities and benefits will be presented to the customer with particular references to respective incentive programs.

Supporting Market Sectors

Nonresidential Audits will support the Commercial, Industrial, and Agricultural sectors by developing sector experts among external resources such as third-parties, University internship programs, and municipal utilities, and by offering on-line audit tools. In addition, Integrated Audits will be offered to large customers. To deliver an Integrated Audit, SoCalGas Engineers will work with assigned SoCalGas customer account representatives and the audited firm project leads. This team will translate sector specific market and technical information into a strategic energy resources plan by incorporating Energy Conservation, Energy Efficiency, demand reduction and Self Generation.

SoCalGas will continue to partner with the Local Government Partnerships program by offering Integrated Audits to qualified governmental agencies as it has during the 2006 – 2008 Program. In the future this effort will increase the number of Regional, County and City aggregated audits to establish a strategic plan for these customers and better integrate DR and Self Generation with Energy Conservation and Energy Efficiency. These customers often have multiple accounts that do not meet the demand threshold for on site audits on their own, but when aggregated they can constitute one of the largest energy consumers in the area.

SoCalGas will provide training and guidance to Third Party program vendors to broaden their audit focus beyond their program offering in order to identify potential in other end use systems. In this way SoCalGas will minimize inefficient and, to the customer, the hassle of multiple visits. Expanding the scope of Third Party program vendor audits will provide customers with additional opportunities through combinations of equipment upgrades in conjunction with other Third Party programs.

Both basic and integrated audits will refer customers to appropriate Third Party program vendors based on audit report recommendations. The SoCalGas Call Center and Account Representatives will provide this service. In addition, the future UEAT (on-line audit tool) will provide potential opportunities via automated selection based on survey input.

f. Integration across resource types :

A comprehensive audit marketing plan will be aligned and coordinated with the marketing plans for each of the resource programs in order to maximize effectiveness, integrate offerings, and, where appropriate, refer customers to relevant DSM programs. SoCalGas will also look to partner with interested public and governmental bodies to proactively promote energy efficiency, water conservation, and environmental stewardship, in partnership with programs such as the local government partnerships and green communities.

Integrated Audits will serve as the foundation for integrated offerings by providing a truly comprehensive energy assessment to customers, seamlessly providing them information and recommendations around energy efficiency, distributed-generation, demand reduction, water conservation, green programs, such as The Climate Registry "The Cool Planet Project" program, and other relevant programs. SoCalGas will identify and coordinate with the appropriate water agency to quantify water conservation & incentive opportunities utilizing the model established with MWD. SoCalGas will provide customers with a complete picture of their energy usage, options for reducing costs and using energy more efficiently, and direct them to programs that meet their needs and situation.

Marketing collateral and messages for energy efficiency will be integrated with other SoCalGas programs. Through additional market segmentation and feedback from customers, SoCalGas will further adjust approaches based on the varied needs of targeted customers.

Services from the Nonresidential Audit sub-program may also be available to low income energy efficiency and third party program staff and customers.

g. Pilots:

h. EM&V:

The utilities are proposing to work with the Energy Division to develop and submit a comprehensive EM&V Plan for 2009-2011 after the program implementation plans are filed. This will include process evaluations and other program-specific studies within the

context of broader utility and Energy Division studies. More detailed plans for process evaluation and other program-specific evaluation efforts cannot be developed until after the final program design is approved by the CPUC and in many cases after program implementation has begun, since plans need to be based on identified program design and implementation issues.

6.2) Subprogram Implementation – Calculated Incentives

The statewide non-residential Calculated sub-program provides customers technical and calculation assistance, as well as incentives based on calculated savings, to influence the design and installation of energy efficient equipment and systems in both retrofit and added load applications.

The Calculated approach is utilized for projects where a rebate is not available through the statewide Deemed program, where project conditions require customized calculations to provide the most accurate savings estimates, or where a project has interactive effects that are best

captured through whole building or whole system modeling. Because Calculated savings estimates are based on actual customer operating conditions, pre-inspections (for retrofit projects), engineering review (for all Calculated projects) and post-inspections (for all large Calculated projects) are typically required as part of each utility's project documentation.

An important element of the Calculated approach is the design assistance and calculation assistance provided by utilities to influence customers to select the most efficient design and equipment options. For both retrofit and added load projects, utilities work with the customer and their project team to evaluate their proposed projects and provide a report recommending efficient design alternatives and detailing energy savings, CO_2 reductions, and calculated incentives available for exceeding Title 24 code or industry standard practice baselines as appropriate. This information is also available to customers through the Non-Residential Audit offering. The combination of technical support and the availability and commitment of approved utility incentive funds is an essential driver to overcome key customer barriers, including lack of technical resources and lack of capital for energy efficiency projects.

Customers and project sponsors (contractors, design teams, vendors, ESCOs) participating in the Calculated approach may also opt to complete their own calculations for submittal to the utilities for review and approval. For this purpose, statewide consistent calculators are publicly available to customers for use if desired. The statewide utility-created and maintained SPC Calculator can be used for retrofits and some new construction applications and is available online and through CDs. For whole building construction projects, utilities accept both Energy Pro, available for license, and the utility-sponsored EQEST, available for free on the statewide Energy Design Resources website www.energydesignresources.com.

Depending on whether a project is a retrofit or added load project, and on whether Title 24 is triggered for a particular project, different baselines are applied to capture appropriate project savings. For retrofit projects, incentives are capped at 50% of the total project costs. For added load projects, incentives are capped at 50% of the incremental project cost. Note: A Standard Operation Procedure Manual will be developed to describe the guidelines for implementation.

Below is a listing of all calculated measures grouped by measure category for all IOUs. Specific measures for each IOU are provided in the attached E3.

#	Measure Name	Per therm Incentive
1	Batch_cullet_preheating	$1.00
2	Closed_hood	$1.00
3	Combustion_controls	$1.00
4	Efficient_burners	$1.00
5	Efficient_drying	$1.00
6	Extended_nip_press	$1.00
7	Flare_gas_controls_and_recovery	$1.00
8	Fouling_control	$1.00
9	Furnace/Oven/Kiln replacement	$1.00
10	Efficient_furnaces	$1.00
11	Heat_Recovery	$1.00
12	Improved_separation_processes	$1.00
13	Insulation/reduce_heat_losses	$1.00
14	Optimize_furnace_operations	$1.00
15	Oxyfuel	$1.00
16	Preventative_maintenance	$1.00
17	Process_Controls_&_Management	$1.00
18	Process_integration	$1.00
19	Thermal_oxidizers	$1.00
20	Automatic_steam_trap_monitoring	$1.00
21	Blowdown_steam_heat_recovery	$1.00
22	Condensate_return	$1.00
23	Flue_gas_heat_recovery_economizer	$1.00
24	Improved_insulation	$1.00
25	Improved_process_control	$1.00
26	Leak_repair	$1.00
27	Load_control	$1.00
28	Maintain_boilers	$1.00
29	Steam_trap_maintenance	$1.00
30	Upgrade_burner_efficiency	$1.00
31	Water_treatment	$1.00

The Statewide Calculated sub-program offers customers incentives to implement energy efficiency measures that have been identified through standard Utility energy efficiency audits or in-depth facility/process assessments. Customers can also directly apply for incentives to implement their energy efficiency projects.

Other avenues used to identify energy efficiency opportunities include programs that provide Education and Outreach, Workforce Education and Training, or through IOU Emerging Technologies Programs.

The Statewide Calculated Program delivers a consistent message Statewide to Non-residential customers about the benefits, energy savings and GHG reductions that efficient technologies and “best operating practices” offer to customers. This eliminates the barrier often run into by Non-residential customers of getting incorrect or out of date information from local networks.

The Statewide Calculated Program information and services will be delivered through Account Representatives, Utility Call Centers, Partnerships, Third Parties, and Utility Internet sites. Statewide Calculated Program information will also be made available through industry events, such as the California Manufacturers and Technology Association and through advertising in industry and trade publications.

The Statewide Calculated Program not only brings IOU Incentive information to customers, but in many instances also provides additional information about other opportunities for project assistance, such as State or Federal funds available for energy efficiency projects, Tax incentives or other local sources of project funding.

The Calculated Sub-program uses retro-commissioning as a resource to delivering energy savings. RCx is a systematic process to identify and correct operational problems or inherent repair and maintenance deficiencies that lead to excessive energy use. Unlike retrofits, which focus on equipment replacement, or O&M, which focuses on routine maintenance, RCx focuses on identifying and correcting problems that may not be readily identified by a standard energy audit. O&M items with an effective useful life greater than 3 years will also be identified through this assessment. Additionally, opportunities often exist to optimize existing systems to operate more efficiently than originally designed with minimal new capital outlay. The RCx program builds upon the initial feedback from the current RCx program and expands its reach into the Industrial segment. Additionally, BSE will improve existing tools and practices for building retro-commissioning to reduce energy consumption in commercial buildings per the Strategic Plan.

RCx will be offered as a bundle of products/services. RCx providers will perform several tasks to identify measures. These tasks include, but are not limited to:

- Initial benchmark
- Collect data to quantify the owner's operational requirements
- Perform detailed on-site audits to evaluate operational deficiencies and/or operational optimization opportunities inclusive of improved and enhanced preventive maintenance and repair programs
- Define measures, quantifying implementation costs and savings
- Assist customers with measure implementation
- Verify completion of measures
- Provide post installation documentation and training as well as other persistence techniques
- Post project benchmark

- For the information requested in Table 4, please see 5.b above.
- For information on sub-program design to overcome market barriers, please see 5.c above.
- For information on sub-program targets, please see 5.d above.
- For information on how the sub-program advances the Strategic Plan, please see 5e above.

a) Statewide IOU Coordination

All California IOUs utilize same types of energy audits targeting same type of customer segments. Energy Audit has been a Statewide program since 2002. For further coordination, this sub-program will be coordinated in the same way as main program, as described in Statewide Section 6.a.

b) Program delivery and coordination

Still working on providing info

i. Emerging Technologies program

Refer to ET PIP

ii. Codes and Standards program

The program relies on the Codes and Standards program to maintain an updated and relevant list of measures that will support savings. As Codes and Standards impact measures, the program will act to align itself with appropriate offerings. Programs will include new offerings that will allow flexibility in adapting to changes in codes and standards, market trends, and technologies. Planned enhancements to Title 24 will be reflected in incentive levels and eligible measures and services. As the market moves toward "low energy" or "zero net energy" buildings, specific changes to each element of the bundling will be made to ensure the latest cost effective technologies/services (e.g. superboiler) made available as these technologies transition from 1) R&D to 2) Emerging technologies to 3) Incubation to 4) Mainstream.

iii. WE&T efforts

WE&T is a portfolio of education and training programs that showcase energy efficient equipment found on the list of measures offered in the program. The education and training takes place through energy centers, technology test centers, and education and training program offerings. In addition to providing the education and training, the classes also address how

customers engage the energy efficiency program offerings relative to the class. An Energy Efficiency representative will be present at all relative classes to provide detailed information on the application process to the relevant Energy Efficiency program.

iv. Program-specific marketing and outreach efforts (provide budget)

The Calculated Sub-Program will be marketed through IOUs Account Executives, as well as through educational, outreach and other marketing activities. Marketing activities will target business customers, ESCOs, trade associations, local business groups and government entities to generate interest and program participation. In addition, direct customer contact by Account Executives, Demand Reduction Program outreach, phone and e-mail support will be provided.

Marketing campaigns will provide a wide range of action-oriented solutions targeted to "personas" identified through segmentation research. In addition, marketing efforts will be "bundled". That is, a menu of demand response, energy efficiency and conservation programs will provide customers a full array of EE, demand reduction and DG options. By providing packaged energy management solutions for each industry segment utilities will be better able to communicate with and serve customers.

Marketing efforts will incorporate a variety of marketing tactics/activities to promote the Calculated Sub-Program. Education, awareness and outreach efforts will rely on a combination of mass media communication channels and targeted communication channels to ensure the messages reach the intended audiences with enough frequency to motivate attitude and behavior changes. The marketing strategies may include, but are not limited to, a mix of print, radio, TV, direct mail, e-mail, personal contact, trade shows, trade association meetings, customer workshops and seminars, energy related and other community events and partnerships with business and industry organizations, specialized collateral, case studies, website links and information with regular updates, bill inserts, press releases, and newspapers.

Market outreach to raise awareness of EE programs available will use a number of strategies, including:

- Account representatives will make a regular and consistent customer calling effort to key customers within this sector;
- Utility representatives, Energy Efficiency program management representatives, and field engineers will be available to provide additional expertise;
- Additional market outreach initiatives for the Industrial Market Sector will include:
- Participation and membership in one or two key trade associations affiliated with each high priority sub-segment within the Industrial Market Sector;
- Attendance at the key trade shows for each high priority sub-segment within the Industrial Market Sector;
- Utility-sponsored training events at the utilities Customer Training Centers and other convenient locations within the utilities service territory;
- Hosting of utility-sponsored Webinars that provide sub-segment training and program adoption; and
- Written collateral pieces that provide an overview of the utilities Energy Efficiency programs will be linked into the appropriate utility DSM web page.

The ideal marketing mix will be assessed for maximum awareness and participation. Marketing and outreach coordination will be coordinated among the IOUs utilizing the statewide coordination process described above.

v. Non-energy activities of program

The program provides a significant challenge to integrating DSM initiatives to non-energy activities due to the general industry structure, the nature of market sector resource use, limited resource savings potential with smaller businesses, and limits to small business owner and operator bandwidth. Therefore, integrated audits that look across the various EE program offerings, as well as complementary options available through other entities (e.g. water agencies) will be used to identify the opportunities to be recommended to the specific commercial customer.

The Water Efficiency Pilot Program's will provide potential opportunities to reduce water use and the potential for associated Energy Efficiency savings. Since some customers within the program sectors are major water users, this

sector is well positioned to realize linked water/energy benefits through the Water Efficiency Pilot Programs.

With respect to water conservation, utility program managers will contact the local water districts to share marketing collateral, attend trade shows, and co-release notices, for programs with interactive water and energy effects. Similarly, with ARB and Air Quality Management Districts, IOUs will offer customers Calculated sub-program incentives for energy efficient equipment that may also reduce air and GHG emissions.

vi. Non-IOU Programs

The Program will continue to engage with Air Quality Management Districts, CEC, CARB, DOE, water agencies, and other government agencies responsible for regulating the various aspects and operations of customer facilities participating in the programs.

vii. CEC work on PIER

The Program will interact with the Emerging Technologies Program to leverage new technologies to increase the list of measures available for energy efficiency projects. The portfolio staff actively works to incorporate promising emerging technologies and PIER projects. The program will work with PIER on researching new technologies for evaluation and testing for application in mainstream projects.

In addition, SoCalGas is currently working on developing and promoting web based energy efficiency training and energy efficiency calculator tools with the CEC PIER Program. Through this effort, SOCALGAS will develop both the tools and the engineering work papers for the tools, will educate targeted customers on the use of the tools through education and training activities and will also provide customers with training on how to measure and monitor energy consumption which can be used for process benchmarking and also in the energy efficiency calculator tools.

viii. CEC work on codes and standards

See Statewide Section 6.b.viii

ix. Non-utility market initiatives

The program will support, educate customers, and/or enforce such initiatives as AB32, renewables, ANSI certification, facility benchmarking, Continuous Energy Improvement, California Green Building Initiative, and other

initiatives as directed. The IOUs will remain engaged in these efforts and work to influence the development of increasingly higher standards.

c) Best Practices

The Calculated sub-program approach constitutes "best practice" by:

- Providing cost-effective energy efficiency.
  - The program will reimburse up to 50% of the energy efficiency project cost.
- Energy savings are based on actual facility operations, process measurement, and accepted engineering protocols for calculating energy savings.
- Energy savings receive engineering review for all Calculated projects and are measured and verified post-installation for all Large Calculated projects.
- The program is customer-focused. The incentive options offered have seen high participation due to the program's flexibility in customizing appropriate energy efficiency solutions for a diverse range of customers.
- Avoiding lost opportunities by utilizing a comprehensive approach.
- Producing both short and long term energy savings.
- Produces co-branding opportunities supporting the reduction of greenhouse gases.
  - The program will be co-branded with SoCalGas' "Cool Planet Project", a program designed to engage industry executives, help them understand the connection between energy efficiency and GHG emissions, and help them take early action to quantify emissions by rewarding participating customers with an annual membership to The Climate Registry .
- Providing an application process that is both easy and friendly.

Developing new Pilots to test innovative approaches that achieve deeper savings.

d) Innovation

Innovative aspects of the program are aiming major program performance indicators such as accuracy of energy saving calculation, higher realization rate, overcoming energy efficiency barriers, reducing application processing time and administrative costs, and integrated energy management.

For the new program cycle California IOUs have implemented a new incentive structure that addresses current economic downturn by offering increased incentives which better motivates customers to participate in energy efficiency incentive programs. During 2009-2011 program cycle new incentive structure will be periodically evaluated and necessary changes may be made in order to enhance program benefits and performance.

IOUs will continue working collaboratively on modifications to program Policies and Procedures to address ongoing changes in customer expectations, market conditions and program flexibility. The modifications

could include changes that have been and will be targeting ease of program understanding and participation, measures eligibility, increase of customer economical benefits and policy restrictions that will be identified as barriers to participation. IOUs are implementing such process based on market studies conducted on the subject and preceding discussion of the policy change. Among modifications that would be potentially discussed and implemented are incentive caps, redesign of measure/equipment early retirement according to the CPUC concept and other.

IOUs are planning to elaborate and utilize positive experience obtained using the Savings By Design (SBD) simplified tool and extend it to energy efficiency retrofit projects. Such tools substantially reduce application processing and review time, and minimize number of hand-offs, while not sacrificing accuracy of energy saving calculations.

Where possible, IOUs will use an integrated approach to addressing DSM opportunities. Innovative approaches will be used, such as merging energy efficiency and demand reduction analysis and converting recommendations to projects under Retro-commissioning and/or Calculated program. In addition, streamlining programs through processing and reviewing energy efficiency and demand reduction measures, providing analytical information about applicable distributed generation solutions will maximize customer adoption rates for most cost-effective energy management opportunities.

SoCalGas has standardized its calculating methodology over the course of the 2006 – 2008 Program cycle. This has ensured that calculations will continue to be more uniform and accurate for energy efficiency projects. SoCalGas tools are based on the nationally and internationally accepted Dept of Energy toolsets for the vast majority of its energy efficiency projects. SoCalGas has made DOE tool training a part of its required training curriculum for Account Executives and has also made the tool training available to customers, vendors, consultants and engineers.

IOUs are planning to continue and expand its core RCx program in multiple target markets. Retrocommissioning is a systematic process for optimizing an existing building or system's performance by identifying operational deficiencies and making necessary adjustments to correct the system. Measures may involve resetting, repair or replacement of existing system controls and components, and in general are low-cost projects with simple payback periods of less than 4 years.

After energy audit is complete and applicable no-cost/low-cost measures are identified the scope of work will be handed-off to RCx implementer who, in-turn, will follow RCx program protocols, execute the scope of work (measure implementation, M&V plan, incentive payment for energy savings, etc.) and report final results to the core program office.

e) Integrated/coordinated Demand Side Management

Where possible, IOUs will use an integrated approach to addressing DSM opportunities. Innovative integrative aspects include merging energy efficiency and demand reduction analysis and converting recommendations to projects under Retro-commissioning and/or Calculated program. Providing analytical information about applicable distributed generation solutions will maximize customer adoption rates for the most cost-effective energy management opportunities.

f) Integration across resource types

Please refer to Statewide Section 6.f.

g) Pilots

AEEP – Pilot Program

The IDSM (Integrated Demand Side Management) for Food Processing Program partners with industry, trade allies and others to promote integrated energy management solutions to end-use customers in the food processing and refrigerated warehouse segments. The integrated approach combines traditional measures (energy efficiency retrofits/upgrades) along with strategies, such as waste heat driven systems or hybrid systems, to help customers manage/reduce their energy demand during peak periods (example: 2:00PM-5:00PM), especially during hot summer days or to permanently reduce their demand and thus, permanent grid congestion reduction. By combining these two approaches, the customer is provided a comprehensive solution to manage day to day energy costs as well as position their facility to respond to days of high energy use(peak periods) when energy is at it's greatest demand and can be very expensive. While the primary program focus is energy efficiency, the program emphasizes integrated solutions in proper sequence (energy efficiency→ demand reduction) to support the most cost-effective and satisfactory energy and financial solutions for these stakeholders.

The concepts of *Continuous Improvement* and *Best Practices* will be woven into the long term solutions provided by the program.

The program will deliver an integrated solutions-driven approach while leveraging the offerings of IOU's portfolio of incentive-based programs.

Targeted customers include agricultural: post-harvest processors (ginners, nut hullers, and associated refrigerated warehouses) and food processing: fruit and vegetable processors (canners, dryers and freezers), prepared food manufacturers, wineries and other beverage manufacturers.

h) EM&V

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

6.3) Subprogram Implementation – Deemed Incentives

The Deemed sub-program, whose provisions correspond with those of statewide programs, commonly referred to as Express Efficiency, will pay rebates for the installation of new energy

efficient equipment. Itemized retrofit measures have prescribed energy savings and incentive amounts. These measures are categorized under the following end uses:

- Food service
- Industrial Process
- High-Efficiency Water Heating
- Greenhouse Curtains and Infrared Films
- Pipe and Tank Insulation
- Steam Traps

The Deemed program directly addresses key market factors that lead to higher energy costs for California businesses. Providing a menu of prescribed common measures simplifies the process of reviewing project proposals and provides a "per-widget" rebate that reduces the cost of retrofitting outdated and inefficient equipment. This element makes it attractive for customers to spend money in the short run in order to achieve lower energy costs in the long run.

Using itemized energy efficiency measures is intended to overcome barriers that prevent many business customers from adopting energy efficiency alternatives. The barriers are addressed by itemizing common energy efficiency measures and rebates, stimulating the supply of high efficiency equipment and products (through higher demand), and offering rebates that help offset higher start up and down payment expenses for energy efficient retrofits.

Furthermore, to ensure equity to all business customer segments, this program will continue to offer statewide-consistent, cost-offsetting itemized rebates to help customers with the cost of installing new energy efficient equipment.

The Deemed program is implemented and coordinated through the same processes used in the Calculated/Customized Program. These include the following programs:

- Existing Itemized retrofit (e.g. Express Efficiency)
- Other itemized measures as relevant.

The difference between the two elements is that applicants who wish to participate in the itemized retrofit element will be allowed to reserve funds for their projects. Reservations will be taken via phone, fax, internet, or mail. SoCalGas will maintain an online reservation system for the convenience of applicants. Although reservations are not required, SoCalGas recommends that customers reserve funds. At the time that they make a reservation, the applicant will be notified if a pre-inspection is required. Pre-inspection is not required unless there is prior participation at the proposed project location for the same measures being reserved. Projects with

prior participation are subject to mandatory pre- and post-inspection. If an applicant does not reserve funds and submits an application that raises the issue of prior participation, the applicant is responsible for clearly demonstrating that the requirements in the terms and conditions were met before a rebate will be paid.

Incentives and savings payouts will be based upon deemed measures in the DEER database or through SoCalGas' work papers.

Deemed Energy Efficiency Rebates for Businesses will be part of the integrated strategy to promote energy efficiency with non-residential customers. The Statewide Deemed Team will hold regular conference calls and in-person meetings to share successes challenges, and best practices in delivering energy efficiency via deemed incentives. When appropriate, the Commercial, Industrial, and Agricultural segments will meet as a Statewide entity to share successes challenges, and best practices in delivering energy efficiency to each market sector and associated sub-segments.

Deemed Energy Efficiency Rebates will be primarily delivered via paper or online application. Measures will be the same across IOUs and incentive levels will also be aligned, unless markets in the individual IOUs require adjustments based on research, communication with industry, and/or changes in the economic landscape.

Deemed Energy Efficiency Rebates will work with the other sub-Programs to design customer facing marketing materials that integrate EE offerings into a complete energy savings package that is focused on individual market segments.

Where appropriate, IOUs will coordinate with POUs to more effectively reach more California businesses to more deeply penetrate each customer segment and technology market. Each IOU will also coordinate internally with Government Partnership Programs to maximize effectiveness of Program offerings and minimize overlap and confusion.

For information on measures and incentive levels offered under this sub-program, please refer to Section 4.b above.

For the information requested in Table 4, please see 5.b above.

For information on sub-program design to overcome market barriers, please see 5.c above.

For information on sub-program targets, please see 5.d above.

For information on how the sub-program advances the Strategic Plan, please see 5e above.

a) Statewide IOU Coordination

Consistent statewide specifications and rebate values make it easier for national chains and manufacturers to understand and support IOU rebate programs. Statewide coordination also includes regular meetings to share industry contacts, marketing strategies and lessons learned. Coordinated statewide participation at relevant industry events have reduced costs through sharing.

Please see Statewide Section 6.a for more details on statewide coordination for the overall Industrial Program, which will be followed for this sub-program.

b) Program delivery and coordination

i. Emerging Technologies program

To meet California's future energy efficiency goals, both in terms of overall usage, GHG emissions and plant thermal efficiency, new technologies and new applications of technology are needed. The Deemed sub-program will seek support from ETP's incubation and development of new technologies to meet the needs of the marketplace. ETP provides the pipeline of new technologies that Deemed looks to incorporate to maintain a robust selection of energy savings equipment. The program will look to ETP to provide customers with technology information, validating effectiveness as an unbiased and neutral expert.

ii. Codes and Standards program

The Deemed sub-program relies on Codes and Standards to maintain an updated and relevant list of measures that support savings. As Codes and Standards impact measures, the Deemed program will act to align itself with appropriate offerings.

iii. WE&T efforts

WE&T is a portfolio of training and information programs that showcase energy efficient equipment found on the list of measures offered in the Deemed sub-program. Dissemination of information takes place through energy centers, technology test centers, and information and training program offerings. During classes, time is dedicated to energy efficiency programs and how to participate. In 2009-2011, a program ambassador will he available to deliver the EE message and answer questions.

iv. Program-specific marketing and outreach efforts (provide budget)

The following will be used as marketing and outreach channels:

- Non-contracted vendors are a key delivery channel of the deemed sub-program. Emphasis will be placed on building awareness with more vendors in the territory. Training vendors on how to participate effectively in the program, will also be a focus in the new program cycle.

- Community Based Organizations (CBOs), Faith Based Organizations (FBOs), Non-Profit organizations, and Non-Government Organizations (NGOs) with unique access and following is expected to be emphasized as a delivery channel.

- Trade associations and industry networks

- Across enabling partners (financial institutions, trade associations, service providers, law firms, environmental organizations, etc.); and

  Unique channels that offer complementary value propositions from the customers' perspective (e.g. energy, water, materials management, recyclables, corporate citizenry, etc.).

v. Non-energy activities of program

See Statewide Section 6.b.v for details.

vi. Non-IOU Programs

The Deemed sub-program will continue to engage with Air Quality Management Districts, CEC, CARB, DOE, water agencies, and other government agencies responsible for regulating the various aspects and operations of customer facilities participating in the programs.

vii. CEC work on PIER

The Deemed sub-program will interact with the Emerging Technologies Program to leverage new technologies to increase the list of measures available for energy efficiency projects. The portfolio staff actively works to incorporate promising emerging technologies and PIER projects. The program will work with PIER on researching new technologies for evaluation and testing for application in mainstream projects.

viii. CEC work on codes and standards

See Statewide Section 6.b.viii.

ix. Non-utility market initiatives

c) Best Practices

To maximize program effectiveness, best practices in Program Design and Implementation will be employed and shared amongst IOUs.

Best practices in Program Design:

- Regular communication amongst IOUs is critical to effective program design.
- Identify qualifying products simply and effectively (Examples; ENERGY STAR®, CEE, FSTC website).
- Seek input from industry in the development of new programs. The IOU programs are trying to change how an industry operates from manufacturer design to the customers purchasing and maintenance practices.
- Industry participation increases program volume and speeds market transformation.

Best practices in Program Implementation:

- Strive to simplify messaging and participation for the customer. (Look for the ENERGY STAR label, purchase from a qualifying products list, etc.)
- Understand the key motivators that drive an industry and use that information to market your program. Make certain outreach efforts make your program visible to your customers and the market that is catering to your customers.
- Always communicate program marketing and advertising plans in advance to appropriate industry channels. Advanced notice allows industry partners an opportunity to leverage off of utility marketing efforts and reinforce the messaging we are trying to get across. (manufacturers/dealers/distributors/retailers)

d) Innovation

See CEI Innovation discussion in Statewide Section 6.d

e) Integrated/coordinated Demand Side Management

f) Integration across resource types

Integration across resource types (e.g., energy, water, and air quality) will be explored. Examples include working with Water Agencies to co-promote Food Service appliances that save water and energy and working with Air Quality Management Districts to co-promote Boilers and Water Heating measures that save energy and improve air quality. [More detail needed here]

g) Pilots

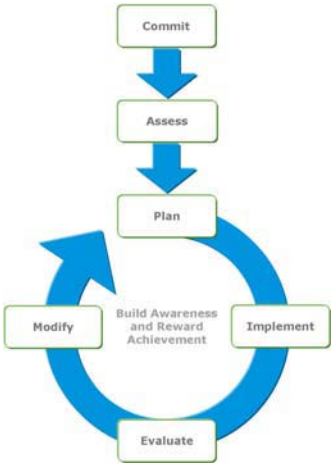
h) EM&V

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

6.4) Subprogram Implementation – Continuous Energy Improvement

Continuous Energy Improvement (CEI) describes a statewide package of products and services aimed at helping customers engage in long-term, strategic energy planning. It

proposes to transform the market and reduce energy intensity through a comprehensive approach that includes addressing both technical and management opportunities. A CEI approach applies the principals of well-known business continuous improvement programs, such as Six Sigma and International Standards Organization (ISO) standards, to facility and plant energy management: Commit, Assess, Plan, Implement, Evaluate, and Modify.



At each stage of customer engagement, there are a variety of utility and non-utility products and services that can be offered the support that can be customized to fit different customer profiles and optimize the cost effectiveness of each utility's portfolios.

In implementation, utilities will *screen customers* for certain CEI services based on factors such as customer energy use, complexity, number of facilities, energy decision making structure, environmental commitment or demonstrated motivation to take action. Screening criteria and specific product offerings will be utility-appropriate.

CEI begins with a high level management commitment to improving energy performance, which increasingly can be combined with other environmental and regulatory commitments that large energy users are developing in response to market and political pressures. A corporate commitment sends the top-down message to employees, partners, shareholders and vendors that energy is a priority issue requiring attention – like safety – and also paves the way for establishing the required company resources required to implement the steps of CEI. These resources can include capital, personnel like energy champions or teams, or technical systems and software required for energy management.

Gaining true customer commitment can take time, but is critical. In implementation, utilities will formalize the Commitment phase with larger or more intensive customers through a *CEI participation agreement*, which outlines the utility CEI services being offered as well as minimum customer expectations.

Following Commitment, a comprehensive assessment is critical to identifying not only technical opportunities, but also systemic energy management practices and cultural shifts

that can improve overall facility management practices and sustain continuous improvements towards long-term company targets.

There are many tools and resources - utility and non-utility, free and licensed – available to support comprehensive customer energy assessment. They include ENERGY STAR's Guidelines for Energy Management, The U.S. Dept of Energy's Plant Energy Profiler tool (PEP tool), Steam System Assessment Tool (SSAT), Process Heating Assessment and Survey Tool (PHAST tool), customer energy management assessment software products like those developed by Envinta, benchmarking tools, Integrated Energy Audits, and local and statewide third parties who can offer specialized technical expertise and assessment.

Based on screening criteria, utilities will offer comprehensive energy assessment services utilizing, but not limited to, vetted sources like those described below, to develop a customer specific strategic energy plan:

ENERGY STAR's Guidelines for Energy Management is housed on the ENERGY STAR website and provides step by step guidelines to customers to support CEI in general, and also guides customers to ENERGY STAR's numerous assessment tools. This option is a low cost resource for smaller and medium customers interested in CEI http://www.energystar.gov/index.cfm?c=guidelines.guidelines_index

Energy Management Assessment Tools

- *Envinta One-To-Five, Achiever, Challenger:* A professionally facilitated energy management assessment with company decision makers explores management practices and company priorities to develop a CEI roadmap for energy goals and actions.
- Each IOU's website tools
- EPA website tools
- DOE website tools

Statewide Integrated Energy Audits

Simple or Integrated Energy Audits provide an inventory of technical facility end-uses and energy efficiency, demand reduction and self-generation investment opportunities. For a full description, see the Statewide Integrated Energy Audits sub-program description.

Benchmarking

Benchmarking can measure energy performance of a company, building, process, or piece of equipment to industry standards or comparable groupings. Benchmarking is a natural first step for the CEI process. Customers with multiple facilities find benchmarking useful to

prioritize efficiency projects, track progress toward energy or green house gas (GHG) improvement goals or drive competition among similar benchmarked facilities. Units of measurement vary widely - for commercial buildings, the unit is energy used/square foot for a unit of time. For agricultural or industrial facilities, benchmarking utilizes energy/unit of production for a unit of time.

Benchmarking can also be applied to other resources and environmental issues such as water use, CO2, and emissions.

The statewide utilities can currently utilize a variety of benchmarking tools and resources including those developed by the EPA for Energy Star and by Lawrence Berkeley National Lab with CEC funding:

- Energy Star Portfolio Manager *Commercial* Benchmarking: Benchmarks customer facility against a national database of similar NAICS codes for an Energy Star score (0-100), kBtu/sq ft-yr, lbs CO_2/yr.
- Energy Star *Cement Plant* Energy Performance Indicator
- Energy Star *Auto Assembly Plant* Energy Performance Indicator
- LBNL BEST *Winery*: Benchmarks a winery's energy and water use against a theoretical best practice winery and allows user to model efficiency improvements.

Other benchmarking tools are under development including:

- Energy Star *Food Processing* Energy Performance Indicator
- Energy Star *Glass Manufacturing* Energy Performance Indicator
- Energy Star *Pharmaceutical Manufacturing* Energy Performance Indicator
- LBNL BEST *Dairy Processing*: Benchmarks a dairy processors energy and water use against a theoretical best practice facility allows modeling of improvements.
- Management Standard for Energy SME2000-2008
- DOE sponsored ISO Plant Certification
- LBNL Superior Energy Performance

In implementation, the statewide Commercial, Industrial and Agricultural program teams will continue to partner with energy industry peers, industry associations and DOE/CPUC sponsored labs and consultants, to enhance the use of existing tools, and develop new tools for key California industries.

CEI Planning

Strategic energy planning involves setting energy goals and action plans around energy efficiency, demand response, and generation as appropriate. Implementation of the Planning stage of CEI can be undertaken independently by the customer, or with utility support. Planning for larger complex customers will typically involve Account Representatives and/or consultants. As is discussed in the Long Term Strategic Plan and in the PIP Integration Chapter, strategic planning can also include complementary non-energy considerations as well, such as greenhouse gas (GHG) reductions, water efficiency, and waste-stream minimization, all which have embedded energy components.

Data and findings from a comprehensive customer Assessment are critical in developing any comprehensive energy plan, including the results from technical audits or assessments, facility benchmarks, energy management assessments, and assessments of company priorities. This information is analyzed and used to develop realistic and achievable company goals and prioritized shorter-term tactics needed to achieve them. Energy plans should be living documents revisited and revised regularly.

Energy goals can vary widely and include elements such as resource utilization (Company X will reduce it's overall energy intensity by 3% over the next 3 years"), carbon reduction goals ("Company X will be carbon neutral by 2012"), or management oriented goals ("Company X will implement energy teams by 2010"). Goals can be internal documents or can be made public through press releases as part of larger sustainability plans, which is increasingly important for large and public companies.

CEI will assist customers in developing and implementing action plans to execute the prioritized near-term activities in support of their company's energy goals, as well as the resources, staff and schedule for tracking. Action plans typically includes activities such as prioritizing process systems or facilities based on benchmarking or company drivers, identifying internal resources required to implement plans, develop project justification and incentive application documentation lists and detailed schedules.

CEI Implementation

In the implementation stage, utilities partner with customers to identify technical support and utility and non-utility resources available to support implementation of projects, such as rebates, incentives, third party and government partnership programs, and state and national resources, including:

- Statewide Deemed rebates
- Statewide Calculated incentives for new construction/tenant improvement, retrofit and retro-commissioning/repair
- Third Party and Government Partnership programs (described in the statewide and local third party filings)
- Non-utility financing options and owners engineer support

CEI Evaluation and Modification

Like in any continuous improvement program, evaluation is an ongoing process of evaluating actual performance against company goals, targets and action plans. It may include repeating the benchmarking and system or facility baseline process annually, assessing advancements in organizational and management practices that facilitate energy management improvements, or evaluating cost savings per unit of product. Regular evaluation will inform changes to goals and action plans moving forward.

As with other information and education sub-programs, CEI will be primarily delivered by IOU customer energy efficiency staff and contractors, service and sales representatives, website and marketing and outreach efforts. Other channels of delivery may be developed.

CEI shall be available to all non-residential customers meeting certain eligibility criteria to justify the cost of the offering. Criteria, including but not limited to will be customer energy use, complexity, number of facilities, energy decision making structure, environmental commitment or demonstrated motivation. Marketing and outreach plans include training of the IOU in-house staff and customer groups. Collateral materials such as fact sheets, how-to documents, Power Point slides will be produced and distributed during sales calls, public events or trade shows.

CEI will include the CEC's PIER and Green Building Initiative programs, DOE's "ISO plant certification" programs, EPA ENERGY STAR Portfolio Manager benchmarking and other programs, USGBC LEED certification, local and other government incentive programs as applicable.

For information on measures and incentive levels offered under this sub-program, please refer to Section 4.b above.

For the information requested in Table 4, please see 5.b above.

For information on sub-program design to overcome market barriers, please see 5.c above.

For information on sub-program targets, please see 5.d above.

For information on how the sub-program advances the Strategic Plan, please see 5e above.

a) Statewide IOU Coordination

The Statewide IOU Coordination process for the Industrial Program is described in Statewide Section 6.a, and will be followed in this sub-program. By following this process, the CEI sub-program managers will play a critical role in ensuring unified implementation on a statewide-level over the course of the three year implementation cycle. Sub-program innovations and challenges will also feed productively into the higher-level Program Steering Committee process, where the IOU lead will act as participant and conduit between both statewide coordination systems.

b) Program delivery and coordination

i. Emerging Technologies program

CEI implementation shall include identification and project development at specific customer sites with potential for Emerging Technologies program participation, demonstrations and incentives.

ii. Codes and Standards program

CEI implementation shall include information about pending new Codes and Standards program that may affect planning or prioritization of retrofit or new construction projects.

iii. WE&T efforts

CEI implementation shall integrate with Workforce Education and Training efforts by providing CEI process and case study input to “energy engineer” curriculum designers for Community Colleges and Universities.

iv. Program-specific marketing and outreach efforts

CEI’s marketing and outreach effort and budget have not been determined at this time. Once the 09-11 funding levels, which include Marketing funds, an allocation to CEI will be determined. The CEI sub-program will be marketed through Account Executives, as well as through educational, outreach and other marketing activities. Marketing activities will target business customers, ESCOs, trade associations, local business groups and government entities to generate interest and program participation. In addition, direct customer contact by Account Executives, Demand Reduction Program outreach, phone and e-mail support will be provided.

In 2009-2011, Marketing campaigns will provide a wide range of action-oriented solutions targeted to "personas" identified through segmentation research. In addition, marketing efforts will be "bundled". That is, a menu of demand response, energy efficiency and conservation programs will provide customers a full array of EE and DR options. By providing packaged energy management solutions for each industry segment the IOUs will be better able to communicate with and serve customers.

Marketing efforts will incorporate a variety of marketing tactics/activities to promote the CEI Sub-Program. Education, awareness and outreach efforts will rely on a combination of mass media communication channels and targeted communication channels to ensure the messages reach the intended audiences with enough frequency to motivate attitude and behavior changes. The marketing strategies may include, but are not limited to, a mix of print, radio, TV, direct mail, e-mail, personal contact, trade shows, trade association meetings, customer workshops and seminars, energy related and other community events and partnerships with business and industry organizations, specialized collateral, case studies, website links and information with regular updates, bill inserts, press releases, and newspapers.

The ideal marketing mix will be assessed for maximum awareness and participation. Marketing and outreach coordination will be coordinated among the IOUs utilizing the statewide coordination process described above.

v. Non-energy activities of program

CEI implementation shall include Non-energy activities such as recognition awards, local area or sector competitions, awareness campaigns, education about non-energy related LEED points and definitions, use of computerized financial analysis tools and cost estimating and forecasting tools.

vi. Non-IOU Programs

CEI implementation shall include information on Non-IOU Programs to expose customers to funding, such as from air or water agencies to support efforts. The SoCalGas Calculated sub-program managers will scan the programs offered by CEC, ARB, Air Quality Management Districts, and other government agencies to capitalize on opportunities to share program information and marketing collateral with Agriculture-sector customers. Conventionally, each government agency and utility has operated natural resource and energy programs independently, missing opportunities to serve customers who must manage more than one resource type. For customers who are regulated by or interested in more than one resource issue, Interactive Program Presentment (IPP), will benefit the customer to the mutual advantage of the single resource programs.

In the effort to promote IPP, IOUs will seek out managers of farm aid programs to see if there are opportunities to present utility programs along with farm aid applications. With respect to water conservation, utility program managers will contact the local water districts to share marketing collateral, attend trade shows, co-release notices, for programs with interactive water and energy effects. Similarly, with ARB and Air Quality Management Districts, IOUs will offer customers Calculated sub-program incentives for energy efficient equipment that may also reduce air emissions.

vii. CEC work on PIER

CEI implementation shall include information on the CEC's work on PIER to expose customers to demonstration or research projects and funding.

viii. CEC work on codes and standards

ix. Non-utility market initiatives

Non-utility market initiatives such as education about Federal Tax incentives for energy efficiency investments is an example of a non-utility information and guidance that CIE sub program will provide customers.

c) Best Practices

The CEI approach applies the principals of well-known business continuous improvement programs, such as Lean Six Sigma and ISO standards, to facility and plant energy management: Commit, Assess, Plan, Implement, Evaluate, and Modify. This approach can now be successfully implemented given the 3 year programs cycle allowing longer term and deeper project development engagements with customers.

d) Innovation

Continuous Energy Improvement (CEI) is a new way of packaging energy efficiency, demand reduction and self-generation products and services aimed at helping customers engage in long-term, strategic energy planning. It proposes to transform the market and reduce energy intensity through a comprehensive approach that includes addressing both technical and management opportunities.

e) Integrated/coordinated Demand Side Management

CEI includes project analysis and implementation support of recommendations of Integrated Energy Audits which provide customers with an inventory of facility end-use breakdown and energy efficiency, demand reduction and self-generation investment opportunities. Over the last few years, traditional DSM programs have learned that successful customer participation in one program leads to a likelihood

of repeat participation in the same program. Additionally, this successful participation makes these customers likely candidates for other similarly related types of programs. While a successful program experience leads to repeat participation, there has been difficulty in cross pollinating similarly related types of programs with these candidates due to program-specific silos. To overcome the historic silo effect of DSM, the CEI sub-Program will leverage lesson's learned from IDSM efforts by offering comprehensive, coordinated marketing and program delivery.

A primary issue when integrating energy efficiency and demand reduction programs is that the two programs are at financial odds with one another, as both programs often reduce the potential for each other's financial incentives. For example, energy efficiency may reduce the overall baseline by which the demand reduction program's incentives are based upon. Since benefits from long term energy savings derived from technological measures outweigh the temporary demand reduction benefits derived from behavioral actions, the CEI sub-Program will offer additional incentives for energy efficiency measures that enable demand reduction when customers enroll, or are already enrolled, in demand reduction programs. In so doing, the program seeks to maximize the potential for both types of programs.

A secondary issue when integrating energy efficiency and demand reduction programs is that communications of both types of DSM program are often non-coordinated, since energy efficiency is typically technology based and demand reduction is often focused on behavior. Also, demand reduction efforts often happen prior to the summer "event season" and wane throughout the remainder of the year. To overcome these differences, the Program will offer integrated and coordinated year-round marketing through consolidates applications, collateral, web sites, and events, where applicable.

Through bundling program elements and offering one program application, customers will have the opportunity to enroll in demand reduction programs in addition to energy efficiency programs.

To support the integration of energy efficiency and demand reduction programs, the Program will focus on several tactics:

- Promotion and incentivizing of demand reduction enabling energy efficiency measures to ensure that energy efficiency is completed first to maximize potentials

- Integrated and coordinated year-round marketing (e.g. Applications, collateral, web sites, and events)

- Linking of program eligibility requirements (e.g. Customer size)

- Provide unified technical assistance through enhanced EE/DR Audits through the TA Program to allow for cross-harvesting opportunities

- Integrated presence on utility websites

- Regular coordination meetings between energy efficiency and demand reduction program management

During the current cycle, funding for energy efficiency and demand reduction must remain non-commingled; therefore payments will be split between the two programs as appropriate.

f) Integration across resource types

CEI implementation shall include information on Non-IOU Programs to expose customers to funding, such as from air or water agencies to support efforts. IOU Calculated sub-program managers will scan the programs offered by CEC, ARB, Air Quality Management Districts, and other government agencies to capitalize on opportunities to share program information, marketing collateral and financial incentive analysis with customers. Conventionally, each government agency and utility has operated natural resource and energy programs independently, missing opportunities to serve customers who must manage more than one resource type. For customers who are regulated by or interested in more than one resource issue, CEI will inform customer about the mutual benefit of combining complementary resource programs.

In the effort to promote CEI, IOUs will seek out customers interested in complementary resource programs such as provided by water and air quality agencies. With respect to water conservation, utility program managers will contact the local water districts to share marketing collateral, attend trade shows, co-release notices, for programs with interactive water and energy effects. Similarly, with ARB and Air Quality Management Districts, IOUs will offer customers Calculated sub-program incentives for energy efficient equipment that may also reduce air emissions.

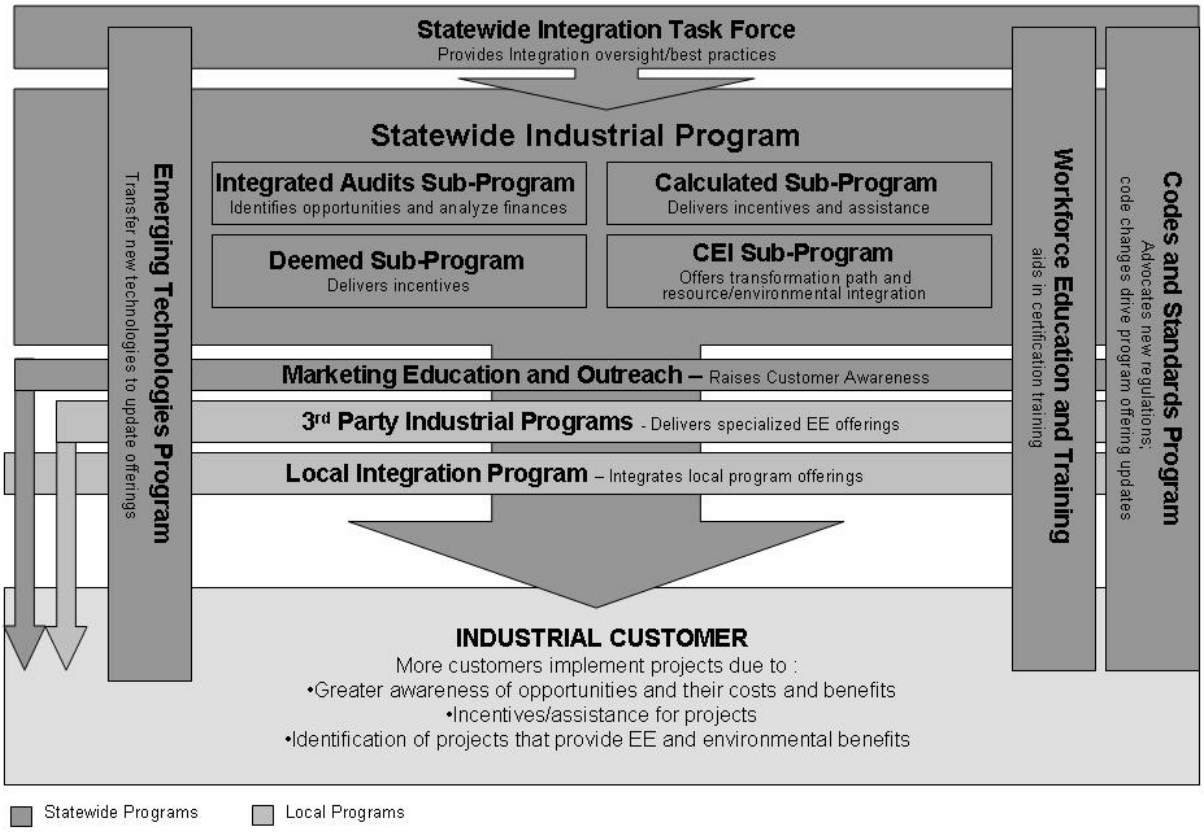
g) Pilots

SoCalGas has no pilot programs currently planned. New pilot concepts, collaboration with DOE, co-funding and other innovations to motivate energy efficiency measure implementation will be evaluated and coordinated with the statewide team.

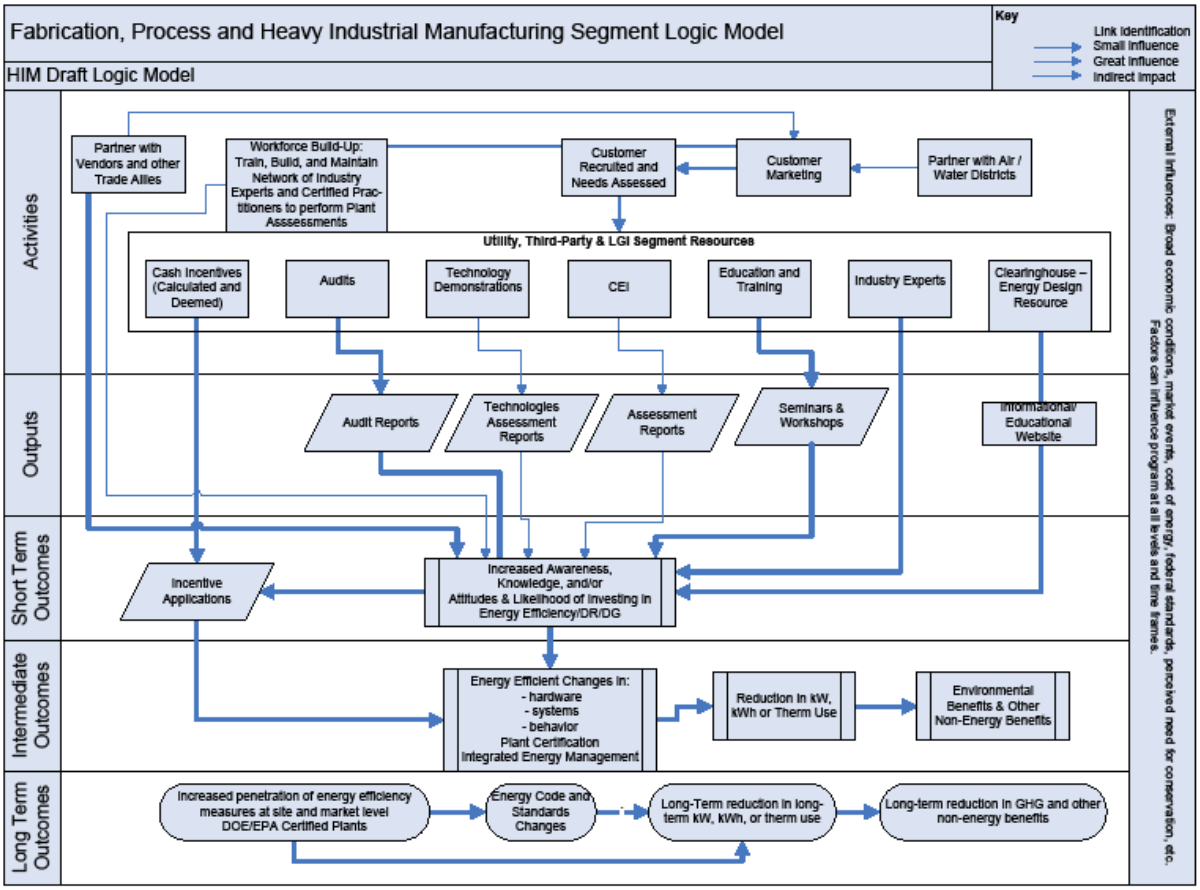
h) EM&V

Not applicable to this sub-program at this time.

7) Diagram of Program



8) Program Logic Model



Appendix 1
Summary Table
CA Energy Efficiency Long Term Strategic Plan – Industrial
[fix format to landscape in final]

Ref #		Strategies	Strategic Plan Goal	Statewide Utility Strategy	Testimony Reference Page
Goal 1: Integration with Other Resource Strategies					
1-1	Support CA industry's adoption of EE by integrating EE savings with achievement of GHG goals and other resource goals	Develop coordinated energy and resource management program for CA's industrial sector, to enhance use of energy efficiency	Establish CARB AB 32 Industry Team	As appropriate, initiate or participate in interagency task force to explore key opportunities to coordinate CA's regulatory, energy and water rules, programs, and incentive mechanisms.	
			Study feasibility of implementing negotiated agreements	Work with CARB interagency team to explore the applicability of negotiated agreements for CA's marketplace, as well as voluntary certification programs such as the ANSI plant certification	

				program that will be piloted in CA	
			Undertake pilot program with food processing sector	Utilize the food processing pilot to explore how a Continuous Energy Improvement approach (voluntary top down corporate commitment, 360 degree assessment and benchmarking, resource utilization reduction goal setting, and metrics and tracking...) can be integrated with air, water, GHG, and other resource management goals to improve uptake and cost effectiveness.	

Goal 2: Certification Program for Continuous Improvement

2-1		Participate in DOE/EPA's national Plant Energy Efficiency Certification Program (E^2).	Participate in planning process.	Actively coordinate with the national efforts and teams developing the tools, metrics and	

				methodologies for ANSI plant certification. Coordinate with the CEC to plan a sequence of WET classes to support a workforce that can support this certification program as defined. (see 2.3)	
2-2		Implement certification	Plan pilot and recruit host sites (8-10 facilities).	Utilize newly developed tools and templates for CEI to refine pilot design, budget, timelines, partners, and outcomes with other IOUs, the CEC, DOE, SEPP ANSI and ISO. Select candidates in industrial, FP, wine segment and initiate pilot. If available, Test monitoring	
			Implement and analyze pilots.		
2-3		Develop and implement workforce training	Adopt the national curriculum for certification.	Closely coordinate with SEP to ensure agreement on	

				certification requirements	
		program (integrated with national training effort).	Consider curriculum enhancements for awareness-level training on integrating energy efficiency into the workplace and developing a new curriculum to fast track for future energy management professionals	Coordinate with SEP in development of curriculum. When available, integrate into training courses in CA. Coordinate with CEC to lay the groundwork for DOE industrial training sequences required for certification	
			Begin pilot courses with key industry segments.		
2-4		Create tracking and scoring systems to measure resource efficiency improvements.	Develop systems.		
			Implement on test basis.	As part of the CEI toolkit, Plant Certification pilot in industry and FP, and through the ET work on Enterprise Energy Management, develop tools and resources to facilitate industry's tracking and management of energy and	

				other resources	
2-5		Implement ME&O program to educate industry and consumers	Form industrial collaboration mechanisms.		

Goal 3: Single Clearinghouse

3-1		Compile technical and resource management regulatory materials into centralized assistance repository	Inventory existing sources for technical and regulatory assistance for industrial energy efficiency and other environmental resource targets.	Establish a statewide team to identify and compile industrial and agricultural program information, technical resources, ET research and studies, and best practices for clearinghouse, on energy and other resource programs. Include financing programs.	
			Identify and incorporate priority energy and other data		

			Develop clearinghouse or integration system.	Utilize the Energy Design Resources statewide funded website to expand content to include industrial and Agriculture content, including emerging technologies and industry specific research. Link users to other non-CA resources and websites where they are comprehensive.	
3-2		Conduct statewide marketing and education effort to create demand for Industrial Information clearinghouse.	Develop ME&O Plan.		

2009 – 2011 Energy Efficiency Programs
Agricultural EE
Program Implementation Plan

1) Program Name: Statewide Agriculture Program
   Program ID: TBD
   Program Type: Core program

2) Projected Program Budget Table

Table 1[1]

Program #	Main Program Name/Sub-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	Market Sector Programs					
	SCG SW Agricultural Program					
	#SW-AgA - Calculated	$ 325,625	$ 524,933	$ 5,136,018	$ -	$ 5,986,576
	#SW-AgB - Deemed	$ 130,125	$ 834,584	$ 20,639,062	$ -	$ 21,603,771
	#SW-AgC - Nonresidential Audits	$ 84,177	$ 11,007	$ 81,337	$ -	$ 176,521
	#SW-AgD - Pump Test & Repair	$ 73,200	$ 3,150	$ 190,189	$ -	$ 266,539
	#SW-AgE - Continuous Energy Improvement	$ 64,223	$ -	$ -	$ -	$ 64,223
	TOTAL:	$ 677,351	$ 1,373,674	$ 26,046,606	$ -	$ 28,097,630

These budget numbers are presented in Appendix C: Energy Division Tables, Graphs & Pie Charts: Table 7.1 - 2009 - 2011 IOU Strategic Planning Program Budget

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

3) Projected Program Gross Impacts Table[2]

Table 2

Program #	Main Program Name/Sub-Programs	2009-2011 Three-Year EE Program Gross kWh Savings	2009-2011 Three-Year EE Program Gross kW Savings	2009-2011 Three-Year EE Program Gross Therm Savings
Market Sector I	**Market Sector Programs**			
	SCG SW Agricultural Program			
	#SW-AgA - Calculated	0	0	3,456,829
	#SW-AgB - Deemed	0	0	4,050,263
	#SW-AgC - Nonresidential Audits	0	0	0
	#SW-AgD - Pump Test & Repair	0	0	0
	#SW-AgE - Continuous Energy Improvement	0	0	0
	TOTAL:	**0**	**0**	**7,507,092**

These savings values are presented in Appendix C: Energy Division Tables, Graphs & Pie Charts: Table 7.2 - IOU 2009 - 2011 Program Savings Estimates

4) Program Description[3]

a) Describe program

The Statewide Agriculture Program offers California's diverse agricultural customers a statewide-consistent suite of products and services to overcome the market barriers to optimized energy management. The program targets integrated energy management solutions, including energy efficiency (EE), demand reduction (DR), and distributed generation (DG), through strategic energy planning support, technical support services, such as facility audits, pump tests, calculation and design assistance, and financial support through rebates and incentives. The Program adopts and supports the strategies and actions of the Agriculture and Industrial chapters of the California Long-Term Energy Efficiency Strategic Plan (Strategic Plan).

Targeted end-users include agricultural growers (crops, fruits, vegetable, and nuts), greenhouses, post-harvest processors (ginners, nut hullers, and associated refrigerated warehouses), and dairies. Food processors targeted through each utility's program efforts may also include fruit and vegetable processors (canners, dryers, and freezers), prepared food manufacturers, wineries, and water distribution customers. As described in the market characterization summary below, market sub-segments in this Program vary widely and require targeted strategies.

[2] For all-electric IOUs, the therm column should include interactive effects.
[3] To be provided for overall program (explaining how sub-programs form a coherent plan) and for each sub-program.

Market Characterization

Irrigated Agriculture: According to the California Energy Commission (CEC), agriculture consumes approximately 7 percent[4] of total statewide electricity and approximately one percent of total statewide natural gas[5], consisting primarily of a broad mix of smaller accounts. Irrigated agriculture represents an estimated 80 percent of this electricity and demand and 73 percent of this natural gas demand ; Energy is predominately used to lift, move, and pressurize irrigation water. Increased reliance on ground water is increasing energy intensity, giving high priority to improving the current average pumping efficiency from 53 percent towards the technical potential for 68 -70 percent through optimizing pump operation. Increasing pressures from international competition, land and water use policy decisions, labor force uncertainties, and consolidation of smaller family farms into larger agribusiness enterprises make this segment increasingly receptive to new technologies and practices balanced by financial concerns from risks of crop failure.

Greenhouses: This specialty segment is in transition from the cut flowers industry to ornamental plants and vegetable transplants. Increased mechanization in this segment, and consolidation, presents opportunities for energy efficiency. Top opportunities for energy savings are in boiler improvements, building envelope improvements, and temperature control enhancements such as heat curtains.

Dairies and Confined Animal Feeding Operations: California's more than 1,900 dairies are primarily located in Tulare, Fresno, Kern, Merced, Stanislaus, and San Joaquin counties. Dairy farms are consolidating, with larger farms facing increased regulatory challenges related to air and water quality, creating opportunities for the adoption of new technologies and practices. Energy efficiency opportunities are focused in refrigeration, ventilation, and waste handling. Benchmarking will be developed as a key foundational activity to drive customer awareness and continuous energy improvement. Improved dairy waste management offers significant potential for distributed generation, as well as potential reduction of air and water quality problems, and the capture and sale of greenhouse gas credits. Like dairies, feedlots and poultry operations for meat and egg production face recent food safety and regulatory attention that may make them more receptive to new technologies and practices for improved efficiencies and waste to energy opportunities. Animal waste streams within this segment offer biogas development potential.

Post-Harvest Processing Facilities: Post-harvest facilities associated with or near agricultural growing facilities are used to process, package and store agricultural

[4] 1980-2005 California Electricity Consumption by Sector - California Energy Commission, http://www.energy.ca.gov/electricity/consumption_by_sector.html
[5] CEC Natural Gas Assessment Update, Feb 2005, Pg 9
http://www.energy.ca.gov/2005publications/CEC-600-2005-003/CEC-600-2005-003.PDF

commodities, such as cotton ginners, nut harvesters and bag-houses, and fruit and vegetable packing plants. Their operations are typically seasonal, driven by harvest schedules. Nut hullers are a growing market due to new more productive strains of almonds. Key technical opportunities in this segment include industrial refrigeration improvements and process improvements.

Food Processing, General: Food Processing includes breweries, meat and poultry processing, dairy processors (e.g., creameries), canned, dried or frozen fruits and vegetables, grain products, baked goods, sugar and confectionary products, oils, snack manufacturing, soft drink manufacturers, and seafood processing. The market is characterized by a small number of large users representing a disproportionate percentage of the energy consumed, offering an ideal opportunity for delivering a large customer strategy. The segment has high energy-intensity in relation to profit margins and is highly seasonal, with the majority of natural gas and over half of the electricity used during the peak summer season. Increased global competition and environmental regulations like AB32 position this market for reductions in energy, water, emissions, greenhouse gasses, and raw materials. An integrated resource management strategy, focusing on long-term continuous improvements, is expected to improve energy efficiency performance in the segment. The majority of the energy savings potential comes from process system improvements such as in refrigeration, boilers and steam systems, process heating and drying, compressed air, and motors. Distributed generation and demand reduction opportunities include using waste heat/steam for production processes such as refrigeration, turbine drive systems, pasteurization, cooking and heating.

Food Processing, Wineries: California's more than 2000 wineries produce 90 percent of all US wine. The segment is comprised of a small number of very large wineries and conglomerates, and a large number of small and medium facilities. This environmentally progressive segment of tightly knit and organized peer-to-peer networks has established environmental programs and web-based environmental benchmarking tools, and has launched a winery carbon calculator to support energy efficiency. The wine segment offers a model for other agricultural segments to follow. These efforts have been led by the California Sustainable Winegrowing Alliance (CSWA), who is eager to continue working with interested IOUs on outreach, education and training, benchmarking, and dispersion of best practices in resource management including energy, water, air and GHGs. Energy savings potential is predominantly in refrigeration, pumping, and water heating and treatment. The wine segment's demand peaks in summer and fall, related to refrigeration during crush, making refrigeration improvements especially attractive. Emerging technologies uptake has been strong.

Food Processing, Refrigerated Warehouses: Refrigerated warehouses are highly specialized, energy-intensive, technology-oriented facilities focused on staying competitive with operators in nearby markets. They are comprised of, or associated with, wholesale facilities, public and private refrigerated warehouses, food and beverage processors, and perishable product cooling and packaging operations. As they handle a

wide variety of seasonal products, loads can vary dramatically between facilities. Significant energy savings opportunities exist in facility retrofits and retro-commissioning and improved new facility design, as captured in the Agricultural Strategic Plan. Activities identified in the Agricultural Strategic Plan include expanded education and training and best practices dissemination directed at facilities designers and operators, the refinement of the DOE-2R energy modeling tool utilizing national funding and support, and incorporating codes and standards. The ability to drive refrigeration loads through peak periods with controls software has shown great initial success in the 2006-2008 program cycle for demand reduction. In addition, waste heat refrigeration and hybrid refrigeration systems show significant potential for demand reduction and GHG reduction.

To address the potential in these markets, the Statewide Agriculture Program includes five core Statewide Sub-Programs:

1. Non-Residential Audits
2. Calculated support services and incentives
3. Deemed rebates
4. Continuous Energy Improvement
5. Pump Test

Each utility also offers local program elements, further described in Section 6, that complement and enhance this core offering to account for regional and market segment differences. As described below and throughout the filing, together these offerings are designed to not only overcome the traditional market barriers to energy efficiency, but also use efficiency to advance demand reduction, distributed generation, and integrated resource management opportunities uniquely suited to the Agricultural and related food processing segments.

1. Nonresidential Audits, including basic audits, Integrated Audits, and Retro-Commissioning (RCx) audits, provide an inventory of technical project opportunities and financial analysis information that can be used to support a customer's short- or long-term energy plan, and overcome both informational and technical customer barriers. Details distinguishing each non-residential audit offering are provided in section 6.1 below.
2. The Calculated program offering provides standardized incentives for customized and integrated energy efficiency/DR projects in new construction, retrofit, and RCx projects, and offers comprehensive technical and design assistance for each. It overcomes information, technical, and financial barriers. As a more customized calculation method that can consider system and resource interactions, it will also be the preferred approach for supporting the integrated, whole system, and multi-resource management strategies of the Strategic Plan. Details on the Calculated sub-program are provided in section 6.2 below.

3. The Deemed rebate offering provides utility representatives, equipment vendors, and customers an easy-to-use mechanism to cost- effectively subsidize and encourage adoption of mass market efficiency measures through fixed incentive amounts per unit/measure for energy saved/projects installed. While Deemed rebates lend themselves well to penetrating the small and medium customer market, they are also a cost effective and efficient way to process large customer projects targeted through large customer strategies. Details on the Deemed sub-program are provided in section 6.3 below.
4. Continuous Energy Improvement (CEI), a non-resource sub-program, describes a collection of strategic planning tools and resources that lay the groundwork for long-term integrated energy planning and serve as a launching platform for other utility and non-utility programs and services. Through analysis, benchmarking, long-term goal setting, project implementation support, performance monitoring, and potentially access to energy management certification offered through evolving Department of Energy (DOE) and International Organization for Standardization (ISO) efforts, CEI aims to transform the market from a "project-to-project" approach toward a continuous improvement pathway. In support of the Strategic Plan, the CEI approach also sets the stage for non-energy resource integration, such as greenhouse gas (GHG) reduction, water conservation strategies, and regulatory compliance. Details on the Continuous Energy Improvement sub-program are provided in section 6.4 below.
5. Pump Test: Because pumps account for an estimated 80 percent of the electric load and 73% of the natural gas load in California's agricultural segment, the Pump Test sub-program aims to overcome key informational, technical, and financial barriers to pump optimization by offering pump tests, repair incentives, and targeted education, training and technical support for customers and pump companies. Each IOU's database of pump test results will be used in the near-term to target pumps in need of repair as a means to capture savings. However in the mid-term, this pump performance data aggregated at the statewide level will contribute to the development of metrics and targets for pump improvements, in support of the pumping focus in the Agricultural Strategic Plan.

When developing program metrics and targets for each sub-program element, each utility will consider, as available, market potential, past program participation rates, current economic conditions, work-paper and baseline updates, and regional customer mix. As discussed at length in the Agricultural Strategic Planning process, there is relatively little statewide market data on the Agriculture segment, which will be addressed through the statewide market characterization effort described in the Agricultural Strategic Plan. The results of this market characterization will provide key baseline data to support robust metrics and segment targets towards market transformation. Through this effort and others, the IOUs will assist the CPUC in collecting data in pursuit of meaningful metrics.

Furthermore, as there are varying levels of utility experience in delivering market-segment based programs, the IOUs will utilize the Statewide IOU Coordination process for the Statewide Agriculture Program, described in detail in Section 6.0, to share successes, lessons learned, and best practices in the pursuit of optimized program strategies, program targets and metrics.

Statewide coordination and planning between utility program planning staff, utility functional departments, government agencies, and other key partners and stakeholders will also be critical to the advancement of the Strategic Plan. Leveraging national and state initiatives, tools, and resources to manage energy and resources—including greenhouse gasses, air quality, and water—is a critical path to optimizing the potential for California's agricultural and food processing segments. As described in full in PIP section 6.0f and 6.0g, the Statewide Agriculture Program design includes staged integration and coordination with existing non-utility programs, initiatives, and regulations today—and later will coordinate with and support advancements in integrated resource planning, energy management certification offered through the DOE, industry benchmarking, workforce education and training, and sharing of industry best practices.

IOU program experience from 2006-2008 indicated that Agriculture and Food Processing markets are well suited to integrated energy strategies including demand reduction and distributed generation. As described in Sections 6.1, 6.2 and 6.4, Non-Residential Audits, the Calculated sub-program and the Continuous Energy Improvement sub-programs all support proper integration of energy efficiency with optimizing a customer's energy use. And, as described in 6.0e, detailed customer segmentation and the development of new tools and marketing resources underway will support increased integration in 2009-2011.

For distributed generation, the Statewide Agriculture Program will support appropriate integrated marketing opportunities for distributed generation from biogas, biomass, back pressure steam turbines, solar, fuel cells, and wind, as well as ag-based community-scale generation projects. These efforts support customer needs and wants, state renewable energy targets (through newly available small generator Power Purchase Agreement contracts), AB32 greenhouse gas reduction targets, and emerging carbon markets and offset programs (such as the Chicago Climate Exchange). Consistent with California's preferred loading order, however, the utilities will continue to aggressively market and support energy efficiency first, as California's most cost-effective energy resource, while also being mindful of the customer's ultimate interests and goals.

Marketing and sales strategies, as described in full in section 6.0.b.iv, will be coordinated as appropriate statewide, and will include a variety of strategies and approaches to address the varied needs and customer profiles found in the diverse market segments. Mass market approaches – from industry partnerships, to integrated deemed measure media campaigns, to the design of the Pump Test sub-program – are designed to deliver volume and reach small and medium customers while minimizing program costs. Large customer strategies, such as Non-Residential Integrated Audits and Strategic Planning

support, will be delivered through IOU Account Representatives, consultants, and third parties, and will focus on optimizing integration, delivering comprehensive savings, and supporting continuous energy improvement practices.

b) List of measures

Technologies addressed through this program effort are varied, and include pumping, refrigeration, process loads, process heating, and lighting. Incentive levels will be those offered through Calculated and Deemed sub-programs, described in full in section 6.2 and 6.3. In brief, Statewide incentive levels for the Calculated sub-program are as follows:

Measure Type	Incentive level (kWh/kW)
Lighting	.05 cents per kWh + $100/pk kW
AC and refrigeration	.15 cents per kWh + $100/ pk kW
Motors and others	.09 cents per kWh + $100/ pk kW
Gas measures	$1.00 per therm

The Deemed sub-program offers itemized retrofit measures with prescribed energy savings and incentive amounts. These measures are categorized under the following end uses:

- Food service
- Refrigeration
- Industrial
- High efficiency water heating
- Pipe and tank insulation
- Steam traps
- Greenhouse curtains and infrared film

The Statewide IOUs will also explore the development of a statewide consistent Deemed measure catalog that includes measures specific to the Agriculture and Food Processing end-users.

c) List non-incentive customer services

The Statewide Agriculture Program will include a wide variety of non-incentive program services intended to support customer strategic planning, educate and train customers and the workforce about energy efficiency, and provide customized technical and project support. As described in PIP Section 6.0a, the Program will coordinate with the crosscutting programs to deliver and optimize these non-incentive program services. The service list includes:

- Non Residential Audits
  - Basic audits
  - Integrated audits
  - RCx audits

- Continuous Energy Improvement (CEI)
  - Energy management assessments
  - Energy planning
  - Baselining and benchmarking
  - Project implementation support
  - Customer recognition
  - Resources on Energy Design Resources website

- Customer Education and Training
  - DOE Basic, Intermediate and Specialist Training on industrial steam systems, process heating, pumps, motors and compressed air,
  - Other industrial process systems training
  - Ag pumping efficiency seminars
  - Workshops merging regulatory compliance with energy efficiency opportunities, (such as with NOX compliance and boiler retrofits)
  - Integrated industry-focused workshops, such as for wineries, dairies, greenhouses, and food processors

- Workforce Education and Training
  - Utilities will coordinate with the Statewide WE&T crosscutting program element to provide training in support of the Superior Energy Performance (SEP) ANSI and ISO energy management Certification, per the Strategic Plan.
  - Title 24 Training, such as for refrigerated warehouses
  - Industrial refrigeration best practices (for designers), in support of the Strategic Plan focus on refrigeration

- Pump tests and technical support

- Design assistance and calculation support

5) Program Rationale and Expected Outcome[6]

a) Quantitative Baseline and Market Transformation Information

[6] To be provided for each program and sub-program in PIP.

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

Market transformation is embraced as an ideal end state resulting from the collective efforts of the energy efficiency field, but differing understandings of both the MT process and the successful end state have not yet converged. The CPUC defines the end state of MT as "Long-lasting sustainable changes in the structure or functioning of a market achieved by reducing barriers to the adoption of energy efficiency measures to the point where further publicly-funded intervention is no longer appropriate in that specific market."[7] 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[8].

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[9]. Markets are social institutions[10], 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[11] 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[12]. According to York[13], "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."

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[7] California Public Utilities Commission Decision, D.98-04-063, Appendix A.
[8] California Public Utilities Commission (2008) *California Long Term Energy Efficiency Strategic Plan,* p. 5. Available at http://www.californiaenergyefficiency.com/docs/EEStrategicPlan.pdf
[9] 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
[10] 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/
[11] 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.
[12] 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.*
[13] York, D., (1999). "A Discussion and Critique of Market Transformation", Energy Center of Wisconsin. Available at http://www.ecw.org/ecwresults/186-1.pdf.

The question of what constitutes successful transformation is controversial because of a Catch-22: Market transformation is deemed successful when the changed market is self-sustaining, but that determination cannot be made until after program interventions are ended. Often, however, the need for immediate energy and demand savings or immediate carbon-emissions reductions will mean that program interventions may need to continue, which would interfere with the evaluation of whether MT is self-sustaining. Market transformation success has also been defined in terms of higher sales of efficient measures than would have otherwise occurred against a baseline absent of program interventions. The real world, however, provides no such control condition. Evaluators must estimate these baselines from quantitative factors such as past market sales that may be sparse and/or inaccurate - particularly for new products. Evaluations must also defer to expert judgments on what these baselines may have been as well as on the degree of successful market transformation[14]. 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[15], 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[16]. 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[17]. 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.)[18]" The Strategic Plan recognizes that regulatory policies are not yet in

[14] 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
[15] Rogers (1995) Diffusion of Innovations, 5th Ed.
[16] Example in bottom chart of this graphic from NYTimes: http://www.nytimes.com/imagepages/2008/02/10/opinion/10op.graphic.ready.html
[17] Sebold et al (2001) p. 6-5,
[18] 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.

place to support the success of market transformation efforts[19], but also reflects the CPUC's directive to design energy efficiency programs that can lay the groundwork for either market transformation success or for codes and standards changes.

Above all else, the hallmark of a successful market transformation program is in the coordination of efforts across many stakeholders. The most successful MT programs have involved multiple organizations, providing overlapping market interventions[20]. 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[21] 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.

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

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

[19] CPUC (2008) Strategic Plan, p. 5.
[20] Nadel, Thorne, Saches, Prindle & Elliot (2003).
[21] Peloza & York, (1999).

The improvement in agricultural pump efficiency measured in terms of overall pumping efficiency (OPE) is proposed as a market transformation metric for the agricultural sectors. OPE captures the efficiency of the pumping system. It does not address the design and operation system that is being supplied by the pump. The IOUs will continue data on OPE in the statewide pump test program. The below chart, whose exact origin is unknown but has been used in both PG&E and SCE literature since the 1990s, suggests, for a particular pump size, what level of efficiency can be considered low, fair, good, or excellent.

This table provides an example basis for creating OPE metrics for pumps of varying sizes; the number and motor hp listed are not necessarily being put forward as metrics. Other available databases also contain information on OPE. Evaluators could analyze these data sources to create baseline OPE metrics and revisit the database periodically to identify changes over time.

OVERALL PLANT EFFICIENCY RANGES WIRE TO WATER					
Motor HP	**Low**	**Fair**	**Good**	**Excellent**	**Booster**
3 –5	41.9 or less	42 – 49.9	50 – 54.9	55 or above	55
7.5 – 10	44.9 or less	45 – 52.9	53 – 57.9	58 or above	58/60
15 – 30	47.9 or less	48 –55.9	56 –60.9	61 or above	60/65
40 – 60	52.9 or less	53 – 59.9	60 – 64.9	65 or above	65/70
75 – up	55.9 or less	56 – 62.9	63 – 68.9	69 or above	70 /72

*Submersible Well Less an additional 3%

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

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

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

Therefore, for the Agricultural sector, the following approach to quantitative baseline and market transformation information is as follows.

Table 3

Agricultural Sector Baseline Metrics		
Metric A	Metric B	Metric C
Agricultural pump efficiency measured in terms of overall pumping efficiency	Change in AKA of sector toward EE based on a survey of audit participants "What EE practices have you built into your business model when considering capital improvements?"	Change in behavior of sector based on a scale developed to measure (EE/green) behaviors in businesses

b) Market Transformation Information

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

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

Table 4

	Agricultural Sector Internal Market Transformation Planning Estimates		
	2009	2010	2011
Metric A	Upward moving average over time	Upward moving average over time	Upward moving average over time
Metric B	Upward moving average over time	Upward moving average over time	Upward moving average over time
Metric C	Upward moving average over time	Upward moving average over time	Upward moving average over time

c) Program Design to Overcome Barriers

The 2009-11 Statewide Agricultural Program builds on past program successes and best practices to overcome both common and unique barriers to efficiency in the segment, including:

- Agricultural barriers:
  - Ag is a diverse and geographically widespread sector, dependent on regional resources for information, and traditionally resistant to change
  - Capital constraints, combined with variable commodity pricing, limit the availability of funds for investing in projects.
  - Low energy costs relative to other operating expenses reduces the motivation to invest in energy efficiency.
  - Regulatory compliance issues further strain limited internal resources.
  - Lack of awareness of the benefits of energy efficiency, and uncertainty and skepticism over long-term energy and cost savings hinders investment.

- Food processing and industrial refrigeration barriers
  - Few firms maintain facility level energy managers, and finding technically qualified staff is an ongoing challenge.
  - Regulatory compliance issues further strain limited internal resources.
  - International competition drives short-term survival attitudes versus a long-term continuous improvement approach.
  - The industrial refrigeration industry lacks design standards and best practices, resulting in substandard design and maintenance.
  - Huge capital outlay requirements in industrial refrigeration can delay or offset efficiency projects.
  - Efficient design alternatives can be lost in low-cost bidding scenarios.
  - Whole system opportunities are missed by individual equipment vendors.
  - Customers are often not aware of systems operating sub-optimally.

The Statewide Agriculture Program considers these unique barriers, among others, in all aspects of program design, including marketing strategies, trade ally outreach plans, and specific mix of services offered.

Marketing and Delivery Channels: To specifically address this highly diverse and dispersed group of agriculture, food processing and related water customers, utilities will continue to foster strategic partnerships with industry and commodity groups, as well as with regional farm and food associations, to engage in a multi-faceted approach to marketing energy efficiency practices and programs to targeted users. Such an approach is recommended by the 2005 ACEEE report *Energy Efficiency Programs in Agriculture; Design, Success, and Lessons Learned*. These strategies leverage both past program successes as well as best practices studies that have confirmed that the targeted market segments rely substantially on local and industry-specific organizations for information and support.

The key food processing industry association partnerships include the Wine Institute's California Sustainable Winegrowers Alliance and the California League of Food Processors, who will be leveraged to reach large and small customers with key messages and emerging technologies information - through association communications, presence at industry conferences and trade shows – and to pursue mutually advantageous benchmarking and pilot opportunities. To reach the more broadly dispersed agricultural segments, the IOUs will coordinate with the state and regional farm bureaus on communicating program offerings in the Ag Alert newsletters, through regional meetings, through market sector workshops and trainings, and through media plans targeting ads and articles in trade publications.

This broad-based marketing will complement the more targeted efforts of utility account representatives who can further promote specific utility programs and resources. Other marketing efforts include both phone and web-based customer support and outreach as well as the promotion of site-based or web-based audits.

In support of the Strategic Plan as discussed in section 5.f, utilities will be inventorying and coordinating all relevant agriculture and food processing technical and programmatic resources into a centralized one-stop shopping clearinghouse on the enhanced statewide Energy Design Resources website. There will be a dedicated page for agriculture.

Continuous Energy Improvement: The long-term strategic energy planning approach of CEI, especially the emphasis on benchmarking, goal setting, and performance tracking, will help customers overcome short-term attitudes. CEI also fosters integration of non-energy business objectives into energy planning and leveraging of the co-benefits of water conservation, GHG reduction, and other relevant issues. This integration elevates the importance of energy efficiency and improves uptake and market penetration. In

addition, top-down corporate attention and tracking of energy performance will positively affect facility staff performance.

Trade Allies/Workforce Education and Training: Customers in the agriculture and food processing markets often treat vendors, designers, and engineers as ad hoc outsourced technical resources and go to them first for everything from new equipment design to emergency equipment repair or replacement. Because these transactions often happen without utility knowledge, it becomes critical to continually inform and equip these vendors about efficiency technologies, practices, programs, and rebates. Vendor Participation Agreements, training, and outreach collaboration allow participating vendors to up-sell customers to efficient options and differentiate themselves on energy efficiency. Utilities gain an additional sales force in the field with customers, minimizing lost opportunities.

Technical Support Services – Audits, Pump Tests, Calculated support: The role of the utility as an unbiased, trusted energy advisor cannot be overstated, both in evaluating proposed vendor projects and in identifying new technical opportunities in retrofit and new construction projects. The combination of technical support and the availability and commitment of approved utility incentive funds – based on a rigorous technical review and followed by an EM&V process – are essential drivers to overcome key customer barriers, including the lack of in-house technical resources and the tendency for efficiency options to get eliminated in low-cost vendor bidding scenarios.

Utility technical resources evaluate customer project opportunities and recommend design alternatives, including energy savings, cost savings, and available rebates and incentives for exceeding program baselines. Moving forward, utilities will also be exploring providing regulatory benefits and opportunities for CO_2 reductions and non-energy benefits, such as production and safety data. The calculated approach provides for a "whole systems" integrated approach (such as incorporating controls and optimization with other systems). This technical data, in conjunction with financial data like payback periods, net present value, and/or ROI, allows facility managers to easily "sell" efficiency projects internally to management. Incentives improve ROI, accelerate project schedules, and can prevent efficiency options from being "value engineered" out at a later time.

Retro-Commissioning (RCx) services, an innovative program offering, help identify sub-optimal systems and improve operating performance. Because RCx focuses on improving existing equipment, rather than installing new equipment, it has an added benefit of allowing many projects to be funded through operating budgets, or through IOU On Bill Financing, overcoming a common financial barrier related to capital budget approvals. Incentives sweeten the project opportunity, while RCx also requires a customer to complete any project with less than a one-year payback, improving the uptake of projects.

d) Quantitative Program Targets

Table 5

SW Agricultural Sector Program	Program Target by 2009	Program Target by 2010	Program Target by 2011
Audits and Pump Tests			
Basic Audits	25	25	25
Integrated Audits	3	3	3
RCx Audits	2	2	2
Pump Tests	75	75	75
CEI Indicators			
CEI Workshops	1	2	2
Large Customer CEI Commitments	1	2	2
Benchmarks Completed	1	2	3
Training			
DOE Industrial Trainings	4	4	4
Pumping Seminars	2	2	2
Segment Specific Workshops	1	2	2
Compliance-Oriented Workshops	3	3	3
Title 24 Training			
Incentives			
Number of Deemed Projects	30	30	30
Number of Calculated Incentive Projects	20	25	35
Total Customer Incentive Payments	$1.5M	$1.9M	2.4M

e) Advancing Strategic Plan goals and objectives

The Statewide Agriculture Program teams supported the development of the Strategic Plan, and the 2009-11 program design aggressively supports the goals and strategies within it. Specifically, the following actions will be advanced during the 2009-11 program cycle.

Goal 1: Energy Efficiency Knowledge Database
1.1 Develop knowledge base of efficiency solutions. Conduct an energy use characterization and efficiency potential study for the statewide agricultural market.

Include potential for waste streams to offset energy consumption. Study plan (6/2009) and study completed (12/2010).

Utilities will continue to coordinate with the California Energy Commission (CEC), CPUC, and other resources as necessary to identify a study plan, scope, and deliverables for a statewide agricultural market characterization that considers integrated energy opportunities in the segment. If possible, the plan shall be coordinated with other agricultural characterization plans planned or underway in the state focusing on renewable energy potentials, such as the California Department of Food and Agriculture's strategic plan for agriculture. The IOUs will defer to the CPUC and the CEC to determine the best method and timeline for this study, and will ensure coordination between each IOU's EM&V groups towards study objectives.

Such a marketing characterization will support the development of future program baseline data and metrics to help set targets and show market progress.

The resulting study will be posted on appropriate websites, including the IOU websites and the Energy Design Resources statewide website.

Collect data on key programs and measures, best practices for energy efficiency in the agricultural sector. Study complete (6/10)

Towards development of a "one stop shopping" clearinghouse of energy management and related information for the agriculture segment, the utilities will inventory all relevant existing technical information, best practices, continuous energy improvement resources, emerging technologies data, tools, programs, and other information for cleanup and organization on the statewide Energy Design Resources website.

1.2 Ensure workforce has information and training necessary to apply efficiency solutions. Conduct workforce training needs assessment and next steps (12/2010) Develop training curricula and modules identified by needs assessment. (12/2011)

In support of actions described in PIP section 6.0biii, utilities will assemble technical sub-groups, including utility and industry experts, to focus on the key technical focus areas identified in the Strategic plan: pumping, refrigeration and process heating. Coordinating with Statewide WE&T Program, the Statewide Agriculture Program will develop a scoping document that outlines training objectives and partners. The group will identify priority topics, resource needs and industry partners for key workforce education and training, and will closely coordinate with the national ANSI Superior Energy Performance standards development work towards workforce Certification. Additionally, utilities will offer prerequisite training to support future Department of Energy certification classes.

Workforce training needs assessment will ideally be included in the Agricultural market characterization study, and results will be communicated to the Statewide WE&T team for coordination and development of a detailed WE&T plan and associated curricula. Furthermore, marketing for WE&T will be incorporated into efforts described in PIP section 6biv. Such efforts, pending timely completion of the characterization study, are targeted for completion by the close of the 2009-11 program cycle.

1.3 Conduct research & development of new technologies and practices for agricultural efficiency. Conduct an Energy Technologies/ RD&D gap analysis. Identify and prioritize needed RD&D/ET projects. (12/2011). Coordinate research activities across government, utilities, agricultural extension and university programs, and equipment manufacturer proprietary efforts.

As described in PIP section 6.0bi, the IOU's Emerging Technologies teams will continue to closely coordinate with the California Energy Commission, universities, and industry associations to identify key potential areas for emerging technologies development and research needs. For agriculture, these areas include irrigation pumping, refrigeration, and process heating. Utilities will identify the most promising technologies that can play a role of providing multiple solutions, both for energy efficiency and greenhouse gas mitigation as well as water efficiency purposes. New emerging technologies showing potential will be added to the Emerging Technologies roadmap.

2.1 Set objectives and framework for agriculture to attain multi-resource management goals. Establish a task force to coordinate resource management policies, action goals, and program designs targeting California's agricultural sector. Identify where goal conflicts arise and resolve these conflicts. Assess potential for integrated approaches.

In support of statewide regulatory coordination, the IOUs are willing and available to coordinate with California Department of Food and Agriculture (CDFA), California Energy Commission (CEC), Environmental Protection Agency (EPA), CA Air Resources Board (CARB), and industry to establish a task force empowered to coordinate strategies and goals, and also assess the potential for integrated approaches, on behalf of their agencies.. In order to facilitate this complex, multi-agency coordination, intervention at the governor's level is likely to be required.

Other efforts planned by the Statewide Agricultural Program, such as the integrated resource management pilot described in Section 6g, will offer California's IOUs and regulatory agencies a case study to support the understanding of on-the-ground integration opportunities.

2.2 Coordinate technical assistance, funding, and incentive mechanisms. Identify the programs and major funding sources affecting the management of energy, air and water resources, and climate change. Create a collaborative forum to facilitate sharing of information and coordination of programs.

As the national economy continues to decline, optimizing all available financial resources in support of energy efficiency and other resource optimization will be increasingly important. In support of financial coordination, utilities will work with appropriate agencies and utilities, industry and private banking to assemble a comprehensive list of incentives, resources, funds, grants, loan products, and federal economic stimulus monies to support energy and other resource management objectives, to be made available to customers through the planned information Clearinghouse on Energy Design Resources.

In addition, financial resources will be integrated into Marketing and Outreach, Education and Training, and other program efforts as appropriate.

3.1 Make information on efficiency solutions readily available to motivate efficiency improvements. Develop benchmarking resources, tools and methods for the agricultural sub-sectors. Design and launch focused program for irrigation efficiency, refrigeration, and process heating

The IOUs will post all relevant market data, technical information, education and training resources, and benchmarking tools on the planned Energy Design Resources clearinghouse website. This information will cover all relevant technologies in the Agriculture and Food Processing segments, but will have a focus on irrigation efficiency, refrigeration, and process heating. The Continuous Energy Improvement sub-program will also support this near-term strategic plan strategy. On benchmarking, the IOUs will continue to work with industry associations (such as the Wine Institute, Almond Board, and Farm Bureau) to prioritize benchmarking needs and to develop tools and methods, as well as to market benchmarking once resources are available.

3.2 Conduct marketing & outreach to stimulate efficiency actions. Develop ME&O strategy, addressing communication channels, partners, and effective messaging. Begin pilot implementation

For details on marketing and outreach planned to stimulate efficiency actions, please refer to PIP section 6.0biv.

3.3 Resolve metrics for embedded energy in water savings. Update evaluation measurement & verification protocols to define energy impacts of water efficiency actions. Design and conduct appropriate water/energy efficiency pilots for agriculture.

In support of the significant efforts underway in California to conserve water resources, and to optimize public funds where energy and water converge, the utilities will work with the CPUC, water resources boards, and others to resolve metrics around embedded energy in water conveyance and treatment. Furthermore, IOUs will explore opportunities for saving energy on-site related to water, such as that in heating, cooling, pumping, and treating water. Lessons learned from current water-energy pilots underway in SoCalGas'

territory will be shared with the other IOUs. The IOUs are willing and available to work with the CPUC to advance these important multi-resource efforts through studies, pilots and partnerships with water agencies as appropriate.

6.0) Program Implementation – Overview

a) Statewide IOU Coordination

The Statewide Agriculture Program will coordinate to ensure the Program is continuously updated and enhanced throughout the three-year implementation cycle. This effort will include coordination of crosscutting program elements described in PIP section 6.0b, including Emerging Technologies, Codes and Standards, Workforce Education and Training, Marketing and Outreach, and Non-IOU programs and market initiatives. Each designated IOU program lead will be responsible for representing key updates from each crosscutting program element in order to discuss opportunities for Statewide program enhancements, modifications and further coordination as needed. IOU leads will then be responsible for incorporating program modifications at the IOU level to support statewide consistency when appropriate. Such items will be tracked in the meeting minutes to facilitate a record of statewide initiatives.

In addition, the five Agriculture Sub-Programs will be coordinated on a statewide level to unify the implementation of program aspects such as Program name, Program delivery mechanisms, Incentive levels, Marketing and outreach plans, and IOU program interactions. (For a detailed description of each of these program aspects and how they will be coordinated statewide, please refer to the Agriculture Sub-Program descriptions). The two coordination systems (one for the broad programmatic level and one designed for the sub-program level) will interact with and support one another. The broad, high-level coordination effort will be described below, focusing on how the IOUs will work together to effect the continuous improvement of the Statewide Agriculture Program.

The Statewide IOU Coordination process for the Statewide Agriculture Program will be as follows:

- Designate an IOU Program "Lead" – The coordination process will begin with each IOU designating a Statewide Agriculture Program lead. The IOU lead will represent one Agriculture sub-program and liaise with the crosscutting program element managers, investigating new innovations, special accomplishments, and challenges experienced by sub-program managers in all IOUs. Where such innovations or challenges show potential for impacting the Statewide Agriculture Program across multiple sub-programs or the Statewide program as a whole, the IOU lead will present such information to a quarterly Steering Committee meeting.

- Establish protocols for Steering Committee Meetings – The IOUs will coordinate to establish protocols around scheduling meetings, agenda setting, interstate travel, meeting minutes and tracking of action items identified.
- Hold Quarterly Steering Committee Meetings – The Agriculture Steering Committee will comprise all designated IOU leads (including at least one lead for each of the five sub-programs), and possibly other contributing stakeholders identified by the IOUs. At the quarterly Steering Committee meeting, individual innovations, challenges, and accomplishments experienced in one IOU or by one sub-program will be transmitted to all IOUs. The Steering Committee will evaluate these individual IOU and sub-program experiences, hear ideas for course corrections and overcoming challenges, replicate successful innovations for consistency statewide, resolve differences in implementation to stay unified, and measure the Agriculture program's progress against statewide metrics and goals.
- Adopt Program Enhancements – Once the Steering Committee agrees that a particular implementation policy or innovation has merit on a statewide level, each IOU lead will distribute the information to their sub-program managers for adoption and integration. Therefore, the IOU lead will act as a conduit, feeding sub-program information up to the statewide Steering Committee and distributing measures for adoption back to the sub-program managers. This feedback loop will assure consistency and unity in programmatic improvements across the IOUs. In some cases, it may be necessary to invite the sub-program managers to the Steering Committee meeting to get their feedback and ensure they receive the same message.
- Evaluate Program Enhancements Against Statewide Targets – To complete the adaptive management loop, the Steering Committee will track the program's accomplishment of statewide targets and goals to ensure that adopted program enhancements are generating their intended results. The Steering Committee will determine whether further course corrections are needed, and if so, rely on the above coordination process to generate the improvements necessary to stay on track.

The high-level focus of this statewide coordination effort will enable the capture of new innovations and opportunities for program improvement, correct program weaknesses that reveal themselves during implementation, and ensure achievement of statewide targets across IOU service territories. Therefore, statewide focus on program unity and continuous program improvement over the course of the three-year implementation cycle will be assured.

b) Program delivery and coordination

2009 – 2011 Energy Efficiency Programs
Agricultural EE
Program Implementation Plan

As described in 6.0a, the Statewide Agricultural program will utilize scheduled Statewide Agricultural Program coordination meetings as a vehicle to coordinate all crosscutting program efforts detailed below in sections 6.0bi through 6.0bix.

i. Emerging Technologies program

The long-term energy efficiency vision of California can only be attained through the continuous development, verification, and acceptance of new technologies into the market. IOU portfolio staff actively works with statewide emerging technologies staff to identify new emerging technologies, support evaluation and demonstration, develop and promote case studies, and market results to applicable customers towards total market penetration and eventual movement into code. The programs coordinate specifically with the CEC's PIER program, as well as universities, to feed market-ready and viable technologies into the ET portfolio.

The Agricultural Program is currently working to support a diverse list of emerging technologies including lean burn engine technology, ultra low NOx burners, wastewater treatment technologies, waste heat and hybrid refrigeration, dairy refrigeration advancements, industrial refrigeration design enhancements, field pre-cooling advancements, and solar thermal applications.

In addition, SoCalGas will work with the other IOU's to develop a roadmap (see Appendix 2) for incorporating emerging technologies into the Agriculture Program. This roadmap will track technologies/tools to be assessed, timeline to deployment, integration, codes and standards actions, expected actions of other players (such as manufacturers and Energy Star) and other related information. The SoCalGas Agriculture team will work with other partners to update and execute the roadmap, based on developments in technology, the program, and the market context. This roadmap is a "living" document and will be modified on a regular basis to reflect current conditions. SoCalGas will work with the other IOU's on this roadmap as a foundational document at the Statewide Agricultural Steering Committee meetings to support existing coordination efforts underway between IOU ET groups.

ii. Codes and Standards program

Following this order of development - 1) R&D to 2) Emerging technologies to 3) Incubation to 4) Mainstream - the program relies on the Codes and Standards program to maintain an updated and relevant list of measures that will support savings. As Codes and Standards impact measures, the program will act to align itself with appropriate offerings. Programs will include new offerings that will allow flexibility in adapting to changes in codes and standards, market trends, and technologies. Planned enhancements to Title 24 will be reflected in incentive levels and eligible measures and services. In the Agricultural program, current

work focuses on transitioning the market to accept new Refrigerated Warehouse code changes, and incorporating best practices and advanced refrigeration practices into that marketing and outreach effort. Towards that end, Agricultural Program staff will continue to coordinate closely with crosscutting Codes and Standards, Workforce Education and Training Teams, and industry partners and associations, and will utilize the Statewide Agricultural Steering Committee to enhance the coordination effort.

iii. WE&T Efforts

WE&T efforts support the education and training of a robust network of industry trade allies, vendors, engineers, design teams and others who can support the market transformation strategies of the Strategic Plan as described in section 5e. In the Agricultural and Industrial Programs, WE&T efforts will include those described in the Non-Incentive services listed PIP section 4c, including training on Title 24 code changes, industrial refrigeration best practices, and ANSI Superior Energy Performance certification. The latter will be contingent on program developments occurring at the national level. In the interim, the Statewide Agriculture program will support the same superior energy performance concepts and principals through Continuous Energy Improvement workshops available for customers and trade allies. Additionally, DOE process system trainings (process steam, process heating, pumps, motors, compressed air) will be offered by IOUs statewide to lay the groundwork for certification level classes once they have been developed nationally and are ready for rollout. The IOUs will be coordinating closely with national efforts and have expressed openness to discuss piloting certification classes. As a result, California will be poised to adopt this national standard and be a leader in this effort.

The education and training generally takes place through IOU energy centers, technology test centers, and education and training program offerings. Working with the Statewide WE&T team, the Agricultural program managers will also explore opportunities to provide training at local universities and academic institutions.

iv. Program-specific marketing and outreach efforts (budget provided in Table 1)

To optimize integrated demand side management opportunities in market-sector targeted programs, the IOUs are currently engaged in in-depth market segmentation analyses. Results of this work will be shared between the IOUs and be incorporated into detailed marketing and sales strategies to ensure the IOUs are targeting the right products to the right customer at the right time, and utilizing the right channels.
This foundational segmentation will evolve with incremental insight into customer mindsets, behaviors, responses and motivations to achieve the most

effective level of energy use. Based on this in-process segmentation analysis, the utilities will be able to focus on providing consistent marketing and overall messaging focused on customers business goals, unique needs, and specific environmental considerations.

The results of this strategic planning effort will help define - and refine - successful program outreach efforts to address the diverse agriculture, food processing and related water customers segments. As discussed in the marketing section of 5C, Program Design to Overcome Market Barriers, such efforts are customized to suit the unique needs of each segment and customer profile.

For example, utilities will continue to foster strategic partnerships with industry and commodity groups, as well as regional farm and food associations, to engage in a multi-faceted approach to marketing energy efficiency practices and programs to targeted users.

Specific efforts will include:

- Attending Farm Bureau and Agriculture focused association meetings and periodically publish Agricultural energy efficiency information in monthly newsletters
- Close partnerships with key industry associations, and participation in their annual conferences, with an effort to develop conference speaking engagements
- Presence at technical conferences, targeting customers and trade allies
- Targeted integrated education and training to specific market sectors to support peer-to-peer interactions and industry advancement.
- Media campaigns focusing on trade magazine ads and articles, discussing IOU program information and case studies.
- Targeted customer efforts through assigned IOU account representatives and program engineers, third parties, and government partnerships
- Phone and web-based customer support and outreach.
- Development of coordinated statewide agriculture and food processing resources into a centralized “one stop shopping” clearinghouse, on Energy Design Resources.
- Market sector specific collateral that drives customers to account representatives and Web sites for additional support.

Such efforts have already shown success in California's IOU programs and are identified as best practices in ACEEE's comparative analysis of national Agricultural energy efficiency programs.

Where possible and applicable, the IOUs will coordinate statewide in these targeted marketing efforts and partnerships to ensure cost-effectiveness and a consistent approach to customer-facing activities. Cost sharing at industry conferences, co-sponsoring workshops, and identifying opportunities for statewide media campaigns as well as co-development of web-based tools and resources will be pursued.
The Energy Design Resources website will be used as a statewide clearinghouse of best practices, technology information, case studies, updates on upcoming education and training, and to promote new tools and resources available to support the Continuous Energy Improvement approach, such as benchmarking and performance tracking tools.

v. Non-energy activities of program

Please see Section 6.0.f.

vi. Non-IOU Programs

In addition to those efforts described in 6e and 6f, there are a variety of programs that will be coordinated with and leveraged in support of the Program objectives. Those include:

- Connecting customers with the CA Climate Action Registry which will support AB32 through CO2 tracking in program resources
- Regulatory program coordination, including EPA air quality standards, water quality standards, and new refrigerant regulations
- Non-utility financing resources, including water utility incentives, industry and private banking loans, state and federal incentives, funds, grants, and loan products to support energy and other resource management objectives.
- Water/Energy efforts within California
- ANSI, for the Superior Energy Performance Standard
- ISO international energy management standards

The Program will continue to engage with Air Quality Management Districts, the California Energy Commission, the California Air Resources Board, the Department of Energy, water agencies, and other government agencies on programs impacting regulatory compliance and resource management.

vii. CEC work on PIER

Please see PIP section 6.0bi., Emerging Technologies

viii. CEC work on codes and standards

Please see PIP section 6.b.ii., Codes and Standards

ix. Non-utility market initiatives

The Agricultural program will coordinate with applicable market initiatives to leverage market momentum and areas of mutual advantage. Modeling on the success of the utility partnership with the wine industry California Sustainable Winegrowers Alliance, the Program will leverage the following efforts:

- Food Processing Efficiency Alliance
- Almond industry sustainability planning to do energy planning
- Wine Industry – CSWA Program initiative
- ASHRAE / ARI efforts to develop best practices for refrigeration
- National dairy sustainability effort

c) Best Practices

As described in prior sections, the Agricultural Program reflects the best of each utility program's successful components of statewide agricultural program offerings, and introduces new elements from other utilities and national efforts as well. Best practices include:

- Leveraging Local Ag Resources – i.e., industry associations and farm bureaus
- A Continuous Energy Improvement approach which proposes to transform the market and reduce energy intensity through addressing technical and management opportunities.
- Technical Assistance: Recognizes the need for personalized assistance for customers which includes a full service approach starting from audits/pump tests to design and technical assistance, presentation of recommendations, resources to develop a long term plan, potential of project management assistance, with financial incentives and guidance on best practices.
- Vendor Partnerships: This strategy will be coupled with vendor support and educational workshops and classes to provide the full breadth of support

customers may need to influence their decision to implement energy efficient equipment and practices.

- Statewide Coordination: In order to take advantage of the statewide implementation of the program, the IOU program representatives will meet on a quarterly basis to improve program operations by sharing successes and areas of operational concerns.

As general best practice, programs will incorporate lessons learned from past EM&V activities to improve results.

d) Innovation

A bundled and integrated product and service offering will increasingly integrate with multiple resource management solutions, offering a new and customer-centric approach to programs. This is supported by innovative customer segmentation work by the Marketing and Outreach IOU teams. Significant innovative aspects of the Agricultural Program offering include:

Integration
The Statewide Agricultural Program boldly takes the lead on not only integrated demand side management strategies, but also developing methods and pilots to promote integration of interlinked environmental and resource management issues. Integrated strategies and activities will be coordinated with the Statewide Integration Task Force. The theory is that by improving the coordination of these issues of paramount importance to the industries being served, more "face-time" will be possible with large customers, projects will become more cost effective, and multiple "problems" will be solved concurrently. Specifically:

- Continuous Energy Improvement will foster a long-term energy management approach and support integrated demand side management
- An innovative food processing pilot will integrate energy, air, water, GHG, and potentially waste streams
- Integrated Audits delivered under the Non-Residential Audit sub-program will provide targeted customers with integrated solutions in efficiency, DR, and DG, and will, in some cases, advise customers on other sustainability practices such as water conservation opportunities, CO2 reduction potential or other programs references.
- IOUs will link customers with the California Climate Registry to support carbon footprinting of a customer's plant.
- Utilities will promote innovative agricultural opportunities such as dairy biogas to energy, biogas injection, waste stream utilization, and both on-site and community scale generation opportunities.

Marketing

- A market-sector approach to designing and delivering programs will allow IOUs to delve more deeply into market opportunities and overcome specific market barriers. This approach is supported by innovative market segmentation work currently underway at IOUs that will support development of new, super targeted integrated marketing and outreach plans outlining multiple delivery channels that target customers based on their needs.
- Closer coordination with third parties, government partnerships, core programs, and other delivery channels will optimize portfolio performance.
- Utilities will increase outreach to new trade and community-based associations, leveraging best practices identified in ACEEE study of utility agricultural programs.
- Expanded workforce education and training efforts with vendors, design teams, industry association members and other key market actors will help overcome many customer informational and transactional barriers
- Energy Design Resources, developed statewide by IOUs, will be expanded as a web-based hub of agriculture and food processing best practice information, training, modeling and performance tracking tools.
- Training will be provided on modeling and quantifying savings opportunities through tools such as The U.S. Dept of Energy's Steam System Assessment Tool (SSAT) and Process Heating Assessment and Survey Tool (PHAST), eQUEST and Energy Pro software tools.
- Non-utility financing tools and resources will be coordinated and communicated to help customers leverage all available sources of funds to complete targeted projects.

Implementation

- Utilities will coordinate on process improvements to statewide programs to ease participation barriers.
- Energy performance measuring and benchmarking assistance/services to customers will enable customers to compare themselves to "best in class" peers utilizing tools such as the U.S. Dept of Energy's Plant Energy Profiler Tool and the U.S. EPA's Energy Star Benchmarking tool.

e) Integrated/coordinated Demand Side Management

An integrated portfolio is cost-effective, captures program delivery efficiencies, and serves the needs and wants of customers, who prefer a single, informed utility point of contact who can help inform and prioritize their energy investment decisions based on

their unique needs. Consistent with CPUC direction and with the Strategic Plan, the Agriculture program includes integration of energy efficiency, demand reduction and distributed generation programs in integrated audits, marketing materials and industry-specific workshops. To this end, the statewide utilities and the Statewide Agriculture Program have made tremendous progress in advancing integrated solutions:

- Marketing: As described in Section 6.b.iv, the IOUs are placing major emphasis on getting the right message to the right customer at the right time. Advanced customer segmentation is being used to develop detailed integrated marketing and outreach plans which outline multiple tactics, delivery channels and key messages to target to specific customers based on their specific needs.

  The IOU account representatives, who serve as the key customer point of contact, will be attending an integrated sales strategy and training program to ensure consistent delivery of portfolio offerings.

- Education and training – especially workshops organized around a customer segment - provides an ideal situation to integrate customer energy solutions. Utilities will build on past successes providing integrated workshops to dairies, wineries, and food processors, where topics start with "analysis" resources and methods, and move on to "conservation", "efficiency", "demand reduction", then "generation" topics and resources. These workshops provide opportunities for utilities to cross-sell solutions and share key information from other utility departments – for example, sharing biogas injection information at dairy workshops. They also provide opportunities to look at water, air, carbon credit and waste management issues.
- As appropriate, Workforce Education and Training will also cover integrated energy and system solutions, which will educate customers on ways to optimize their energy use across all sources, and will be increasingly important as GHG reduction requirements progress. The Agricultural Program will coordinate with the WE&T group on curricula development and class planning.
- The availability of a Continuous Energy Improvement approach, especially for the largest, most strategic customer accounts, will facilitate a thoughtful, integrated energy plan and will allow utilities to stay engaged in supporting the progress of that plan.
- As described in 6.1, Integrated Audits combine funds and resources of energy efficiency and demand reduction programs to provide integrated recommendations to customers. These audits provide customers with EE and DR recommendations and also provide general feasibility assessments for DG. Detailed integrated audits will be offered to customers with loads greater than 250,000 therms and all integrated audits will focus on EE, DR and DG options. In addition, the utilities are developing an enhanced web-based audit tool that would be accessible by customers as well as internal utility personnel. The audit tool will

be the principal tool to provide IDSM information to customers with loads less than 50,000 therms. It will be capable of generating customer reports that include specific information on the costs and benefits of IDSM programs.

- Emerging Technologies and CEC-PIER collaboration is expected to include pilot projects and market acceleration assistance for market-ready products in the general categories of ultra low Nox burners, superboilers, hybrid energy systems, waste heat recovery systems such as waste heat refrigeration, HVAC, controls, and building envelope improvements.

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

f) Integration across resource types

California's Agriculture and related food processing sectors face a multitude of environmental and regulatory challenges that threaten their survival and competitiveness. In addition to the severe drought impacting California's farmers and increasing water pumping costs, new regulations aimed at improving air quality, water quality and reducing toxic environmental pollutants are proving to be expensive and disruptive to business as usual, and in many cases will have the impact of increasing energy use in compliance.

The Agricultural program proposes to leverage these challenges to coordinate with the regulating agencies and the programs they are operating in order to support mutually advantageous program designs, customer incentives, marketing opportunities, and implementation opportunities. For example, SoCalGas will continue to offer targeted trainings to customers who are sharing common regulatory challenges. In the 2006 - 2008 Program cycle, SoCalGas hosted fourteen air quality seminars which included the Engine Regulation and Technologies seminar, the Air Quality and Permitting with case studies for boilers, engines, and distributed generation technologies, and the South Coast Inspection and Maintenance Plan and Portable Monitoring workshops, which educated customers on impending regulations, requirements for their equipment, and the most efficient project options to consider for compliance. Future workshops will look at wastewater treatment options, refrigeration upgrades, and energy efficiency to meet AB32 targets. SoCalGas will share information about these workshops with the other IOUs for consideration in their territories.

SoCalGas is currently working with area water agencies to offer joint energy and water conservation incentives to support projects that reduce demand of both resources, which reduces project costs and improves payback.

The Integrated Resource Management Pilot with Food Processors is still under development, but aims to coordinate air, energy, water and waste streams management.

Ideally, learning from the current CPUC water/energy pilot, which includes wineries, will be useful in advancing the objectives of this effort.

Where applicable, the Program will integrate topics like GHG reduction and water conservation into targeted customer workshops, marketing and communications, building on a strong track record from the 2006-8 program cycle. For example, one IOU is currently conducting a series of winery workshops focusing on GHG reduction strategies, Water management, Energy Management 101, and Green Building which includes materials and water. Ads and articles featured water savings opportunities and messaging.

g) Pilots

The Agriculture Program will support the Pilot proposed by the California League of Food Processors tentatively titled the Integrated Demand Side Management for Food Processing Program. The pilot forms an alliance between the food industry, the Public Utilities Commission, Investor Owned Utilities (IOUs), and other state and national stakeholders and promotes integrated energy management solutions to end-use customers in the food processing segment.

The pilot aims to explore the relationship between energy, demand, air, water, and other resources and develop integrated strategic plans for pilot participants that will optimize their management. This comprehensive strategic approach to resource efficiency is warranted due to the close interconnection with the demand for energy and water, air and wastewater emissions. The pilot will support the need for industrial managers, plant supervisors and workers to have new skills and abilities to engage in technical deliberations to ensure the integration across resources achieves the desired resource optimization objectives.

The end result is expected to be food processors that ultimately reduce, reuse and recycle water resources; limit air pollution emissions; capture solid and liquid waste streams to generate bio-energy products; and continuously achieves energy efficiency through Best Practices and self actualization. The reward will be energy efficiently made products with the lowest level possible of impacts on natural resources and the environment.

The scope of the pilot is still under development. In 2009, utilities will coordinate with the California League of Food Processors, CPUC, California Energy Commission, ANSI and the International Standardization Organization to clarify and refine pilot design, budget, timelines, partners, and goals. Candidates will ultimately be selected from the food processing and potentially industrial segments. If possible, non-utility funding sources will be leveraged to support pilot activities as the resource benefits cross multiple agencies and jurisdictions. The pilot is expected to be planned during the bridge period and be rolled out in the six month period after 2009-11 program cycle begins.

h) EM&V

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

6.1) Subprogram Implementation - Nonresidential Energy Audits

The Nonresidential Audits sub-program features basic audits, integrated audits and RCx audits. These audits consist of a technical survey of energy utilization throughout the customer facility, thereby providing a system view of equipment and processes that consume energy. In this holistic system view, four discrete components of the California Energy Efficiency Strategic Plan—Energy Conservations, Energy Efficiency, Demand Reduction, and Self Generation—are blended and evaluated in various combinations. Utilities are increasingly considering including other resources in audits such as water and GHG; planned training will increase focus integration of a range of energy and non-energy options. These various combinations will be reviewed for their societal benefits, logical order, and customer benefits, and then presented to the customer in the recommendations section of the IEA final report.

The table below summarizes the features, target segment, estimated cost, and funding model for each audit type.

Audit Type	Scope	Target Segment	Facility Size (Therms)	Estimated Avg. Audit Cost	Funding Model
Basic Audits • **On-line** • **On-site**	These typically remote audits offer customer recommendations and reports with cost, savings data and roadmap for implementation. The tools will be enhanced with IDSM recommendations if technically feasible and once UEAT is implemented Some Basic audits are offered on-site in conjunction with marketing campaigns and in response to specific customer requests.	Very Small to Medium Customers	< 50,000	From $25 to $170	Public Purpose Programs (PPP) and Procurement Funds. DR Program will fund its portion of the audit.
Integrated Energy Audit	Onsite audit performed by qualified engineering contractors and IOU personnel. Key deliverables include energy efficiency, demand reduction and distributed generation measures. Costs of implementation, energy savings, available incentives and implementation paybacks are provided in summary charts.	Large Customers Medium Customers	≥ 250,000 ≥ 50,000 < 250,000	$17,500 From $1000 to $5000	PPP and Procurement Funds. DR Program will fund its portion of the audit.
RCx for Non residential Customers	Optimize existing building or system performance. Identify operational deficiencies and recommend corrective measures.	Large and Medium CIA customers	≥ 50,000	$2000 - $3000	PPP and Procurement Funds. DR Program will fund its portion of the audit.

Integrated and RCx audits are on-site audit programs. Typically, on-site audits consist of three types:

Targeted – Focused on a single piece of equipment. Provides a written summary of existing equipment, the proposed equipment, the value of the recommendations, calculated energy savings, and reference to applicable programs, such as Calculated Incentives or Deemed Rebates.

Walk-through – A site-wide audit. Provides written recommendations on a standardized form. Customers are informed of energy savings potential.

Comprehensive audit – Conducted for customers that require more in-depth detailed information, and usually involves complex processes with an operational assessment that includes customized energy savings calculations.

The program will integrate demand side energy management opportunities to ensure that the customer embarks on the most cost-effective, productive solution that meets his/her business requirements and goals, while optimizing energy consumption in California and delivering significant environmental benefits. Audit reports will offer an array of no-cost,

low-cost, and capital-intensive actions that lead customers to invest in energy efficiency, demand reduction, and distributed generation options.

The program will help customers overcome first-cost barriers that typically prevent customers from implementing IDSM measures by guiding customers to relevant IOU incentive and/or finance programs and beneficial non-IOU programs. Integrated audits for large customer summarize the effect of utility incentives on the first cost of energy efficiency upgrades to their facilities. They illustrate how many more dollars a customer will save in the long term by spending slightly more to upgrade end use equipment to more efficient technologies in their facilities. The impressive reductions in long-term energy expenses are often surprising to customers. Reducing the cost of operations is a customer priority addressed by IOU audit programs.

Cost effectiveness calculations enable the customer to make financial decisions to implement projects. Integrated audits for large customers will include ROI/IRR and payback with and without incentives. Current remote auditing tools provide customers with a simple payback calculation. The forthcoming Universal Energy Audit Tool (UEAT), described in section 6.1.d below, will have calculations for payback and simplified ROI. As a further enhancement, we will explore the applicability of more detailed ROI calculations to UEAT.

To support the core utility programs, Nonresidential Audits will provide Savings Calculation Assistance (SCA), targeted to specific end uses and systems, to support nonresidential retrofit applications. SCA will be provided by IOU engineers or contracted energy engineering firms and will help customers submit accurate, technically complete nonresidential retrofit applications. This assistance will speed the process and reduce expensive, time consuming rework later in the process.

For customers with loads between 50,000 and 250,000 therms, the utilities may provide walk through audit services using Account Representatives or Third Party services depending on complexity of the facility and the estimated savings potential. Less complex facilities will be provided with online audit tools.
IOUs will discuss and consider various options for customer engagement in energy audits and implementation of energy efficiency, demand reduction, and distributed generation recommendations. Such options may include, but not be limited to, co-payments, rewards, case studies, additional incentives, etc.

The Nonresidential Audits sub-program uses RCx as a resource to delivering energy savings. RCx is a systematic process to identify and correct operational problems or inherent repair and maintenance deficiencies that lead to excessive energy use. Unlike retrofits, which focus on equipment replacement, or O&M, which focuses on routine maintenance, RCx focuses on identifying and correcting problems that may not be readily identified by a standard energy audit. O&M items with an effective useful life greater than 3 years will also be identified through this assessment. Additionally, opportunities

often exist to optimize existing systems to operate more efficiently than originally designed with minimal new capital outlay. The RCx program builds upon the initial feedback from the current RCx program and expands its reach into the Agricultural segment. Additionally, the utilities will improve existing tools and practices for building retro-commissioning to reduce energy consumption in commercial buildings per the Strategic Plan.

RCx will be offered as a bundle of products/services. RCx providers will perform several tasks to identify measures. These tasks include, but are not limited to:

- Initial benchmark
- Collect data to quantify the owner's operational requirements
- Perform detailed on-site audits to evaluate operational deficiencies and/or operational optimization opportunities inclusive of improved and enhanced preventive maintenance and repair programs
- Define measures, quantifying implementation costs and savings
- Assist customers with measure implementation
- Verify completion of measures
- Provide post-installation documentation and training as well as other persistence techniques
- Conduct post-project benchmark

For information on measures and incentive levels offered under this sub-program, please refer to Section 4.b above.

For the information requested in Table 4, please see 5.b above.

For information on sub-program design to overcome market barriers, please see 5.c above.

For information on sub-program targets, please see 5.d above.

For information on how the sub-program advances the Strategic Plan, please see 5.e above.

a) Statewide IOU Coordination

The Nonresidential Audit sub-program will follow the process for Statewide IOU Coordination described in Section 6.0.a. The Energy Audit has been a Statewide program since 2002, and all IOUs use the same types of energy audits targeting the same type of customer segments. For coordination in other areas, this sub-program will be coordinated in the same way as main program, as described in Section 6.0, a. Utilities are also jointly developing the UEAT tool.

b) Program delivery and coordination

i. Emerging Technologies program

Constant two-way communication between the Emerging Technologies program and the Nonresidential Audits sub-program will accelerate implementation of pilot programs for demonstrating promising new EE technologies and practices. Additionally, Nonresidential Audits will add scope to the audits to enable auditors to seek potential applications among targeted customer segments so that ET may gauge potential for promising technologies. Incentives are available for customers who install emerging technologies under the Calculated Sub-Program.

ii. Codes and Standards program

As noted in Section 6.0.b.ii, the Nonresidential Audits sub-program will work closely with Codes and Standards to recommend appropriate technologies and products to customers.

iii. WE&T efforts

For information on how this sub-program links to WE&T, please see Section 6.0.b.iii.

iv. Program-specific marketing and outreach efforts (budget provided in Table 1)

A broad range of marketing activities will be used to promote audits and elevate customer engagement. Marketing plans will utilize EM&V studies conducted over the years for statewide and local utility programs that specify necessary steps to be taken to enhance program performance.

Audits will be promoted via direct communication between customers and account executives with support of project managers from individual programs, as well as through traditional advertising activities, such as Internet, bill inserts, brochures, trade shows, etc. Marketing activities will be coordinated between IOUs, and between Account Representatives and Field Engineering departments within SoCalGas.

The message to internal and external customers is threefold:

- Integrated demand side management is good for California business and our quality of life.

- IOU audit programs are the first step towards developing a high-impact, cost-effective plan for our customers.
- IOU energy expertise and customer relation teams will support customers as they implement changes within their facilities.

The majority of audits will have a follow up component depending on customer size as follows:

- Large audits – account representative, project managers
- Remote audits – postcards, emails or telephone
- Case study/best practices for target-specific sectors

To aid in future auditing and marketing efforts, audit recommendations are placed in a database to enable each market sector to target market specific end uses and measures.

v. Non-energy activities of the program

Integrated audits are a key tool for identifying non-energy opportunities for specific customers, as noted in Section 6.0.b.v.

vi. Non-IOU Programs

Please refer to Section 6.0.b.vi.

vii. CEC work with PIER

See Section 6.0.b.vii.

viii. CEC wok on codes and standards.
See section 6.0.b.viii

ix. Non-utility market initiatives

See Section 6.0.b.ix.

c) Best Practices

To maximize its reach, the Nonresidential Audits sub-program, in conjunction with utility training centers, will offer training to interested third-party personnel and publicly owned utilities to develop a workforce that will implement energy efficiency products and

practices. As an energy efficiency expert, SoCalGas can leverage the knowledge and experience it has built up over the years by sharing that information with other interested parties throughout California. SoCalGas' successful efforts over the past twenty-plus years are evidenced by the industry that has sprung up to support existing audits and other educational efforts. Many third-party engineering firms focus a large portion of their business on supplying the technical resources required by existing IDSM programs. To support the substantial ramp up of goals envisioned by the strategic plan, SoCalGas can increase the workforce available to California by increasing its training efforts.

One focus of the Nonresidential Audits program will be to improve the adoption rate of energy efficiency and demand side management audit recommendations made to IOU customers. As such, staff will provide comprehensive support and establish an extended follow-up plan as follows:

- Customers who complete an online mass market audit (using the Universal Energy Audit Tool or UEAT) will be targeted for follow up through all available communication channels.
- Mailings and call scripts will be personalized for each customer and will reference specific audit recommendations, based on the customer's online audit report.
- Following on-site audits for large targeted customers (LTCs), assigned account managers, who are either target market experts or assigned account managers, will contact customers to discuss each recommendation and elicit customer feedback or commitments to implement measures.

The Nonresidential Energy Audits Program design is based on EM&V study results. Statewide IDSM program performance will be continually enhanced by iterative evaluations of EM&V study results. Lessons learned will be incorporated into best practices protocols, and EM&V results will be evaluated to identify delivery channels and measures that yield the highest energy savings.

d) Innovation

IOUs will discuss and consider various options for customer engagement in energy audits and implementation of energy efficiency, demand reduction and distributed generation recommendations. Such options may include, but not be limited to, co-payments, rewards, case studies, additional incentives, etc.

Integration with RCx

Energy efficiency measures recommended in LTC reports comprise three categories defined by their relative cost for implementation: no cost, low cost, and capital projects. Integrated audits are a primary source of leads for potential RCx projects that assist customers with implementation of no cost and low cost EE measures. RCx contractors also share their findings with the large targeted customer program and can recommend

that customers pursue a full Integrated Audit before embarking on RCx efforts. In the 2009–2011 Nonresidential audits sub-program, cross-training and coordination between the two programs will be increased to encourage optimum effectiveness in achieving an integrated offering of NRR and RCx projects.

Enhanced Resources

The IOUs will provide information to customers, such as contractor lists, financial resources, and technical assistance, to make it easier for customers to take action in response to audit recommendations. Much of this information is available on IOU websites. Further, the IOUs will upgrade web resources to include such features as case studies, technical assistance for selected measures, and savings calculators.

Universal Energy Audit Tool

To implement the integrated audits for customers smaller than 50,000 therms, the IOUs are developing a Web-based audit (do-it-yourself or auditor-performed) that includes education on various demand side management solutions. The UEAT will enable customers to conduct their own energy audits from the comfort of their home or office by logging onto the SoCalGas website. It will be the primary tool to provide energy conservation, energy efficiency, demand reduction, and self-generation information and analyses to customers with less than 50,000 therm load. Customers will supply account information or a zip code, or telephone number, which will calibrate the tool for their specific microclimate. UEAT will specifically address potential measures that qualify for rebates and incentives and provide simple payback information. By implementing such features in UEAT, SoCalGas will extend the integration concept to broader audience, including residential customers.

Additional questions, presented through the latest online graphic interface, will provide robust customization of customer end energy use (e.g., type of business, type of residential building, hours of operation, number of inhabitants, etc.). Reports will be available to customers through e-mail. .

UEAT will provide preliminary calculations for technical feasibility and sizing of solar systems. This analysis will consider the impact of energy efficiency implementations. For more detailed analysis of solar systems, the tool will refer to the Statewide CSI Calculator. When appropriate for particular measures, the UEAT will refer to other available tools, such as DOE or SoCalGas calculator tools, E Quest, DOE 2, etc.

The UEAT will provide a portfolio of audits that are easily accessible to SoCalGas program managers. It will provide them with unified data resources, a central repository of recommendations and algorithms, and an interface to enable customization of energy audit formats to meet specific customer needs.

All IOUs are discussing developing UEAT as a joint effort to ensure statewide consistency.

New Technologies

To boost the number of quick turnaround audits to customers and increase participation in deemed rebates, SoCalGas will consider the use of new technologies (i.e., wireless and PDA-based checklists) to enhance productivity while targeting specific customer needs.

Engineering Support

The IOUs will contract with energy engineering firms to help medium and large customers, who will benefit from an enterprise-wide plan for staged implementation of IDSM recommendations, develop IDSM implementation plans. Specialized engineering firms will supplement the customer's site and business specific knowledge with IDSM specific know-how. Together, the consultant and client will build a successful plan that results in an optimum installation of energy efficient equipment and processes that enhance the customer's productivity and competitiveness.

e) Integrated/Coordinated Demand Side Management

The Nonresidential Audit sub-program is a core strategy of an overall integrated customer approach. It features a technical and comprehensive survey of energy utilization throughout the customer facility, and provides a system view of equipment and processes that consume energy. In this holistic system view, four discrete components of the Strategic Plan (Energy Conservation, Energy Efficiency, Demand Reduction and Self Generation) are blended and evaluated in various combinations. These combinations will be reviewed for their societal benefits, logical order, and customer benefits, and then presented to the customer in the recommendations section of the IEA final report.
The integrated audit blends a site survey, customer input regarding their needs, and the guidance provided by the Strategic Plan to produce a final energy audit report. The auditor analyzes and describes multiple energy efficiency, demand reduction, self-generation measures and recommendations. Then an auditor will optimize a course of action utilizing Strategic Plan loading order and utility's portfolio to craft an integrated solution that is tailored to customer specific business needs and requirements. The report's recommendations are optimized to achieve reduced energy consumption, reduced environmental impacts and increased productivity and economic viability for the California economy.

Customers will receive a strategic plan that utilizes RCx, NRR, DR, distributed generation and third-party programs to achieve the above goals. The plan may lead customers to make sound decisions based on economical (ROI, payback period, etc.) and societal benefits of introduced energy management opportunities along with multiple options to participate in utility incentive programs. The audit process, final report, and follow up activities are designed to integrate services and minimize disruption of

customer core business activities while maximizing effects of provided recommendations.

The following illustrates how the integrated process will be implemented utilizing available programs and services:

- After integrated audit is completed, no-cost/low-cost energy conservation measures may be transferred to the Retro-commissioning program for implementation.
- Capital investment measures selected by a customer will become a subject to a more rigorous calculation of energy savings under the Saving Calculation Assistance service. These calculations may accompany the application for a retrofit project filed with incentive program to fulfill technical support requirements.
- Demand reduction measures can be evaluated for their applicability for daily use (they may eventually become an energy efficiency measure), load shifting, and direct impact on demand response events.
- Measures that require retrofit work and are accepted by a customer for implementation would be included in the same application as energy efficiency measure for potential incentive under Technology Incentive program.
- Distributed generation opportunities and benefits will be presented to the customer with particular references to respective incentive programs.

Utilities realize it is important that the customer has the opportunity to explore all facets of IDSM. Our current tools already show how much energy efficiency measures positively impact GHG emissions. Utilities will provide training to auditors to incorporate water conservation into integrated audits. Water conservation, GHG reduction, waster management, and other modules will be incorporated into an enhanced version of UEAT. Additional training for auditors will increase their capability to integrate the elements of DSM by creating a strategic plan that implements the various recommended measures. IOU s are currently developing curriculum to provide training to sharpen the integration skills of IDSM auditors.

Supporting Market Sectors
Nonresidential Audits will support the commercial, industrial, and agricultural sectors by developing sector experts in Field Engineering Staff and among the engineering firms that conduct audits and by embedding artificial intelligence into the UEAT that translates sector marketing and technical expertise. In large integrated audits, project managers within the sectors will be an integral part of a team consisting of the project manager, the assigned SoCalGas customer account representative and the audit firm project lead. This team will translate sector specific market and technical information

into a strategic approach to the customer's energy use by incorporating energy conservation, energy efficiency, demand reduction and self generation.

SoCalGas will continue to partner with Local Government Partner program managers by offering Integrated Audits to qualified governmental agencies as it has during the 2006–2008 Program. In the future this effort will increase the number of regional, county and city aggregated audits to establish a strategic plan for these customers and better integrate DR and self generation with energy conservation and energy efficiency. These customers often have multiple accounts that do not meet the demand threshold for on site audits on their own, but when aggregated they can constitute one of the largest energy consumers in the area.

SoCalGas will provide training and guidance to third-party program vendors to broaden their audit focus beyond their program offering in order to identify potential in other end use systems. In this way SoCalGas will minimize inefficient and, to the customer, often annoying multiple visits. Expanding the scope of third-party program vendor audits will provide customers with additional opportunities through combinations of equipment upgrades in conjunction with other third-party program vendors.

All large integrated audits will provide leads to appropriate third-party program vendors based on audit report recommendations.

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

A comprehensive audit marketing plan will be aligned and coordinated with the marketing plans for each of the resource programs in order to maximize effectiveness, integrate offerings, and appropriate refer customers to relevant DSM programs. SoCalGas will also look to partner with interested public and governmental bodies to proactively promote energy efficiency and environmentally green actions, in partnership with programs such as the local government partnerships and green communities. As noted above, an extensive training program is being planned to hone the ability of auditors to integrate other resources into energy audits.

The Nonresidential Audits sub-program will serve as the foundation for integrated offerings by offering a truly integrated audit to customers, seamlessly providing them information and recommendations around energy efficiency, distributed generation, demand reduction, green programs, such as the Cool Planet program, and other relevant programs. Customers will be referred to eligible SoCalGas programs and will be given a complete picture of their energy usage and options for reducing costs and using energy more efficiently.

Marketing collateral and messages for energy efficiency will be integrated with other SoCalGas programs. Through additional market segmentation and feedback from

customers, SoCalGas will further adjust approaches based on the varied needs of targeted customers.

Services from the Nonresidential Audits program may also be available to low income energy efficiency and third party program staff and customers.

g) Pilots

Not applicable

h) EM&V

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

6.2) Subprogram Implementation - Calculated

The statewide non-residential Calculated sub-program provides customers technical and calculation assistance, as well as incentives based on calculated savings, to influence the design and installation of energy efficient equipment and systems in both retrofit and new construction applications.

The Calculated approach is used for projects where a rebate is not available through the statewide Deemed program, where project conditions require customized calculations to provide the most accurate savings estimates, or where a project has interactive effects that are best captured through whole building or whole system modeling. Because Calculated savings estimates are based on actual customer operating conditions, pre-inspections (for retrofit projects), engineering review (for all Calculated projects) and post-inspections (for all large Calculated projects) are typically required as part of each utility's project documentation.

An important element of the Calculated approach is the design and calculation assistance provided by utilities to influence customers to select the most efficient design and equipment options. For both retrofit and added load projects, utilities work with the customer and their project team to evaluate their proposed projects and provide a report recommending efficient design alternatives and detailing energy savings, CO_2 reductions, and calculated incentives available for exceeding Title 24 code or industry standard practice baselines as appropriate. This information is also available to customers through the Nonresidential Audit offering. The combination of technical support and the availability and commitment of approved utility incentive funds is an essential driver to overcome key customer barriers, including lack of technical resources and lack of capital for energy efficiency projects.

Customers and project sponsors (contractors, design teams, vendors, ESCOs) participating in the Calculated approach may also opt to complete their own calculations for submittal to the utilities for review and approval. For this purpose, statewide consistent calculators are publicly available to customers for use if desired. The statewide utility-created and maintained SPC Calculator can be used for retrofits and some new construction applications and is available online and through CDs. For whole building construction projects, utilities accept both Energy Pro, available for license, and the utility-sponsored EQEST, available for free on the statewide Energy Design Resources website www.energydesignresources.com.

Depending on whether a project is a retrofit or new construction project, and on whether Title 24 is triggered for a particular project, different baselines are applied to capture appropriate project savings. For retrofit projects, incentives are capped at 50% of the total project costs. For new construction projects, incentives are capped at 50% of the incremental project cost.

2009 – 2011 Energy Efficiency Programs
Agricultural EE
Program Implementation Plan

Below is a listing of all calculated measures grouped by measure category for all IOUs. Specific measures for each IOU are provided in the attached E3 [Appendix xxx]

#	Measure Name	Per therm Incentive
1	Batch_cullet_preheating	$1.00
2	Closed_hood	$1.00
3	Combustion_controls	$1.00
4	Efficient_burners	$1.00
5	Efficient_drying	$1.00
6	Extended_nip_press	$1.00
7	Flare_gas_controls_and_recovery	$1.00
8	Fouling_control	$1.00
9	Furnace/Oven/Kiln replacement	$1.00
10	Efficient_furnaces	$1.00
11	Heat_Recovery	$1.00
12	Improved_separation_processes	$1.00
13	Insulation/reduce_heat_losses	$1.00
14	Optimize_furnace_operations	$1.00
15	Oxyfuel	$1.00
16	Preventative_maintenance	$1.00
17	Process_Controls_&_Management	$1.00
18	Process_integration	$1.00
19	Thermal_oxidizers	$1.00
20	Automatic_steam_trap_monitoring	$1.00
21	Blowdown_steam_heat_recovery	$1.00
22	Condensate_return	$1.00
23	Flue_gas_heat_recovery_economizer	$1.00
24	Improved_insulation	$1.00
25	Improved_process_control	$1.00
26	Leak_repair	$1.00
27	Load_control	$1.00
28	Maintain_boilers	$1.00
29	Steam_trap_maintenance	$1.00
30	Upgrade_burner_efficiency	$1.00
31	Water_treatment	$1.00

The Statewide Calculated sub-program offers customers incentives to implement energy efficiency measures that have been identified primarily through standard utility energy efficiency audits or in-depth facility/process assessments. Other avenues used to identify energy efficiency opportunities include programs that provide Education and Outreach, Workforce Education and Training, or through IOU Emerging Technologies Programs.

The Statewide Calculated sub-program delivers a consistent message statewide to nonresidential customers about the benefits, energy savings, and GHG reductions that efficient technologies and “best operating practices” offer to customers. This eliminates a common barrier: obtaining incorrect or out-of-date information from local networks.

The Statewide Calculated sub-program information and services will be delivered through account representatives, utility call centers, partnerships, third parties, and utility internet sites. Information will also be made available through industry events, such as the World Ag Expo, through industry organizations, such as the California League of Food Processors and The Building Owners and Managers Association (BOMA), and through advertising in industry and trade publications.

The Statewide Calculated sub-program not only brings IOU Incentive information to customers, but in many instances also provides additional information about other opportunities for project assistance, such as state or federal funds available for energy efficiency projects, tax incentives or other local sources of project funding.

The Calculated sub-program uses retro-commissioning as a resource for delivering energy savings. The RCx program builds upon the initial feedback from the current RCx program and expands its reach into the Agricultural segment. Additionally, the IOUs will improve existing tools and practices for building retro-commissiong to reduce energy consumption in commercial buildings per the Strategic Plan. For more on RCx, refer to the Nonresidential Audits sub-program description in section 6.1.

For the information requested in Table 4, please see 5.b above.

For information on sub-program design to overcome market barriers, please see 5.c above.

For information on sub-program targets, please see 5.d above.

For information on how the sub-program advances the Strategic Plan, please see 5e above.

a) Statewide IOU Coordination

The Calculated sub-program will follow the process for Statewide IOU Coordination described in Section 6.0.a.

b) Program delivery and coordination

i. Emerging Technologies program

The long-term EE vision of California can only be attained through the long-term and continuous development, verification, and acceptance of new technologies into the market. The achievement of long-term goals requires new technology as well as information, training and market development to maximize the EE benefits of cutting-edge technologies. In recognition of the importance of

emerging technologies, the program is poised to adopt the efficiency potential of new technologies through its programs. In addition, portfolio staff actively works to incorporate promising emerging technologies and PIER projects. Incentives will be available for customers who install Emerging Technologies. Incentives will be offered through coordination between the Calculated program and the Emerging Technologies Program.

ii. Codes and Standards program

The program relies on the Codes and Standards program to maintain an updated and relevant list of measures that will support savings. As Codes and Standards impact measures, the program will act to align itself with appropriate offerings. Programs will include new offerings that will allow flexibility in adapting to changes in codes and standards, market trends, and technologies. Planned enhancements to Title 24 will be reflected in incentive levels and eligible measures and services. As the market moves toward "low energy" or "zero net energy" buildings, specific changes to each element of the bundling will be made to ensure the latest cost effective technologies/services (e.g., superboiler) made available as these technologies transition from R&D, to Emerging Technologies, to incubation, and into the mainstream.

iii. WE&T

WE&T is a portfolio of education and training programs that showcase energy efficient equipment found on the list of measures offered in the program. The education and training takes place through energy centers, technology test centers, and education and training program offerings. During classes, time is dedicated to energy efficiency programs and how to participate. An Energy Efficiency Ambassador will be present at all relevant classes to provide detailed information on the application process to the relevant energy efficiency program.

iv. Program-specific marketing and outreach efforts (Budget provided in Table 1)

The Calculated Sub-Program will be marketed through IOU account executives, as well as through educational, outreach and other marketing activities. Marketing activities will target business customers, ESCOs, trade associations, local business groups and government entities to generate interest and program participation. In addition, direct customer contact by SoCalGas customer service representatives, energy efficiency contractors, phone and e-mail support will be provided.

Marketing campaigns will provide a wide range of action-oriented solutions targeted to "personas" identified through segmentation research. In addition, marketing efforts will be "bundled." That is, a menu of demand reduction, energy efficiency and conservation programs will provide customers a full array of EE

and DR options. By providing packaged energy management solutions for each industry segment, IOUs will be better able to communicate with and serve customers.

Marketing efforts will incorporate a variety of marketing tactics/activities to promote the Calculated Sub-Program. Education, awareness and outreach efforts will rely on a combination of mass media communication channels and targeted communication channels to ensure the messages reach the intended audiences with enough frequency to motivate attitude and behavior changes. The marketing strategies may include, but are not limited to, a mix of print, radio, TV, direct mail, e-mail, personal contact, trade shows, trade association meetings, customer workshops and seminars, energy related and other community events and partnerships with business and industry organizations, specialized collateral, case studies, website links and information with regular updates, bill inserts, press releases, and newspapers.

Market outreach to raise awareness of EE programs available will use a number of strategies, including:

- Account representatives will make a regular and consistent customer calling effort to key customers within this sector;
- Utility representatives, Energy Efficiency program management representatives, and field engineers will be available to provide additional expertise;
- Additional market outreach initiatives for the Agricultural market sector will include:
  - Participation and membership in one or two key trade associations
  - Attendance at the key trade shows
  - Utility-sponsored training events at the utilities Customer Training Centers and other convenient locations within the utilities service territory;
  - Hosting of utility-sponsored Webinars that provide sub-segment training and program adoption; and
  - Written collateral pieces that provide an overview of the utilities Energy Efficiency programs will be linked into the appropriate utility DSM web page.

The ideal marketing mix will be assessed for maximum awareness and participation. Marketing and outreach coordination will be coordinated among the IOUs utilizing the statewide coordination process described above.

v. Non-energy activities of program

The program provides a significant challenge to integrating DSM initiatives to non-energy activities due to the general industry structure, the nature of market sector resource use, limited resource savings potential with smaller agricultural businesses, and limits to small agricultural business owner and operator bandwidth. Therefore, integrated audits that look across the various EE program offerings, as well as complementary options available through other entities (e.g. water agencies) will be used to identify the opportunities to be recommended to the specific commercial customer.

The Water Efficiency Pilot Program will provide potential opportunities to reduce water use and the potential for associated Energy Efficiency savings. Since some customers within the program sectors are major water users, this sector is well positioned to realize linked water/electricity benefits through the Water Efficiency Pilot Programs.

vi. Non-IOU Programs
The Program will continue to engage with Air Quality Management Districts, CEC, CARB, DOE, water agencies, and other government agencies responsible for regulating the various aspects and operations of customer facilities participating in the programs.

vii. CEC work on PIER

The Program will interact with the Emerging Technologies Program to leverage new technologies to increase the list of measures available for energy efficiency projects. The portfolio staff actively works to incorporate promising emerging technologies and PIER projects. The program will work with PIER on researching new technologies for evaluation and testing for application in mainstream projects. Incentives, developed through coordination between the Emerging Technologies Program and the Calculated sub-Program, will be offered to customers who install emerging technologies exiting PIER.

viii. CEC work on codes and standards

See Section 6.b.ii.

ix. Non-utility market initiatives

The program will support, educate customers, and/or enforce such initiatives as AB32, renewables, ANSI certification, facility benchmarking, Continuous Energy Improvement, California Green Building Initiative, and other initiatives as directed. The IOUs will remain engaged in these efforts and work to influence the development of increasingly higher standards.

c) Best Practices

The IOUs will continue to improve this program as experience leads to new knowledge that can improve results. Many of these lessons learned are reflected in the innovations described below. As general best practice, programs will incorporate lessons learned from past EM&V activities to improve results.

d) Innovation

Innovative aspects of the program are aiming major program performance indicators such as accuracy of energy saving calculation, higher realization rate, overcoming energy efficiency barriers, reducing application processing time and administrative costs, and integrated energy management.

For the new program cycle California IOUs have implemented a new incentive structure that addresses current economic downturn by increasing the incentive level and better motivates customers to participate in energy efficiency incentive programs. During 2009-2011 program cycle, the new incentive structure will be periodically evaluated and necessary changes may be made in order to enhance program benefits and performance.

IOUs will continue working collaboratively on modifications to program Policies and Procedures to address ongoing changes in customer expectations, market conditions and program flexibility. Such changes have been and will be targeting ease of program understanding and participation, measures eligibility, increase of customer economical benefits and policy restrictions that will be identified as barriers to participation. IOUs are implementing such process based on market studies conducted on the subject and preceding discussion of the policy change. Among modifications that would be potentially discussed and implemented are incentive caps, redesign of measure/equipment, early retirement according to the CPUC concept, and others.

IOUs are planning to elaborate and utilize positive experience obtained using the Savings by Design (SBD) simplified tool and extend it to energy efficiency retrofit projects. Such tools substantially reduce application processing and review time, minimize number of hand-offs, not sacrificing accuracy of energy saving calculations.

SoCalGas has standardized its calculating methodology over the course of the 2006 – 2008 Program cycle. This has ensured that calculations will continue to be more uniform and accurate for energy efficiency projects. SoCalGas tools are based on the nationally and internationally accepted Dept of Energy toolsets for the vast majority of its energy efficiency projects. SoCalGas has made DOE tool training a part of its required training curriculum for Account Executives and has also made the tool training available to customers, vendors, consultants and engineers.

IOUs are planning to continue and expand its core RCx program in multiple target markets. After energy audit is complete and applicable no-cost/low-cost measures are identified the scope of work will be handed-off to RCx implementer who, in-turn, will follow RCx program protocols, execute the scope of work (measure implementation, M&V plan, incentive payment for energy savings, etc.) and report final results to the core program office.

e) Integrated/coordinated Demand Side Management

This sub-program will follow the process outlined for the core program described in 6.0.e.

Further, where possible, IOUs will use an integrated approach to addressing DSM opportunities. Innovative approaches will be used, such as merging energy efficiency and demand reduction analysis and converting recommendations to projects under RCx and/or Calculated program. In addition, streamlining programs through processing, reviewing energy efficiency and demand reduction measures in a single application, and providing analytical information about applicable distributed generation solutions will maximize customer adoption rates for most cost-effective energy management opportunities.

f) Integration across resource types

This sub-program will follow the process outlined for the core program described in 6.0.f.

g) Pilots

Food Processing Integrated Resource Management Pilot
The IDSM (Integrated Demand Side Management) for Food Processing Program partners with industry, trade allies and others to promote integrated energy management solutions to end-use customers in the food processing and refrigerated warehouse segments. The integrated approach combines traditional measures (energy efficiency retrofits/upgrades) along with strategies to help customers manage/reduce their total plant energy demand which reduces total GHG footprint and provides total grid benefit during peak periods (example: 2:00PM-5:00PM), especially during hot summer days. By combining these two approaches, the customer is provided a comprehensive solution to manage day to day energy costs as well as position their facility to reduce grid demand including demand on days of high energy use(peak periods) when energy is at it's greatest demand and can be very expensive. While the primary program focus is energy efficiency, the program emphasizes integrated solutions in proper sequence (energy efficiency→ demand reduction) to support the most cost-effective and satisfactory energy and financial solutions for these stakeholders.

The concepts of *Continuous Improvement* and *Best Practices* will be woven into the long term solutions provided by the program.

The program will deliver an integrated solutions-driven approach while leveraging the offerings of IOU's portfolio of incentive-based programs.

Targeted customers include agricultural: post-harvest processors (ginners, nut hullers, and associated refrigerated warehouses) and food processing: fruit and vegetable processors (canners, dryers and freezers), prepared food manufacturers, wineries and other beverage manufacturers.

h) EM&V

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

6.3) Subprogram Implementation - Deemed

The Deemed sub-program, whose provisions correspond with those of statewide programs, commonly referred to as Express Efficiency, will pay rebates for the installation of new energy efficient equipment. Itemized retrofit measures have prescribed energy savings and incentive amounts. These measures are categorized under the following end uses:

- Food service
- Industrial
- High efficiency water heating
- Greenhouse curtains and infrared film
- Steam traps
- Pipe and tank insulation

The Deemed program directly addresses key market factors that lead to higher energy costs for California businesses. Providing a menu of prescribed common measures simplifies the process of reviewing project proposals and provides a "per-widget" rebate that reduces the cost of retrofitting outdated and inefficient equipment. This element makes it attractive for customers to spend money in the short run in order to achieve lower energy costs in the long run.

Audits are an important tool for marketing and increasing the uptake of EE measures. Nonetheless, an audit is not a prerequisite for deemed incentives. In fact, deemed incentives are specifically designed for ease of use—and our goal is to decrease, rather than increase, any administrative burden on customers opting for deemed incentives

Using itemized energy efficiency measures is intended to overcome barriers that prevent many business customers from adopting energy efficiency alternatives. The barriers are addressed by itemizing common energy efficiency measures and rebates, stimulating the supply of high efficiency equipment and products (through higher demand), and offering rebates that help offset higher start up and down payment expenses for energy efficient retrofits.

Furthermore, to ensure equity to all business customer segments, this program will continue to offer statewide-consistent, cost-offsetting itemized rebates to help customers with the cost of installing new energy efficient equipment.

The Deemed program is implemented and coordinated through the same processes used in the Calculated/Customized Program. These include the following programs:

- Existing Itemized Retrofit (e.g., Express Efficiency)
- Other itemized measures as relevant

The only difference is that applicants that wish to participate in the Itemized Retrofit element are allowed to reserve funds for their projects. Reservations will be taken via phone, fax, internet, or mail. The IOUs will maintain an online reservation system for the convenience of applicants. Although reservations are not required, the IOUs recommend that customers reserve funds. At the time that they make a reservation, the applicant will be notified if a pre-inspection is required. Pre-inspection is not required unless there is prior participation at the proposed project location for the same measures being reserved. Projects with prior participation are subject to mandatory pre- and post-inspection. If an applicant does not reserve funds and submits an application that raises the issue of prior participation, the applicant is responsible for clearly demonstrating that the requirements in the terms and conditions were met before a rebate will be paid.

Incentives and savings payouts will be based upon deemed measures in the DEER database or through work papers.

Deemed Energy Efficiency Rebates for Businesses will be part of the integrated strategy to promote energy efficiency with non-residential customers. The Statewide Deemed Team will hold regular conference calls and in-person meetings to share successes challenges, and best practices in delivering energy efficiency via deemed incentives. When appropriate, the Commercial, Industrial, and Agricultural segments will meet as a statewide entity to share successes challenges, and best practices in delivering energy efficiency to each market sector and associated sub-segments.

Deemed Energy Efficiency Rebates will be primarily delivered via paper or online application. Measures will be the same across IOUs and incentive levels will also be aligned, unless markets in the individual IOUs require adjustments based on research, communication with industry, and/or changes in the economic landscape.

Deemed Energy Efficiency Rebates will work with the other sub-programs to design customer facing marketing materials that integrate EE offerings into a complete energy savings package that is focused on individual market segments.

Where appropriate, IOUs will coordinate with Publicly Owned Utilities (POUs) to more effectively reach more California businesses to more deeply penetrate each customer segment and technology market. Each IOU will also coordinate internally with Government Partnership Programs to maximize effectiveness of Program offerings and minimize overlap and confusion.

For information on measures and incentive levels offered under this sub-program, please refer to Section 4.b above.

For the information requested in Table 4, please see 5.b above.

For information on sub-program design to overcome market barriers, please see 5.c above.

For information on sub-program targets, please see 5.d above.

For information on how the sub-program advances the Strategic Plan, please see 5e above.

a) Statewide IOU Coordination

Statewide coordination is important as it generally guarantees that the California IOU customers comprise at least 10% of an industry's national market. Consistent statewide specifications and rebate values make it easier for national chains and manufacturers to understand and support IOU rebate programs. Statewide coordination also includes regular meetings to share industry contacts, marketing strategies and lessons learned. Coordinated statewide participation at relevant industry events has reduced costs through sharing.

Please see Section 6.0.a for more details on statewide coordination for the overall Agricultural Program, which will be followed for this sub-program.

b) Program delivery and coordination

i. Emerging Technologies program

To meet California's future energy efficiency goals, both in terms of overall usage, GHG emissions and plant thermal efficiency, new technologies and new applications of technology are needed. The Deemed sub-program will seek support from ETP's incubation and development of new technologies to meet the needs of the marketplace. ETP provides the pipeline of new technologies that Deemed looks to incorporate to maintain a robust selection of energy savings equipment. The program will look to ETP to provide customers with technology information, validating effectiveness as an unbiased and neutral expert.

ii. Codes and Standards program
he Deemed sub-program relies on Codes and Standards to maintain an updated and relevant list of measures that support savings. As Codes and Standards impact measures, the Deemed program will act to align itself with appropriate offerings.

iii. WE&T
E&T is a portfolio of training and information programs that showcase energy efficient equipment found on the list of measures offered in the Deemed sub-program. Dissemination of information takes place through energy centers, technology test centers, and information and training program offerings. During classes, time is dedicated to energy efficiency programs and how to participate. In 2009-2011, a program advisor will be available to deliver the EE message and answer questions.

iv. Program-specific marketing and outreach efforts (provide budget)

The IOUs will continue to build on and refine marketing plans and strategies used in past portfolios in the 2009-2001 cycle. This will involve developing marketing plans to deliver targeted messages to specific customers that resonate with their values and needs with the goal of increasing the market uptake of deemed incentives. These plans will coordinate and create timelines for activities, present strategic campaigns, establish targets and metrics, and include a performance monitoring strategy.

The following will be used as marketing and outreach channels:

- Non-contracted vendors are a key delivery channel of the Deemed sub-program. Emphasis will be placed on building awareness with more vendors in the territory and training vendors on how to participate effectively in the program.
- Community-based organizations (CBOs), faith-based organizations (FBOs), non-profit organizations, and non-government organizations (NGOs) with unique access and following are expected to be emphasized as delivery channels.
- Trade associations and industry networks
- Enabling partners (financial institutions, trade associations, service providers, law firms, environmental organizations, etc.)
- Unique channels that offer complementary value propositions from the customers' perspective (e.g., energy, water, materials management, recyclables, corporate citizenry, etc.).

v. Non-energy activities of program

See Section 6.0.b.v for details.

vi. Non-IOU Programs

The Deemed sub-program will continue to engage with Air Quality Management Districts, CEC, CARB, DOE, water agencies, and other government agencies responsible for regulating the various aspects and operations of customer facilities participating in the programs.

vii. CEC work on PIER

The Deemed sub-program will interact with the Emerging Technologies Program to leverage new technologies to increase the list of measures available for energy efficiency projects. The portfolio staff actively works to incorporate promising emerging technologies and PIER projects. The program will work with PIER on researching new technologies for evaluation and testing for application in mainstream projects.

viii. CEC work on codes and standards

See Section 6.b.viii.

ix. Non-utility market initiatives

See section 6.b.ix.

c) Best Practices

To maximize program effectiveness, best practices in Program Design and Implementation will be employed and shared amongst IOUs.

Best practices in program design include the following:

- Ensure regular communication amongst IOUs
- Identify qualifying products simply and effectively (Examples; ENERGY STAR®, CEE, FSTC website).
- Seek input from industry in the development of new programs. The IOU programs are trying to change how an industry operates from manufacturer design to the customers purchasing and maintenance practices.
- Increase industry participation to increase program volume and accelerate market transformation.

Best practices in program implementation include the following:

- Simplify messaging and participation for the customer. (Look for the ENERGY STAR label, purchase from a qualifying products list, etc.)
- Understand the key motivators that drive an industry and use that information to market your program. Ensure that outreach efforts make your program visible to your customers and the market that is catering to your customers.

- Always communicate program marketing and advertising plans in advance to appropriate industry channels. Advanced notice allows industry partners (manufacturers/dealers/distributors/retailers) an opportunity to leverage off of utility marketing efforts and reinforce the messaging we are trying to get across.
- Never underestimate the power of market share or program visibility.
- Measure performance against targets, an activity central to the IOU plan. Ongoing process evaluations and adaptive management strategies will provide data to ensure the adequacy of resource plans and modify strategies to improve outcomes.

As general best practice, programs will incorporate lessons learned from past EM&V activities to improve results.

d) Innovation

Aiming to enhance the deemed incentive programs, the IOUs plan to initiate a number of innovations in 2009-2011:

- Leveraging the marketing and outreach power of partner entities, such as water and state and local air quality management districts, to create and market combined measures/incentives that achieve multiple benefits. One example of such an incentive would be a combined incentive from the IOU and the water district for large projects that save both energy and water, a measure that is currently being promoted by SoCalGas and water agencies in Southern California.
- Packaging and marketing multiple measures, and offering a bonus incentive to customers who implement packages of measures.
- Continuing efforts to standardize Program offerings across IOUs

e) Integrated/coordinated Demand Side Management

The IOUs will coordinate across demand reduction, self-generation, and other relevant programs to provide customers energy management solutions that address their unique needs. Ramping up this level of coordination requires a carefully planned strategy that is addressed in detail in the Statewide and SoCalGas' Integrated Demand-Side Management Program Implementation Plans. This said, participation in an audit is not a prerequisite for a deemed incentive. Access to deemed incentives will continue to be simple and customer-friendly.

f) Integration across resource types

Integration across resource types (e.g., energy, water, and air quality) will be explored. Examples include working with water agencies to co-promote appliances that save water

and energy and working with air quality management districts to co-promote boilers and water heating measures that save energy and improve air quality.

g) Pilots

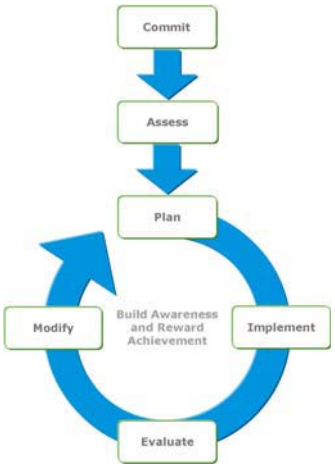
Not applicable.

h) EM&V

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

6.4) Subprogram Implementation -Continuous Energy Improvement (CEI)

Continuous Energy Improvement (CEI) describes a statewide package of products and services aimed at helping customers engage in long-term, strategic energy planning. It proposes to transform the market and reduce energy intensity through a comprehensive approach that includes addressing both technical and management opportunities. A CEI approach applies the principals of well-known business continuous improvement programs, such as Six Sigma and International Standards Organization (ISO) standards, to facility and plant energy management and includes these key steps: Commit, Assess, Plan, Implement, Evaluate, and Modify.



At each stage of customer engagement, a variety of utility and non-utility products and services can be customized to fit different customer profiles and optimize the cost effectiveness of each utility's portfolios.

In implementation, utilities will *screen customers* for certain CEI services based on factors such as customer energy use, complexity, number of facilities, energy decision making structure, environmental commitment or demonstrated motivation to take action. Screening criteria and specific product offerings will be utility-appropriate.

This screening allows the IOUs to target customers effectively. Implementing a CEI program requires significant time and resources for both the utility and the customer. Therefore, IOUs will consider the following and other factors when selecting customers:

- **The customer's current and past commitment to energy management and green policies:** Certain customers, such as WalMart, have already demonstrated a significant commitment to energy management as part of an overall green policy. IOUs will work closely with their strategic customer relationship managers to target such customers.

- **The ability to deliver cost-effective energy savings:** CEI programs focus on helping customers transform their energy management processes, with the expectation that the transformation will lead to energy savings. IOUs will target customers with the potential to transform relatively quickly and cost-effectively, so that delivery of energy savings begins within the 2009-2011 cycle. Such customers will be identified in close collaboration with the strategic customer relationship managers. Customer characteristics, such as energy use, complexity, number of facilities, and energy decision making structure will also be considered for their impact on cost effectiveness.

CEI begins with a high-level management commitment to improving energy performance, which increasingly can be combined with other environmental and regulatory commitments that large energy users are developing in response to market and political pressures. A corporate commitment sends the top-down message to employees, partners, shareholders and vendors that energy is a priority issue requiring attention – like safety – and also paves the way for establishing the required company resources required to implement the steps of CEI. These resources can include capital, personnel like energy champions or teams, or technical systems and software required for energy management.

Gaining true customer commitment can take time, but is critical. In implementation, utilities will formalize the Commitment phase with larger or more intensive customers through a CEI participation agreement, which outlines the utility CEI services being offered as well as minimum customer expectations.

Following Commitment, a comprehensive assessment is critical to identifying not only technical opportunities, but also systemic energy management practices and cultural shifts that can improve overall facility management practices and sustain continuous improvements towards long-term company targets.

Many tools and resources - utility and non-utility, free and licensed – are available to support comprehensive customer energy assessment. They include:

- The U.S. Department of Energy's Industrial Technologies Program efficiency source books and guides. These sourcebooks include;
    - Improving Steam System Performance,
    - Improving Process Heating Performance,
    - Improving Pumping System Performance,
    - Improving Motor and Drive System Performance,

  As well as other efficiency focused technical publications and software tools

- Energy Star's Guidelines for Energy Management, housed on the ENERGY STAR website, provide step-by-step guidelines to support CEI in general, and also guide customers to Energy Star's numerous assessment tools. This option is a low-cost resource for smaller and medium customers interested in CEI. (http://www.energystar.gov/index.cfm?c=guidelines.guidelines_index,)
- Customer energy management assessment software products like those developed by Envinta. *Envinta Energy Challenger,* for example, lets company decision makers explore management practices and company priorities to develop a CEI roadmap for energy goals and actions.

Benchmarking tools, which measure the energy performance of a company, building, process, or piece of equipment against industry standards or comparable groupings. Benchmarking is a particularly useful tool to support a CEI process. Customers with multiple facilities can prioritize efficiency projects, track progress toward energy improvement goals or drive competition among similar benchmarked facilities. Benchmarking can also be applied to other resources and environmental issues such as water use, CO2, and emissions.

Existing benchmarking tools include those developed by the DOE and by the EPA for Energy Star and by Lawrence Berkeley National Lab (LBNL) with CEC funding. These include tools for commercial facilities, cement, auto assembly, and an LBNL winery benchmarking tool. Under development are ENERGY STAR benchmarking tools for food processing, glass manufacturing, and pharmaceutical manufacturing, as well as an LBNL tool for dairy processing. Benchmarking and establishing baselines are an important component of the Management Standard for Energy SME 2000-2008, the DOE sponsored ISO Plant Certification, and LBNL Superior Energy Performance.

- Simple or integrated energy audits provide an inventory of technical facility end uses and energy efficiency, demand reduction and self-generation investment opportunities. For a full description, see the Statewide Integrated Audits sub-program description.

Based on screening criteria, utilities will offer comprehensive energy assessment services utilizing, but not limited to, vetted sources like those described above, to develop a customer specific strategic energy plan. In implementation, the statewide Agricultural program will continue to partner with energy industry peers, industry associations and DOE/CPUC sponsored labs and consultants to enhance the use of existing tools and develop new tools to improve key California agricultural sectors.

CEI Planning

Strategic energy planning involves setting energy goals and action plans around energy efficiency, demand reduction, and generation as appropriate. Implementation of the planning stage of CEI can be undertaken independently by the customer, or with utility support. Planning for larger complex customers will typically involve account executives, field engineering staff and/or consultants. As is discussed in the Strategic Plan and in the

Statewide Integration PIP, strategic planning can also include complementary non-energy considerations as well, such as GHG reduction, water efficiency, and waste-stream minimization, all which have embedded energy components.

Data and findings from a comprehensive customer assessment are critical in developing any comprehensive energy plan, including the results from technical audits or assessments, facility benchmarks, energy management assessments, and assessments of company priorities. This information is analyzed and used to develop realistic and achievable company goals and prioritized shorter-term tactics needed to achieve them. Energy plans should be living documents revisited and revised regularly.

Energy goals can vary widely and include elements such as resource utilization (Company X will reduce it's overall energy intensity by 3% over the next 3 years"), carbon reduction goals ("Company X will be carbon neutral by 2012"), or management oriented goals ("Company X will implement energy teams by 2010"). Goals can be internal documents or can be made public through press releases as part of larger sustainability plans, which is increasingly important for large and public companies.

CEI will assist customers in developing and implementing action plans to execute the prioritized near-term activities in support of their company's energy goals, as well as the resources, staff and schedule for tracking. Action plans typically includes activities such as prioritizing process systems or facilities based on benchmarking or company drivers, identifying internal resources required to implement plans, develop project justification and incentive application documentation lists and detailed schedules.

CEI Implementation
In the implementation stage, utilities partner with customers to identify technical support and utility and non-utility resources available to support implementation of projects, such as rebates, incentives, third party and government partnership programs, and state and national resources, including:

- Statewide Deemed rebates
- Statewide Calculated incentives for new construction/tenant improvement, retrofit and retro-commissioning/repair
- Third-Party and Government Partnership programs (described in the statewide and local third-party filings)
- Non-utility financing options and owners engineer support

CEI Evaluation and Modification

Like in any continuous improvement program, evaluation is an ongoing process of assessing actual performance against company goals, targets and action plans. It may include repeating the benchmarking and system or facility baseline process annually, assessing advancements

in organizational and management practices that facilitate energy management improvements, or evaluating cost savings per unit of product. Regular evaluation will inform changes to goals and action plans moving forward.
For information on measures and incentive levels offered under this sub-program, please refer to Section 4.b above.

For the information requested in Table 4, please see 5.b above.

For information on sub-program design to overcome market barriers, please see 5.c above.

For information on sub-program targets, please see 5.d above.

For information on how the sub-program advances the Strategic Plan, please see 5e above.

a) Statewide IOU Coordination

The Statewide IOU Coordination process for the Agricultural Program is described in Section 6.0.a, and will be followed in this sub-program.

b) Program Delivery and Coordination

i. Emerging Technologies Program

CEI implementation shall include identification and project development at specific customer sites with potential for Emerging Technologies program participation, demonstrations and incentives.

ii. Codes and Standards Program

CEI implementation shall include information about pending new Codes and Standards program that may affect planning or prioritization of retrofit or new construction projects.

iii. WE&T

CEI implementation shall integrate with Workforce Education and Training efforts by providing CEI process and case study input to "energy engineer" curriculum designers for community colleges and universities.

iv. Program-specific marketing and outreach efforts (provide budget)

CEI's marketing and outreach effort and budget have not been determined at this time. Once the 2009-2011 funding levels, which include Marketing funds, an allocation to CEI will be determined.

As with other information and education sub-programs, CEI will be primarily delivered by IOU customer energy efficiency staff and contractors, account representatives, website and marketing, and outreach efforts. Other channels of delivery may be developed. Marketing and outreach plans include training of the IOU in-house staff and customer groups. Collateral materials such as fact sheets, how-to documents, and PowerPoint slides will be produced and distributed during sales calls, public events or trade shows.
Marketing activities will target business customers, ESCOs, trade associations, local business groups and government entities to generate interest and program participation.

In 2009-2011, marketing campaigns will provide a wide range of action-oriented solutions targeted to "personas" identified through segmentation research. In addition, marketing efforts will be "bundled". That is, a menu of demand reduction, energy efficiency and conservation programs will provide customers a full array of EE and DR options. By providing packaged energy management solutions for each industry segment the IOUs will be better able to communicate with and serve customers.

v. Non-energy activities of program

CEI implementation shall include non-energy activities such as recognition awards, local area or sector competitions, awareness campaigns, education about non-energy related LEED points and definitions, use of computerized financial analysis tools and cost estimating and forecasting tools. In addition, the CEI sub-program will help customers learn about and access the many certification programs available, such as EnergyStar, LEED, and ISO.

vi. Non-IOU Programs

CEI implementation shall include information on non-IOU programs to expose customers to funding, such as from air or water agencies to support efforts. Typically, each government agency and utility has operated natural resource and energy programs independently, missing opportunities to serve customers who must manage more than one resource type. For customers who are regulated by or interested in more than one resource issue, Interactive Program Presentment (IPP), will benefit the customer to the mutual advantage of the single resource programs.

vii. CEC work on PIER

CEI implementation shall include information on the CEC's work on PIER to expose customers to demonstration or research projects and funding.

viii. CEC work on codes and standards

ix. Non-utility market initiatives

Non-utility market initiatives such as education about federal tax incentives for energy efficiency investments is an example of a non-utility information and guidance that CIE sub program will provide customers.

c) Best Practices

The CEI approach applies the principles of well-known business continuous improvement programs, such as Lean Six Sigma and ISO standards, to facility and plant energy management: Commit, Assess, Plan, Implement, Evaluate, and Modify. This approach can now be successfully implemented given the three-year programs cycle allowing longer-term and deeper project development engagements with customers.

One means of delivering significant energy efficiency is to place or pay for a full-time energy manager at a customer site. This manager provides advice on, and management of, energy management improvements. The CEI program will consider implementing such a strategy in situations where there is strong potential for cost-effective delivery of energy savings.

As general best practice, programs will incorporate lessons learned from past EM&V activities to improve results.

d) Innovation

Continuous Energy Improvement is a new way of packaging energy efficiency, demand reduction and self-generation products and services aimed at helping customers engage in long-term, strategic energy planning. It proposes to transform the market and reduce energy intensity through a comprehensive approach that includes addressing both technical and management opportunities.

e) Integrated/coordinated Demand Side Management

CEI includes project analysis and implementation support of recommendations of integrated audits which provide customers with an inventory of facility end-use breakdown and energy efficiency, demand reduction and self-generation investment opportunities. Over the last few years, traditional DSM programs have learned that successful customer participation in one program leads to a likelihood of repeat participation in the same program. Additionally, this successful participation makes these customers likely candidates for other similarly related types of programs. While a successful program experience leads to repeat participation, there has been difficulty in cross pollinating similarly related types of programs with these candidates due to

program-specific silos. To overcome the historic silo effect of DSM, the CEI sub-Program will leverage lesson's learned from IDSM efforts by offering comprehensive, coordinated marketing and program delivery.

A primary issue when integrating energy efficiency and demand reduction is that these two efforts, in many cases, cross "traditional" energy efficiency program lines and, while considerable energy and societal benefits may be gained from an integrated project, the project doesn't necessarily fit into an existing incentive program structure. For example, a process may have a high temperature waste heat stream that could be used in a cross cutting technology to provide process cooling or generate steam to provide shaft work. However, since the recovered waste heat doesn't reduce the energy use of the process from which the waste heat is recovered or may reduce grid demand instead of gas consumption, the project doesn't fit neatly into existing incentive program structures. SoCalGas will continue to make these types of recommendations in their integrated assessments because it is the best course of action for our customers, provides the greatest benefits for the environment and is aligned with California Energy Efficiency Strategic Plan's loading order.

SoCalGas will record these integrated energy efficiency/conservation recommendations and share the information with the other IOU's, the CEC and the CPUC so that the benefits offered and GHG reductions achievable by these types of projects can be examined and a potential energy efficiency incentive option can be developed.

To support the integration of energy efficiency and demand reduction programs, the Program will focus on several tactics:

- Promotion of demand reduction enabling energy efficiency measures to ensure that energy efficiency is completed first to maximize potentials
- Integrated and coordinated year-round marketing (e.g., applications, collateral, web sites, and events)
- Linking of program eligibility requirements (e.g., customer size)
- Provide unified technical assistance through enhanced EE/DR Audits through the TA Program to allow for cross-harvesting opportunities
- Integrated presence on utility websites
- Regular coordination meetings between energy efficiency and demand reduction program management
- Open discussion about how an integrated incentive funding element that would assist customers with cross cutting energy efficiency options could be worked into a statewide program.

During the current cycle, it is expected that resource efficiency and integrated incentives will be evaluated by the IOU's, the CEC and the CPUC and considered for inclusion into a statewide incentive opportunity for California businesses.

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

In the effort to promote CEI, IOUs will seek out customers interested in complementary resource programs such as provided by water and air quality agencies. With respect to water conservation, utility program managers will contact the local water districts to share marketing collateral, attend trade shows, co-release notices, for programs with interactive water and energy effects. Similarly, with ARB and Air Quality Management Districts, IOUs will offer customers calculated sub-program incentives for energy efficient equipment that may also reduce air emissions.

g) Pilots

If appropriate, based on lessons learned and new developments, pilots will be added throughout the cycle. Best practices from pilots will be communicated through the Integration Task Force and appropriate customer communication processes.

h) EM&V

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

6.5) Subprogram Implementation - Pump Test

Pumping is estimated to account for more than 80 percent of the electric load and approximately 18M Therms of natural gas load in California's agricultural segment, and this load is growing as the state's drought increases reliance on water pumping systems. To help customers make informed decision about improving inefficient pumping systems, all California utilities will offer pump testing services and workshops at no or low cost through in-house or contracted resources in 2009–2011.

These pump testing services, and associated education and training, will reinforce the energy and financial benefits of operating efficient pumping systems. These services will be offered to agricultural growers, as well as to targeted commercial and industrial customers, such as water agencies, oil industries, and potentially large refrigeration and commercial chiller systems. Additional details can be found in the Commercial and Industrial program sections.

For each pump tested, the customer will receive a report that provides customized energy use analysis and operational efficiency information. This information will enable the customer to make an informed decision on whether to renovate or replace their pump, change motors to premium efficiency motors, adjust operating perimeters, make system redesign decisions, or install a variable speed drive.

Southern California Edison (SCE) has in-house pump testers and may supplement their services utilizing independent pump testers. Southern California Gas Company relies solely on in-house pump testers. Pacific Gas and Electric and San Diego Gas and Electric will contract 100 percent of pump test services through the California State University, Fresno Foundation's Agricultural Pump Efficiency Program (APEP). This program reimburses subcontracting companies from $150–200 per eligible pump test submitted to the program. All utilities will use the resulting database of pump efficiency results to target retrofit opportunities and market the availability of utility repair incentives, irrigation measure rebates offered through the Deemed sub-program, and technical support to customers with inefficient pumps. Marketing will be conducted through mail, phone, on IOU websites and through account reps.

Pump testing services will advise customers of services and offerings from the Agricultural Energy Efficiency program, Industrial Energy Efficiency Program, On Bill Financing, Demand Reduction, Renewable Generation/California Solar Initiative, and AB32 Carbon Emissions Reduction Program, and water conservation programs as appropriate.

Through the Pump Test program, utilities will be supporting efforts to improve California's average pump efficiency, currently estimated at 53 percent, as directed in the Strategic Plan. The utilities will take the leadership role in developing effective partnerships with the CEC, universities such as CSU Fresno and Cal Poly, commodity groups, Department of Agriculture and others on advancing technologies and practices in irrigation and pumping.

All utilities will pay the Calculated process incentive rate of $1.00 per therm for pump repair energy savings as documented through pre- and post-repair pump tests. Measures to be included follow:

- Full-service pump efficiency improvement (receiving incentives)
- Full-service pump efficiency improvement (not receiving incentives)
- Low-pressure sprinkler nozzles
- Commercial customized pumping
- Lean burn carburetion
- High efficiency engine retrofit

Pump efficiency education and training, offered through utility-sponsored seminars and workshops for agricultural, industrial, municipal, and pumping trade allies and customers, complement the pump testing services and repair incentives. Workshops and resources, such as those offered by CSUF's APEP's interactive Mobile Pumping Training Center, illustrate the complex concepts of pumping—and the costs of inefficient operations—on functional closed-loop pumping system. Such workshops will be offered by each utility, independently and jointly where feasible. In addition, each utility will offer a Pump Efficiency Hotline for customers to conveniently find answers to their questions during weekday business hours and offer wide variety of downloadable technical resource materials on the utilities' website.

Agricultural production and water supply customers lag far behind customers in other segments in adopting energy efficiency technologies and practices for two essential reasons. First, energy cost are a much smaller concern to agricultural and water supply customers than are such issues as overall costs, high labor costs, water use, and water, soil, and air quality. Second, efforts to encourage energy efficiency have almost exclusively focused on water pump improvements. As a result, agricultural customers remain largely unaware of potential energy savings in other areas of their activities.

This program will succeed in overcoming many of these barriers through these actions:

- Expanding activities beyond just addressing water pumps to evaluating and recommending improvements to the efficiency of water pumping systems.
- Expanding the types of customers targeted for services beyond crop and animal farms to include nurseries, greenhouses, and other facilities covered under the Green Building Initiative Executive Order.
- Providing a balance between tried-and-true utility offerings, such as water pump testing, and innovative new activities, such as design assistance, investigating additional financing options, and aligning with agricultural and water trade allies.
- Leveraging the infrastructure and experience of other programs offered by utilities to the nonresidential customer segment.

The utilities programs offer customers several benefits:

- The products and services of the program can help customers address water use and air quality concerns, as well as energy reduction and cost savings.
- Helping customers make their businesses energy efficient can also help them stay cost-competitive and retain their operations in California—and create spillover positive impacts on their supporting markets.

For information on measures and incentive levels offered under this sub-program, please refer to Section 4.b above.

For the information requested in Table 4, please see 5.b above.

For information on sub-program design to overcome market barriers, please see 5.c above.

For information on sub-program targets, please see 5.d above.

For information on how the sub-program advances the Strategic Plan, please see 5e above.

6) Program Implementation

a) Statewide IOU Coordination

This sub-program will follow the process for IOU statewide coordination outlined in 6.0.a.

b) Program delivery and coordination

i. Emerging Technologies Program

See details in Section 6.0.b.i.

ii. Codes and Standards

See details in Section 6.0.b.ii.

iii. WE&T

See details in Section 6.0.b.iii.

iv. Program-specific marketing and outreach

As described above, the utilities will use a database on pump testing developed through contractor testing of customer pumps to identify customers with inefficient pumps and pumping systems. Utilities will market directly to these customers through mail, phone, and account representatives to encourage retrofits and market the availability of repair incentives, irrigation measure rebates, and technical support to customers with inefficient pumps.

v. Non-energy activities of the program

As noted above, the products and services of the program can help customers address water use and air quality concerns, as well as energy reduction and cost savings. Helping customers make their businesses energy efficient can also help them stay cost-competitive and retain their operations in California.

vi. Non-IOU program

This program will advise customers of services and offerings from the Agricultural Energy Efficiency program, Industrial Energy Efficiency Program, On Bill Financing, Demand Reduction, Renewable Generation/California Solar Initiative, and AB32 Carbon Emissions Reduction Program, and water conservation programs as appropriate.

vii. CEC Work On PIER

See Section 6.0.b.vii

viii. CEC work on Codes and Standards

See Section 6.0.b.viii.

ix. Non-utility market initiatives

c) Best Practices

By providing multi-level design, technical, and financial assistance to influence all aspects of the design of a customer's pumping system, this sub-program reduces lost opportunities that may result when a pumping system's energy performance is not at the top of the customer's list. The program will work to incorporate other existing offerings to assist projects that reflect a cohesive sense of energy efficiency and sustainability that go beyond the traditional aspects of energy efficiency.

As general best practice, programs will incorporate lessons learned from past EM&V activities to improve results.

d) Innovation

See Best Practices section above.

e) Integrated/coordinated Demand Side Management

See Section 6.0.e.

f) Integration across resource types

California's serious air quality issues in agriculturally heavy regions are driving the Environmental Protection Agency (EPA) and other entities to support agricultural pump conversions from diesel to electric. Per the Strategic Plan, as part of the interagency coordination, utilities will partner with the EPA and air districts to market program services, such as pump tests, as well as to encourage energy efficiency considerations when installing new pumps. This effort will result in increased leads for the program that allow up-selling of measures like high efficiency lean burn engines.

Certain irrigation efficiency measures, such as low pressure sprinkler systems, may have water conservation benefits on top of saving the energy required for moderately pressurized sprinkler systems. Utilities will explore opportunities to market both benefits or partner with water agencies as possible.

g) Pilots

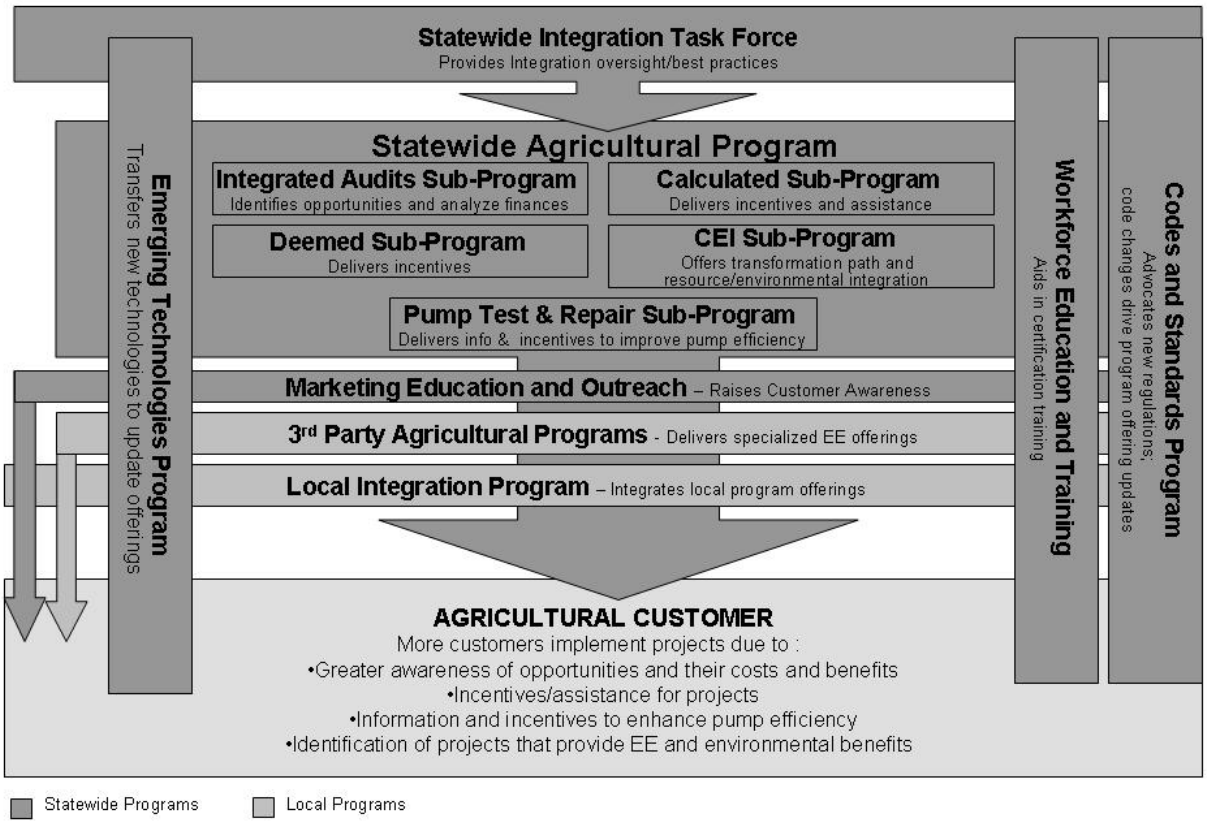
Pump testing will expand to explore benefits of testing large chilled water air conditioning and refrigeration systems for pumping system efficiencies. This decision is based customer energy savings Workshop and design brief benefits developed by Architectural Energy Corporation on for the Energy Design Resources program.

h) EM&V

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

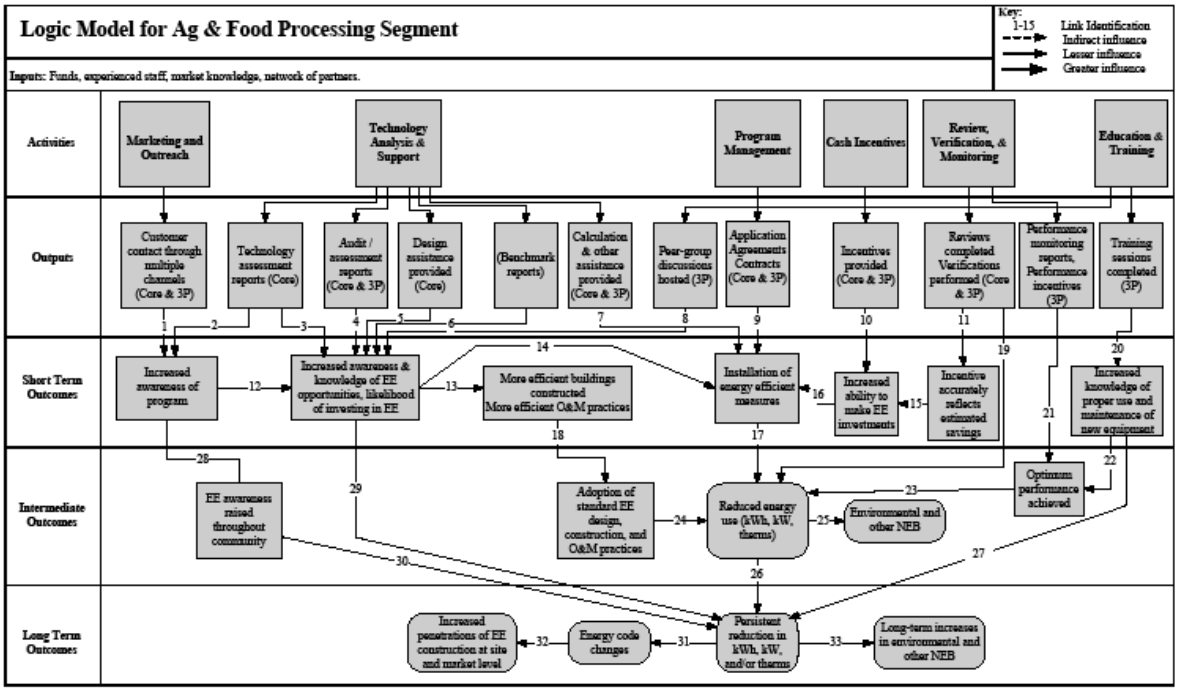
7) Diagram of Program

The Agricultural Program, sub-programs, and linkages with other programs are represented in the following Program Diagram. Overlapping boxes indicate major areas of two-way coordination. Direct targets of influence are indicated by arrows. The Statewide HVAC Program, Statewide Lighting Program, and Government Partnerships are not represented in this diagram as the linkages are somewhat limited. Statewide and Local Integration Programs coordinate DR, DG and other IOU activities that are not indicated on this diagram.



2009 – 2011 Energy Efficiency Programs
Agricultural EE
Program Implementation Plan

8) Logic Model



2009 – 2011 Energy Efficiency Programs
New Construction
Program Implementation Plan

1. Program Name: New Construction Program
   Program ID#: TBD
   Program Type: Core Program - Statewide

2. Projected Program Budget Table

Table 1[1]

Program #	Main Program Name/Sub-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					
	SCG SW New Construction Program					
	#SW-NCNR - NRNC Savings By Design	$ 373,366	$ 330,566	$ 7,033,329	$ -	$ 7,737,262
	#SW-NCResA - RNC	$ 1,247,205	$ 1,071,000	$ 9,924,775	$ -	$ 12,242,980
	TOTAL:	**$ 1,620,571**	**$ 1,401,566**	**$ 16,958,105**	**$ -**	**$ 19,980,242**

These budget numbers are presented in Appendix C: Energy Division Tables, Graphs & Pie Charts: Table 7.1 - 2009 - 2011 IOU Strategic Planning Program Budget

3. Projected Program Gross Impacts Table – by calendar year (all utilities combined total here)

Table 2

Program #	Main Program Name/Sub-Programs	2009-2011 Three-Year EE Program Gross kWh Savings	2009-2011 Three-Year EE Program Gross kW Savings	2009-2011 Three-Year EE Program Gross Therm Savings
	Market Sector Programs			
	SCG SW New Construction Program			
	#SW-NCNR - NRNC Savings By Design	34,648,380	3,811	1,732,419
	#SW-NCResA - RNC	16,752,120	18,427	837,606
	TOTAL:	**51,400,500**	**22,239**	**2,570,025**

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

These savings values are presented in Appendix C: Energy Division Tables, Graphs & Pie Charts: Table 7.2 - IOU 2009 - 2011 Program Savings Estimates

4. Program Description

a) Describe program

The New Construction Program is a statewide program that will continue to support transformation process of California's residential and nonresidential new construction markets consistent with the vision of the California Long Term Energy Efficiency Strategic Plan (CEESP) and a more sustainable energy efficient future. Through several Sub Program elements, the New Construction Program aims to ensure:

- Home builders of all production volumes in California will be encouraged to construct homes that exceed California's Title 24 energy efficiency standards by at least 15%;
- Residential new construction will work towards reaching "zero net energy" (ZNE) performance for all single and multi family homes by 2020;
- By 2011, 50% of new homes built in California will be 35% more efficient than 2005 Title 24 standards and 10% will be 55% more efficient ;
- Plug loads will be managed for decline through technological innovation spurred by market transformation and customer demand for energy efficient products;
- Nonresidential new construction will be progressively more efficient and include clean, on-site distributed generation, moving towards Zero Net Energy (ZNE) by 2030.

The IOUs propose realizing this vision by implementing a comprehensive set of strategies that integrate the utilities' existing programs, education, training, marketing and outreach efforts that leverage the existing relationships within the building industry. Through the statewide New Construction Program, the utilities plan to implement a common approach to energy efficiency improvements in the building industry, and continually revise/update strategies and programs, guided by the CEESP.

Market transformation and direct energy savings and demand reductions will be achieved through a series of Sub Programs that address the needs of both residential and non residential markets, and are described in detail in separate PIPs. The Sub Programs are briefly summarized below, followed by a pictorial representation.

Sub Program 1: Savings By Design (SBD)
This Sub Program aims for significant energy efficiency improvements in the nonresidential new construction industry, and is designed to overcome customer

and market barriers to designing and building high performance facilities. Since 1999, SBD has provided statewide consistency, program stability and savings.

California's Title 24 requirements set some of the most stringent energy regulations in the nation. Exceeding these standard energy performance levels requires a high level of design expertise, technical knowledge, and motivation. The requirements also can be complex and sometimes confusing. Because many in the design field are unaware of the potential savings from energy efficient design or perceive budgetary constraints, they are reluctant to implement energy-efficiency strategies. As a result, energy efficiency is often a lost consideration, abandoned in favor of pursuing the "lower initial cost" option. SBD strives to avoid lost opportunities by assisting customers in moving beyond initial cost considerations and towards the realization of long-term energy cost savings.

Through an integrated design approach (a Whole Building Approach that encourages performance significantly better than Title 24 code by offering a variety of financial incentives) as well as a Systems Approach for simpler facilities where integrated opportunities are limited, SBD encourages energy efficiency and green building practices in new commercial buildings. Financial incentives are supplemented by a variety of other support activities such as: feasibility studies and pilot projects, training and education, conferences and workshops, scholarships, and program marketing activities. In the 2009-2011 portfolio period, SBD will advance a broader palette of technical and financial resources to aid the proactive design of new facilities in accordance with the most cost-effective energy and resource efficiency standards. SBD will incorporate several new approaches towards integrated design and green building certification in support of the CEESP.

Sub Program 2.1: California Advanced Homes Program (CAHP)

The California Advanced Home Program (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. This goal will be achieved through a combination of incentives, technical education, design assistance, and verification. With respect to the CEESP (Section 2, Strategy 1-1), the CAHP targets an interim goal of 50 percent of residential new construction to Tier II (2005) level by 2011, and a final goal of 100 percent of residential new construction to "net zero" by 2020.

Through a pay-for-performance sliding scale incentive structure that is based on a whole building approach, CAHP will encourage builders to exceed Title 24 energy efficiency standards by 15% to 45%. Performance Bonus adders, Design Team Incentives and some prescriptive measure incentives will also be included to encourage green building initiatives, energy star appliances, compact homes, and solar thermal installations. In addition, several non incentive customer services will be offered, including: technical support to Energy Analysts and

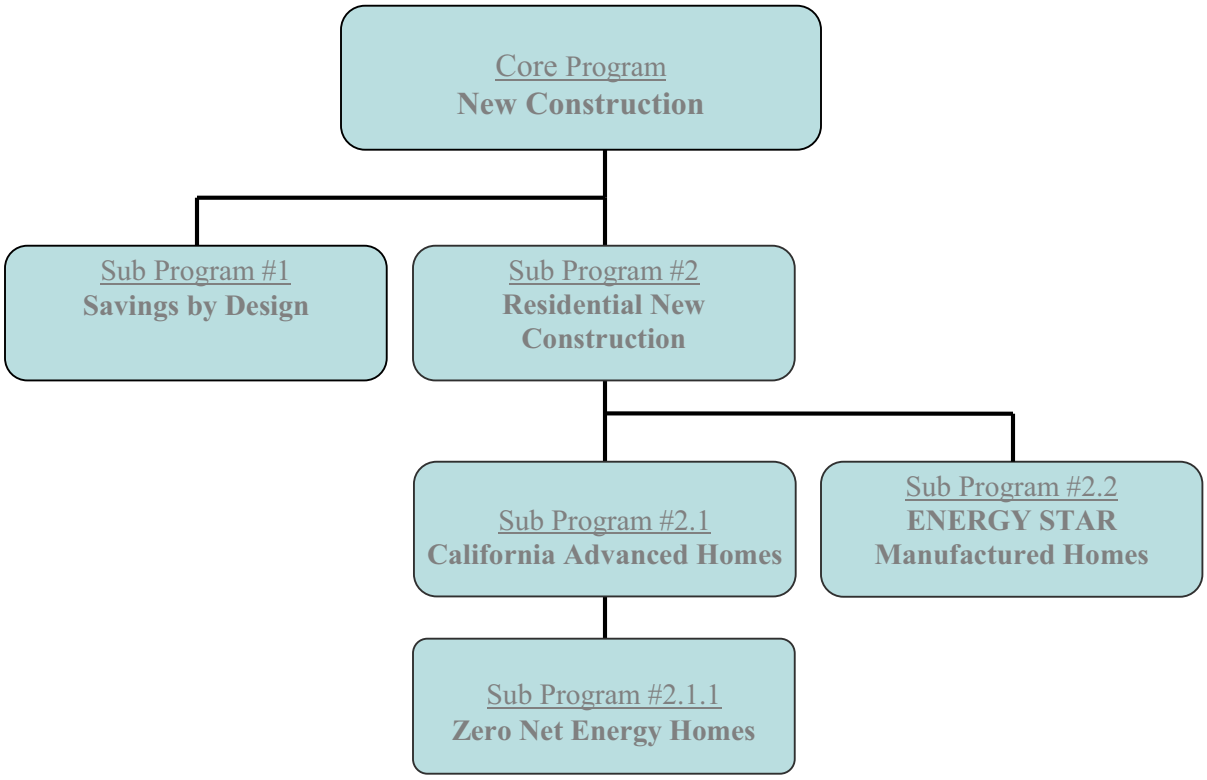
Design teams, Design Team Assistance, Economic modeling / measure selection support to builders, marketing support and DSM coordination for builders to maximize demand side reductions. CAHP will be closely coordinated with the Zero Net Energy Homes, described below.

Sub Program 2.1.1 Zero Net Energy Homes (ZNEH)

The purpose of this Sub Program 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. Participating builders will be encouraged to incorporate environmentalism, economics, and social equity in their design, 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. IOUs will seek to integrate R&D ideas from Emerging Technologies, PIER, LBNL and other avenues to further assist the projects in advancing sustainability and achieving higher levels of energy efficiency.

Sub Program 2.2: Manufactured Housing

This Sub Program is designed to promote the construction of new manufactured homes that comply with ENERGY STAR® energy efficiency standards. It 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 go beyond HUD and 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 key objectives of this Sub Program are to capture cost effective energy savings and demand reduction opportunities and move the industry towards zero-net energy. Additionally, this Sub Program aims to move the market segment from 'HUD compliant' to ENERGY STAR and provide savings for customers purchasing energy efficient manufactured homes. The program will also include an education and outreach component.



b) List of Measures

The list of measures eligible for each of the sub programs is provided in the respective Sub Program PIPs.

Incentives:

The New Construction Program aims to achieve the deep levels of market transformation desired by the CEESP, primarily by offering meaningful financial incentives directly to key participants in the building community. Incentives will be targeted to builders, designers, and energy analysts. Various organizations involved in developing green building and sustainability standards will also be actively supported. The incentive levels and rationale are discussed in more detail in the Sub Program PIPs.

SBD
In addition to the traditional sliding scale incentives that are calibrated to energy savings exceeding standard energy performance code, SBD will offer a flat incentive for peak kW reduction as well as financial support for design teams to undertake an integrated design process. Additionally, sustainability incentives

will be offered to building owners to achieve green building certification, perform building commissioning during design and construction, and/or establish and follow a building measurement & verification (M&V) plan after occupancy. These sustainability incentives are designed to encourage new buildings to be as well designed as possible, be built as well as they are designed, and be operated as well as they are built.

CAHP

In the residential arena, IOUs will advance a pay-for-performance approach designed on a sliding scale from 15% better than Title 24 standards to 45% better than Title 24. The proposed approach is closely modeled on the calculated whole building approach currently being used by SBD. This is a significant departure from the measure-based structure of the past, as well as the current deemed structure consisting of three tiers (15, 20 and 35% better than Title 24). 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. The sliding scale incentive methodology offers higher level of incentives to encourage home builders to reach for higher levels of performance based on energy savings. Additionally, IOUs will offer Design Team Incentives to encourage builders to seek their help in optimizing their building designs.

ZNEH

The ZNEH Sub Program goes further in providing financial incentives that could drive builders towards constructing homes that will eventually incorporate features that reach beyond energy efficiency – sustainability, renewables, and distributed generation. Homes considered for the ZNEH case studies will start at "45% better than Title 24 standards for Single Family homes, 35% for Multi Family and Low Income housing". Additional measures will be incentivized on a case by case basis.

Manufactured Housing

The Manufactured Housing Sub Program provides an incentive to manufactured home retailers when they sell a 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.

c) List of non-incentive customer services

The New Construction Program will be active in a number of non-incentive activities as well. Several non-incentive customer service components are incorporated in each of the Sub Programs, including the following:

- Technical support to Energy Analysts and Design Teams
- Economic Modeling / measure selection support to builders and construction managers
- Marketing support to builders
- DSM coordination (PV, DR, AMI, ET) for builders to maximize demand side reductions
- Feasibility studies and pilot program components as needed to develop new approaches to more effectively engage new and targeted non residential market segments.
- Training and resource enhancements
- Conferences and workshops to develop tools and concepts that will help the program expand its educational efforts
- Scholarships for students to attend the UC/CSU's Sustainability Conferences.
- Educational Institution Collaboration; Sustainability lectures to students

These activities are discussed in detail in the respective Sub Program PIPs.

5. Program Rationale and Expected Outcome

a) Quantitative Baseline and Market Transformation Information:

Refer to the SBD and Residential PIPs.

Table 3

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

b) Market Transformation Information:

Refer to the SBD and Residential PIPs.

Table 4

	Internal Market Transformation Planning Estimates		
Market Sector and Segment	2009	2010	2011
Metric A			
Metric B			
Metric C			
Metric D			

c) Program Design to Overcome Barriers: The New Construction program will address the following barriers, some of which are common across the different market segments:

- Building Code Changes: 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 a marked increase in production costs for builders at a time when the industry and the economy at large are experiencing significant challenges.

- Home Buyer awareness: Although the energy used in the average home produces roughly twice the greenhouse gas emissions as the average automobile, there is little consumer awareness of the impact their homes have on the environment. Moreover, there is scant evidence that energy efficiency drives decision- making among homebuyers, whose access to capital is more restricted in the current capital market environment.

- Financing: Financing of energy efficiency upgrades continues to be a barrier in achieving full savings potential. This is critically important for the small and medium size builders who have limited access to capital financing. To this end, SBD will evaluate the development of innovative financing tools in the commercial markets.

- Small-Project Market Penetration: SBD has historically achieved very high penetration rates with mid-sized and especially large new construction projects. However, barriers exist to deeply penetrating the small-project market due to extensive level of design assistance provided to SBD projects. To help overcome this, SBD has developed a simplified, web-based system for projects that meet a specific size.

- Program Presentation: Gaining a full understanding of program offerings can be difficult for some customers, especially in the case of non residential building participants. Collaboration with demand response and distributed

generation programs, as appropriate, to combine program offerings into a customer-friendly and easy-to-navigate suite of materials is essential for effective communication of integrated offerings.

The building industry in California is in one of the worst slumps in decades. In a buyer's market, builders are looking to differentiate themselves from competition. This presents a great opportunity for New Construction to assist builders in overcoming cost barriers, minimizing lost opportunities, and working collaboratively to meet the state's and utilities' goals for the reduction of green house gas emissions and utility source demand.

d) Quantitative Program Targets: The New Construction program aims to achieve the following broad program targets:

Table 5

e) Advancing Strategic Plan goals and objectives: The New Construction Program is designed to enable the achievement of several goals and strategies identified in the CEESP. Additionally, the New Construction Program will facilitate implementation of the mandates of AB32 (California Global Warming Solutions Act) for carbon reduction, as well as the State of California's Green Building Initiative.

- Residential New Construction:
  The CEESP envisions a transformation of the core residential sector to ultra-high levels of energy efficiency, resulting in Zero Net Energy 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 2005 Title 24 energy efficiency standards by 35%; 10% will surpass 2005 Title 24 standards by 55% (Strategy 1-1)
  - 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 Technologies, and the New Solar Homes Partnership. In fully aligning itself with the CEESP, the CAHP targets an interim goal of 50 percent of RNC to Tier II (2005) by 2011, 10 per cent of RNC to 55 percent 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.

- <u>Commercial New Construction</u>:
  With respect to commercial new buildings, the CEESP calls for laying out a path to zero net energy by 2030; it envisions a dramatic growth of innovative technologies, enhanced building design and operating practices through a combination of whole building programs, technology development, market pull, professional education, targeted financing and incentives, and codes and standards. Specifically, the CEESP lays out the following goal for Commercial New Construction.

  - Goal #1: Commercial new construction will increasingly embrace zero net energy performance (including clean, on-site distributed generation), reaching 100% penetration of new starts in 2030.

The SBD Sub Program elements are designed to advance the CEESP's comprehensive energy efficiency goals. By offering a set of tools and expertise, as well as financial incentives that support long term energy efficiency improvements (traditional sliding scale incentives tied to building design performance, peak reduction incentives that encourage load reduction, Design Team Incentives that ensure intervention at early design phases), as well as training and education to the design professionals and architects, SBD plans to accelerate commercial building design practices towards ZNE. By offering increased incentives and design assistance for innovative buildings and through case studies to show case ZNE projects, this Sub Program establishes a "Path To Zero" campaign to create demand for high efficiency buildings. SBD will partner with green focused organizations and local governments to advance the "Path To Zero" concept. These strategies and the IOU action plans are further elaborated in the SBD PIP for Savings By Design (Appendix A: Zero Net Energy Goals and Strategies).

- The State of California's Green Building Initiative[2] requires that state agencies, departments, and other entities under the direct executive authority of the Governor cooperate in taking measures to reduce grid-based energy purchases for state-owned buildings by 20 percent by 2015, through cost-effective efficiency measures and distributed generation technologies. Commercial building owners are also encouraged to take aggressive action to reduce electricity usage by retrofitting, building, and operating the most energy- and resource-efficient buildings by taking measures described in the Green Building Action Plan. SBD supports the voluntary portions of the Green Building Initiative through improved new construction in the commercial sector as well as the mandates in the government sector.

- The California Global Warming Solutions Act of 2006 (AB 32) created a state-mandated program to reduce greenhouse gas (GHG) emissions in California to 1990 levels by 2020, specifically including emissions of GHG from the generation of electricity delivered and consumed in the state. SBD supports efforts to enhance the public's understanding of AB 32 by relating the carbon reduction effects of energy efficiency programs to program participants.

6. Program Implementation

a. Statewide IOU Coordination:

[2] Per Executive order S-20-04, dated December 14, 2004, http://www.energy.ca.gov/greenbuilding/documents/executive_order_s-20-04.html

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The IOUs will jointly participate in California's efforts to achieve real market transformation in the new construction market segment. 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 Sub Programs throughout the three-year implementation cycle. The process will include the following key elements:

- Designate an IOU Program Lead: Each IOU will designate a New Construction Program Lead. The lead will investigate new innovations, special accomplishments and challenges faced by the Sub Programs within their own IOU. Where such innovations or challenges offer some potential for improving the New Construction Program, the Program Lead will present such information in a quarterly New Construction Program Management Team meeting.

- Hold Quarterly New Construction Program Management Team Meetings: At this quarterly meeting, individual innovations and accomplishments experienced by the IOUs will be actively shared. The team will evaluate the innovations and accomplishments of the individual IOUs, hear ideas for course corrections and overcoming challenges, measure the New Construction Program's progress against statewide metrics and goals.

- Adopt Program Enhancements: Once the New Construction Program Management Team agrees that a particular idea or innovation has merit on a statewide level, each IOU program lead will disseminate the information to their Sub Program managers for adoption and integration. The IOU Program Leads will act as conduits, feeding IOU-specific information for adoption.

Evaluate Program Enhancements Against Statewide Targets: To complete the adaptive management loop, the 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 Program Management Team will determine whether future course corrections are needed, and if so, "activate" a fresh start of the adaptive management cycle to generate the improvements necessary to stay on track.

- The Savings By Design program at So Cal Gas will be directed to the Municipal utilities that are within So Cal Gas's service territory, such as LADWP, City of Riverside, City of Anaheim and others within the greater Los Angles area. These municipal utilities have been tasked to achieve energy efficiency goals but are severely constrained by budgets and especially, personnel assigned to run and manage them. By offering the SBD program to their customers, we can offer them the benefits of a mature, robust, statewide program offering incentives to both owners

and design teams, while making it very cost effective for the municipal utility in reaching their energy efficiency goals.

- To assist them in their efforts we propose running the Savings By Design program in their service territories as a third party program. So Cal Gas would promote the SBD program within the design community and to building owners in each muni and assist those owners throughout the design process in making the buildings as energy efficient and green as possible. So Cal Gas personnel would seek out projects and work actively with the various design teams and owners in making energy efficiency a priority.

- It's envisioned that So Cal Gas would use the whole building integrated design approach in working with these projects to maximize energy efficiency and hence, energy savings. So Cal Gas would sign incentive contracts with building owners within each muni and provide incentives for kWhrs, kW and therms. Upon completion and inspection of these projects, So Cal Gas would claim the gas therm savings in their overall EE portfolio and each muni would claim the kWhr and kW savings towards their energy efficiency goals. The muni would then reimburse So Cal Gas for the incentives paid out for kWhr and kW savings and a small administrative fee for program administration.

- This would provide a revolutionary and collaborative approach in achieving additional energy savings. In addition, close cooperation among the utilities would provide maximum potential for increasing energy savings that would be very cost effective. By implementing this program to their customers the munis benefit from the programs past successes and increasing customer service to their valuable commercial customers. The Savings By Design program has a long history of being the preeminent commercial new construction program in California and is well recognized by both the CEC and CPUC as a leader in this area.

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Additional areas of program coordination include:

i. Program names: Savings By Design, California Advanced Homes Program (CAHP and Zero Net Energy Homes (ZNEH), – these names will be adopted by all the IOUs uniformly and used in their communications consistently. This will ensure better communication across the utility service territories and ensure uniformity and long term continuity of program offerings.

ii. Program delivery mechanisms – The New Construction Program is the umbrella activity that encompasses and unifies the Sub Program activities

discussed in more detail in their own unique PIPs and summarized above in Section 4.a. The IOUs will deliver these Sub Programs through a combination of delivery channels such as account executives, third-party vendors and internal program management staff. The Sub Programs will be delivered using existing industry infrastructure and the individual utility's organization structure, in order to enhance their local effectiveness.

iii. Incentive levels – To the extent possible, the IOUs will retain uniformity in the incentive structure of the Sub Programs. See Section 4.b above and Sub Program PIPs for more details on specific incentive levels. .

iv. Marketing and outreach plans: Each utility will develop and execute specific marketing and outreach plans to engage the industry in its own particular market transformation objectives. The Program Management Team will explore opportunities for extracting synergies in developing collateral materials, common program websites that could be utilized by builders and designers, builder contact information, joint presentations at trade shows, expos, and other industry events.

v. IOU program interactions: Strategy [1-2] outlined in the CEESP is to create a better linkage between the CEC's Title 24 compliance efforts with the IOUs' energy efficiency programs. In order to achieve the market transformation goals of the CEESP, the Program Management Team will ensure coordination with the efforts of the CEC, Codes and Standards and Emerging Technologies.

b. Program delivery and coordination: The New Construction program will be coordinated with the following statewide and local activities. The individual IOUs are responsible for ensuring communication and cooperation with the entities listed below on an as-required basis. The Program Management Team will ensure such communication occurs on a regular basis from a statewide perspective.

i. Emerging Technologies program: Coordination of New Construction Program with the Codes and Standards and Emerging Technologies activities will be realized through the 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. The ZNEH and SBD Sub Programs are expected to interact extensively with the ET Program to ensure new and emerging technologies are showcased and / or piloted through the ZNEH case study projects.

ii. Codes and Standards program: Close coordination with the statewide Codes and Standards team is essential for tracking and implementing changes initiated by the Title 24 standards. The New Construction Program goals are

closely tied to Title 24 standards, and it is imperative to track and implement changes to the program on an as-needed basis. New Construction, Codes and Standards and Emerging Technologies activities will be coordinated through the Program Management Team.

iii. WE&T efforts: The workforce education and training needs for the New Construction program are unique to the industry and close coordination with WE&T will be necessary. CAHP and SBD program staff will coordinate with the WE&T program management team to ensure its training and education needs are met.

iv. Inter-Utility coordination: In an effort towards integrated delivery of energy savings, SCE and SoCalGas (single fuel utilities) have recently concluded a joint agreement to buy back Therm saving and kWh savings. Implementation of this agreement will entail closer coordination of the CAHP Sub Program between the two utilities. The New Construction Program Leads will meet on a quarterly basis to ensure the savings are reported appropriately and exchanged in accordance with the agreement between the two utilities.

v. Non-IOU Programs – The Program will remain engaged with CEC, DOE and other government agencies responsible for various aspects of New Construction in California.

vi. CEC work on PIER – The ZNEH Sub Program will interact extensively with the Emerging Technologies Program to ensure new technologies are absorbed quickly into the case study projects. Such efforts are already underway with the PIER program. This activity will primarily be managed under the Technology and System Diagnostics Advocacy Program (see the ZNEH Sub Program plan for more details).

vii. CEC work on codes and standards – See Section 6.b.ii.

viii. Non-utility market initiatives: California utilities have established relationships with a number of other groups in the building industry. The New Construction Program will continue to seek out and coordinate synergies with, but not limited to, the following groups:

- New Solar Home Partnerships (NSHP)
- Environmental Protection Agency (EPA)
- California Building Industry Association (CBIA)
- Green Building Consulting Organizations (Build It Green, California Green Builder, Global Green)
- National Association of Homebuilders (NAHB)
- Rater Organizations (ResNet, CalCerts, CHEERS, HERS)

IOUs are keenly interested in the efforts of Green Building organizations that are engaged in developing industry-wide qualification standards, and will coordinate with the relevant organization s to ensure appropriate standards are developed and adopted.

c. Best Practices: The Statewide New Construction Program demonstrates several examples of programmatic best practices. The Savings By Design team recently completed process evaluations of the 2006-08 programs. Based on interviews with various market actors and focus groups from the design community, several recommendations were developed to improve the program. Based on that feedback several enhancements have been added to the SBD Sub Program for 2009-11. Providing early design charrettes to explore "out-of-the-box" ideas, promoting high efficiency standards (LEED certification), expanding energy credits for unconventional measures, establishing tracks for cutting edge projects, providing early design team incentives, expanding the incentives for commissioning and M&E projects are some of the recommendations that resulted from the process evaluation, and they have been duly incorporated into the design of the SBD program.

   Additionally, SBD will extend the potential of targeted approaches to market segments or industries where alternative interventions may be more effective than the traditional design assistance/incentive approach. A customized approach will focus on market segments such as hospitals and clean room facilities, and other market segments as identified.

d. Innovation: The Statewide New Construction Program features a number of new program elements that reflect innovative out-of-the box thinking. These innovative features originated from the IOUs' desire to extend their resources in order to achieve the ambitious goals of the program by tapping into heretofore unexplored markets. Some examples:

   i. SBD's "Path To Zero" campaign, which aims to create a demand in the marketplace for super efficient, green, LEED+ and/or solar ready, high-performance buildings.
   ii. Simplified SBD for smaller projects, which will offer web based advice on common energy saving strategies
   iii. Sustainability incentives: additional financial incentives beyond direct energy and demand reduction incentives for SBD's systems approach and WBA projects that meet qualifying criteria
   iv. Redesigned incentive mechanism for single family and multi family projects offered by CAHP, which rewards higher levels of performance in a whole house approach. Performance Bonus adders for sustainability measures, green building and compact

homes, designed to move the market towards very high levels of energy efficiency

v. Program implementation that will emphasize fuel neutrality: a whole house, performance based incentive approach that focuses on overall building efficiency rather than individual measures.
vi. The therm – kWh buy back agreement recently executed by SCE and SoCalGas which enables the two utilities to work more collaboratively.
vii. ZNEH case studies and demonstrations that will be showcased and marketed through company web sites, recognition awards, trade show participation, on-site promotions, etc.

e. Integrated/coordinated Demand Side Management: At a minimum, all marketing materials developed to support energy efficient design processes will cross promote demand response to educate customers on the availability of IOU DR programs. Additional work will take place during the three-year program cycle to evaluate closer linkages between EE and DR, DG and LIEE.

f. Integration across resource types (gas, electricity, water, air quality, etc): The New Construction Program is designed to be implemented with fuel neutrality. Wherever possible, program management staff will highlight potential water savings and work with the local water utilities to incorporate water savings into the program. SCE and SoCalGas have signed a joint agreement to exchange therms and electricity savings derived from projects they have been able to secure, so lost opportunities are minimized. The ZNEH Sub Program will emphasize savings from all sources, including mitigation of carbon footprints associated with energy saving measures.

g. Pilots: The ZNEH Sub Program will serve as the proving ground for pilots, and will actively engage Emerging Technologies to incorporate new measures in the initial design of pilot projects.

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

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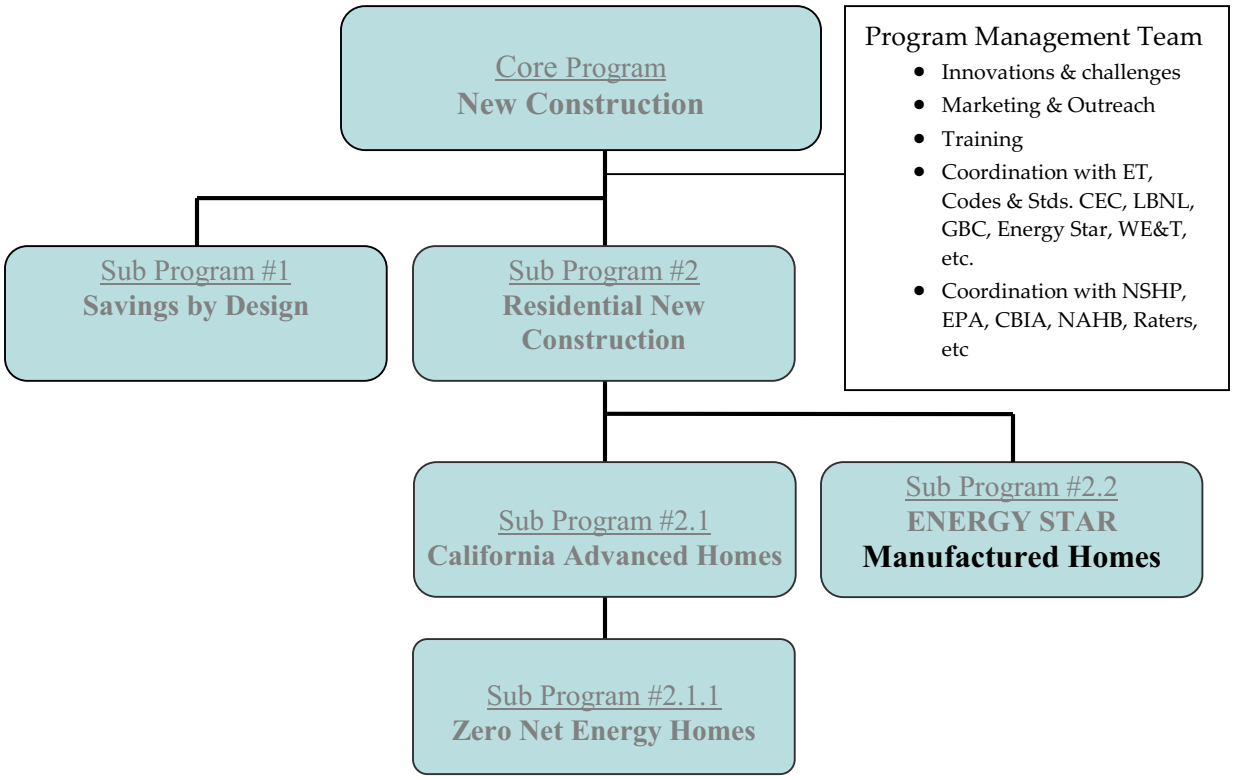
7. Diagram of Program: The overall structure of the statewide New Construction Program is depicted in the following diagram. The actual implementation of the Sub Programs is flexible and may differ depending on the IOU's internal organization of the programs. The individual differences in implementation are highlighted in the individual IOU's PIPs.



8. Program Logic Model: Logic models for the Sub Programs are presented in the respective Sub Program PIPs.

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1. Program Name: Savings By Design
   Program ID#: TBD
   Program Type: This is a core, statewide program

2. Projected Program Budget Table

Table 1[3]

Program #	Main Program Name / Sub-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[4] – by calendar year

[3] 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.
[4] For all-electric IOUs, the therm column should include interactive effects.

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Table 2

Program #	Program Name / Sub-Programs	2009 - 2011 Three-Year EE Program Gross kWh Savings	2009 - 2011 Three-Year EE Program Gross kW Savings	2009 - 2011 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

Savings By Design (SBD) is an energy efficiency program developed for the nonresidential new construction industry. Since 1999, SBD has provided statewide consistency, program stability, and savings. SBD seeks to protect and preserve natural resources by advancing the design and construction of sustainable communities and promoting green building practices. The program is designed to overcome customer and market barriers to designing and building high performance facilities.

SBD provides the nonresidential new construction industry with a broad palette of technical and financial resources to aid the design of new facilities in the most cost-effective energy and resource efficiency standards.

The program will incorporate new approaches for 2009 - 11 to advance integrated design and green building certification in support of the CEESP. Furthermore, in an effort to pursue a whole-house approach, SoCalGas and SCE have entered in an inter-utility arrangement for SCE to sell its therms to SoCalGas and SoCalGas to sell its kWh to SCE.[5] This will allow both utilities to consider solutions for saving both kW and Therms

[5] An agreement for 09-11 program therm and kWh exchanges has been executed by both parties.

Tools and Expertise: California's Title 24 requirements establish some of the most stringent energy regulations in the nation. Exceeding these standard energy performance levels requires a higher level of design, technical assistance, and motivation. The requirements also can be very confusing. SBD provides the assistance, tools and expertise necessary to help customers and designers exceed compliance with the requirements and achieve long-term energy- and cost-savings.

Long-Term Energy-Efficiency: It has been firmly established in SBD program evaluations that the integrated design process, when implemented correctly, can lead to highly cost-effective energy savings for most projects. Because many in the design field are unaware of the potential savings, do not understand the design process, or perceive budgetary constraints, they are reluctant to implement energy-efficiency strategies. As a result, energy efficiency is often a lost consideration, abandoned in favor of pursuing the "lower initial cost" option. SBD strives to avoid lost opportunities by assisting customers in moving beyond initial cost considerations and towards the realization of long-term energy cost savings.

Energy Design Resources: Another key component of Savings By Design is Energy Design Resources (EDR). Energy Design Resources offers a valuable palette of energy design tools and resources that help make it easier to design and build energy-efficient commercial and industrial buildings in California. The goal of this effort is to educate architects, engineers, lighting designers, and developers about techniques and technologies that contribute to energy efficient nonresidential new construction. Additionally, design tools that reduce the time spent evaluating the energy use impact of design decisions are provided here at no cost.

Comprehensive Integrated Building Design Training: In conjunction with the Workforce Education and Training program, Savings By Design will proactively offer integrated building design training to architects, engineers and other design professionals. Training might encompass highly technical building modeling techniques for use in the selection of cost effective energy efficient measures. In addition, SBD will offer "lunch and learn" sessions to architectural and engineering firms interested in learning about utility energy efficiency programs.

b) List measures

The SBD program incentives and non-incentive activities are based on supporting a whole building design, and hence SBD does not present a set of defined measures.

c) List non-incentive customer services

Beyond traditional incentives, SBD engages in a variety of non-incentive activities as detailed in the implementation section of this Sub Program PIP. These non incentive activities are listed below:

- Technical support to Energy Analysts and Design Teams
- Economic Modeling / measure selection support to builders and construction managers
- Marketing support to builders
- DSM coordination (PV, DR, AMI, ET) for builders to maximize demand side reductions
- Feasibility studies and pilot program components as needed to develop new approaches to more effectively engage new and targeted non residential market segments.
- Training and resource enhancements
- Conferences and workshops to develop tools and concepts that will help the program expand its educational efforts
- Scholarships for students to attend the UC/CSU's Sustainability Conferences.
- Educational Institution Collaboration; Sustainability lectures to students

5. Program Rationale and Expected Outcome

a) Quantitative Baseline and Market Transformation Information:

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

Market transformation is embraced as an ideal end state resulting from the collective efforts of the energy efficiency field, but differing understandings of both the MT process and the successful end state have not yet converged. The CPUC defines the end state of MT as "Long-lasting sustainable changes in the structure or functioning of a market achieved by reducing barriers to the adoption of energy efficiency measures to the point where further publicly-funded intervention is no longer appropriate in that specific market."[6] 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[7].

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

Market transformation programs differ from resource acquisition programs on 1) objectives, 2) geographical and 3) temporal dimensions, 4) baselines, 5) performance metrics, 6) program delivery mechanisms, 7) target populations, 8) attribution of causal relationships, and 9) market structures[8]. Markets are social institutions[9], 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[10] 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[11]. According to York[12], "Market transformation is not likely to be achieved without significant, permanent increases in energy prices. From an economic perspective, there are 3 ways to achieve market transformation: (1) fundamental changes in behavior, (2) provide proper price signals, and (3) permanent subsidy."

The question of what constitutes successful transformation is controversial because of a Catch-22: Market transformation is deemed successful when the changed market is self-sustaining, but that determination cannot be made until after program interventions are ended. Often, however, the need for immediate energy and demand savings or immediate carbon-emissions reductions will mean that program interventions may need to continue, which would interfere with the evaluation of whether MT is self-sustaining. Market transformation success has also been defined in terms of higher sales of efficient measures than would have otherwise occurred against a baseline absent of program interventions. The real world, however, provides no such control condition. Evaluators must estimate these baselines from quantitative factors such as past market sales that may be sparse and/or inaccurate - particularly for new products. Evaluations must also defer to expert judgments on what these baselines may have been as well as on the degree of successful market transformation[13]. 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

[8] 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

[9] 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/

[10] 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.

[11] 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.*

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

[13] 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

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[14], 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[15]. 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[16]. 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.)[17]" The Strategic Plan recognizes that regulatory policies are not yet in place to support the success of market transformation efforts[18], but also reflects the CPUC's directive to design energy efficiency programs that can lay the groundwork for either market transformation success or for codes and standards changes.

Above all else, the hallmark of a successful market transformation program is in the coordination of efforts across many stakeholders. The most successful MT programs have involved multiple organizations, providing overlapping market interventions[19]. 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[20] suggests that the first step is not to set end-point definitions, progress metrics or goals. Rather, the first steps

[14] Rogers (1995) Diffusion of Innovations, 5th Ed.
[15] Example in bottom chart of this graphic from NYTimes:
http://www.nytimes.com/imagepages/2008/02/10/opinion/10op.graphic.ready.html
[16] Sebold et al (2001) p. 6-5,
[17] 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.
[18] CPUC (2008) Strategic Plan, p. 5.
[19] Nadel, Thorne, Saches, Prindle & Elliot (2003).
[20] Peloza & York, (1999).

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.

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

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

The IOUs are proposing a metric that is believed to reliably indicate a trend toward market transformation for Energy Efficiency in Non-Residential New Construction. While all metrics fall short of a perfect measure, the ideal metric would have a baseline that is already established that includes a reasonable and easy method of duplication and comparison. Market transformation cannot be measured on a year to year basis but will take several years and measurements to reliably discern trends. With this in mind, the IOUs propose the following:

- Study of participants in the Savings By Design (SBD) program projects exceeding Title 24 standards by specific percentages as determined from IOU program records.
- Average compliance margin of the Nonresidential New Construction sector as determined through a sample study of as-built construction projects.

The overarching purpose for these metrics is to understand how this market sector is transforming. Drivers of this market transformation include efforts from Codes and

Standards, Marketing, Education, and Outreach, Workforce Education and Training, and the direct SBD program.

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

Table 3

Metric A	Metric B
Percent of SBD participants with projects exceeding Title 24 (2005) standards by specific percentages.	Average compliance margin of the Nonresidential New Construction sector.

b) Market Transformation Information

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

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

Table 4

	Non-Residential New Construction Sector Internal Market Transformation Planning Estimates		
	2009	**2010**	**2011**
Metric A	Upward moving trend toward 2011 target.	Upward moving trend toward 2011 target.	Upward moving trend toward 2011 target.
Metric B	Upward trend in non-participants as-built compliance margins.	Upward trend in non-participants as-built compliance margins.	Upward trend in non-participants as-built compliance margins.

c) Program Design to Overcome Barriers:

Financing

Financing of energy efficiency upgrades continues to be a barrier in achieving full savings potential. To this end the program will evaluate the development of innovative financing tools:

- Explore expanding On-Bill Financing offerings to all participants (more information on page 16, under "Innovation").
- Investigate how to leverage external funding for zero net energy new buildings and major efficiency upgrades of existing buildings.
- Explore establishing relationships with other entities to identify alternative sources of funding for energy efficiency upgrades.

Small-Project Market Penetration
SBD has historically achieved very high penetration rates with mid-sized and large new construction projects. However, barriers exist to deeply penetrating the small-project markets. To help overcome this, SBD will be developing a simplified, web-based system for smaller projects that meet a specific size threshold (more information on page 15, under "Innovation").

Program Presentation
Gaining a full understanding of the program's offerings can be difficult for some customers. Field delivery staff for SBD will collaborate with demand response and self-generation programs, as appropriate, to combine program offerings into a customer-friendly and easy-to-navigate suite of materials. Programs can be cross-promoted and the whole building approach will help to educate designers in the benefits of their adoption in new construction.

d) Quantitative Program Targets: Provide estimated quantitative information on number of projects, companies, non-incentive customer services and/or incentives that program aims to deliver and/or complete in 2009-11 timeframe. Provide references where available.

Table 5

Program Name	Program Target by 2009	Program Target by 2010	Program Target by 2011
Savings By DesignTarget #1			
Target #2			
Target #3			
Target #4			

* [e.g. Target #1: 20,000 refrigerators recycled by 2011; or Partnerships with 5 of the 10 top homebuilders by 2010]

e) Advancing Strategic Plan goals and objectives:

- The State of California's Green Building Initiative[21] requires that state agencies, departments, and other entities under the direct executive authority of the Governor, cooperate in taking measures to reduce grid-based energy purchases for state-owned buildings by 20 percent by 2015, through cost-effective efficiency measures and distributed generation technologies.

  Commercial building owners are also encouraged to take aggressive action to reduce electricity usage by retrofitting, building, and operating the most energy- and resource-efficient buildings by taking measures described in the Green Building Action Plan.

  SBD supports the voluntary portions of this legislation through improved new construction in the commercial sector as well as the mandates in the government sector.

- The California Global Warming Solutions Act of 2006 (AB 32) created a state-mandated program to reduce greenhouse gas (GHG) emissions in California to 1990 levels by 2020, specifically including emissions of GHG from the generation of electricity delivered and consumed in the state.

  SBD supports efforts to enhance the public's understanding of AB 32 by relating the carbon reduction effects of energy efficiency programs to program participants.

- The California Long Term Energy Efficient Strategic Plan (CEESP[22]) spells out a variety of strategies to address energy reduction in California for homes, offices, factories, and farms.

  SBD advances CEESP's comprehensive energy efficiency goals with:
  - Integrated design approach
  - Support of commissioning and M&V
  - Support training activities

6. Program Implementation

   a. Statewide IOU Coordination:

   On a statewide basis, the SBD program will continue to offer two existing program components to its customers with new construction or major

[21] Per Executive order S-20-04, dated December 14, 2004, http://www.energy.ca.gov/greenbuilding/documents/executive_order_s-20-04.html
[22] California Energy Efficiency Strategic Plan, 2008, http://www.californiaenergyefficiency.com/index.shtml

remodel/renovation projects, and will add a simplified approach for smaller projects.

- Whole-Building Approach or WBA (Integrated Design) - existing
- Systems Approach - existing
- Simplified Approach - new

SBD will offer financial support for design teams to undertake an integrated design process. Additionally, sustainability incentives will be offered to building owners to achieve green building certification, perform building commissioning during design and construction, and/or establish and follow a building measurement & verification (M&V) plan after occupancy. These sustainability incentives are designed to encourage new buildings to be as well designed as possible, be built as well as they are designed, and be operated as well as they are built.

Non-Energy Activities

In addition, SBD will be engaged in a number of non-energy activities, including the following.

- **Feasibility studies and pilot program components** as needed to develop new approaches to more effectively engage new and targeted market segments.
- **Training and resource enhancements** in concert with the Energy Design Resources component (now included in the Education/Training/Outreach program).
- **Conferences and workshops** to develop tools and concepts that will help the program expand its educational- efforts to encompass sustainability issues, and work towards coordinated delivery of Demand Response, self-generation, water conservation, and enhanced gas savings.
- **Scholarships** for students to attend the UC/CSU's Sustainability Conferences. The annual conference presents the architectural students with the rare opportunity to see first-hand that sustainability issues are growing in importance. Sponsoring Scholarships also provides SBD with a participatory role on a panel that answers questions regarding the SBD program and the compliance characteristics of potential customer projects.
- **Educational Institution Collaboration** will help ensure the development of curricula and adequate preparation of students for opportunities in energy efficiency. Sustainability lectures to students are also expected to help in their development.

Subcontractor Activities

Including other industry experts in certain program implementation processes enhances and extends the value of program benefits that customers can receive.

In recognition of this, appropriate consultants will be selected through competitive bidding processes for some or all of the following activities:

- Project-specific energy simulation design assistance for WBA projects.
- Integrated energy design support, such as charrette facilitation and process training.
- Program marketing and delivery in technically specialized, hard-to-reach industries.
- Complex computational analyses required for the achievement of Zero Net Energy projects, as called for in the CEESP.

Marketing Activities

Cross Promotion

For 2009 - 11, SBD program information will be included with other marketing materials of other programs/services as appropriate. Notably, during events which SBD sponsors, marketing materials from other partner programs, such as DR, Sust Comm, Partnership, ET, Retrofit Program, etc will be included with SBD materials. This will extend the reach of the program and reduce customer confusion as to program availability.

Partnership Synergies

Savings By Design has established close relationships and memberships with other groups involved with the commercial new construction industry. These relationships make it possible to provide comprehensive services to our customers. These groups include:

- American Institute of Architects (AIA)
- California Council of American Institute of Architects (AIACC)
- Illuminating Engineering Society (IES)
- American Society of Heating and Refrigeration Engineers (ASHRAE)
- United Sates Green Building Council (USGBC)
- Green Building Consultants
- Collaborative for High Performance Schools (CHPS)
- California Commissioning Collaborative (CCC)

SBD seeks out partnerships and opportunities to help educate building owners, building design teams, and other industry participants in order to promote whole building, energy-efficient, sustainable design in new construction.

Awards Sponsorship

SBD co-sponsors (with AIA California Council) the annual Energy Efficiency Design Awards. These awards are designed to raise the awareness of successful high-performance facilities within the design professions.

Internet
Comprehensive information about SBD can be found on savingsbydesign.com. In addition, SBD case studies are posted on the Energy Design Resources website. In the future, Web Based Training (WBT) might be considered for both websites mentioned above.

Utility websites will continue to advance Savings By Design by providing program information.

Print Media
Articles and press releases submitted to specialty publications targeting developers, building owners and design professionals.

Outreach
SBD will continue to seek out speaking opportunities at conferences and provide "Lunch and Learns" for architects and engineers. In addition, Utilities will consider holding conferences to promote and build awareness surrounding their energy efficiency programs, although this might only be offered when resources permit.

b. Program delivery and coordination:

i. Emerging Technologies program: Coordination of SBD with the Codes and Standards and Emerging Technologies activities will be realized through the 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. The SBD Sub Programs is expected to interact extensively with the ET Program to ensure new and emerging technologies are showcased and / or piloted through case study projects.

ii. Codes and Standards program: Close coordination with the statewide Codes and Standards team is essential for tracking and implementing changes initiated by the Title 24 standards. SBD goals are closely tied to Title 24 standards, and it is imperative to track and implement changes to the program on an as-needed basis. SBD, Codes and Standards and Emerging Technologies activities will be coordinated through the Program Management Team.

iii. WE&T efforts: The workforce education and training needs are unique to the industry and close coordination with WE&T will be necessary.

SBD program staff will coordinate with the WE&T program management team to ensure its training and education needs are met.

iv. Inter-Utility coordination: In an effort towards integrated delivery of energy savings, SCE and SCG (single fuel utilities) have recently concluded a joint agreement to buy back therm saving and kWh savings. Implementation of this agreement will entail closer coordination between the two utilities. The New Construction Program Leads will meet on a quarterly basis to ensure the savings are reported appropriately and exchanged in accordance with the agreement between the utilities.

v. Non-IOU Programs – The Sub Program will remain engaged with CEC, DOE and other government agencies responsible for various aspects of New Construction in California.

vi. CEC work on PIER – The ZNEH Sub Program will interact extensively with the Emerging Technologies Program to ensure new technologies are absorbed quickly into the case study projects. Such efforts are already underway with the PIER program. This activity will primarily be managed under the Technology and System Diagnostics Advocacy Program (see the ZNEH Sub Program plan for more details). (is this applicable for SBD? I don't think so.)

vii. CEC work on codes and standards – See Section 6.b.ii.

viii. Non-utility market initiatives: California utilities have established relationships with a number of other groups in the building industry. SBD will continue to seek out and coordinate synergies with, but not limited to, the following groups:

- Environmental Protection Agency (EPA)
- California Building Industry Association (CBIA)
- Green Building Consulting Organizations (Build It Green, California Green Builder, Global Green)

IOUs are keenly interested in the efforts of Green Building organizations that are engaged in developing industry-wide qualification standards, and will coordinate with the relevant organization s to ensure appropriate standards are developed and adopted.

Whole Building Approach

The Whole Building Approach (WBA) is SBD's preferred avenue for achieving energy efficiency in new construction because it enables a design team to consider integrated, optimized energy-efficiency solutions. This customized approach

requires a high level of building energy simulation and interactive feedback, which generally leads to much more efficient design decisions. The key to maximizing energy choices, using this type of collaborative effort, is intervention at the earliest phase of building design.

Traditional Incentives
For 2009 – 11, the statewide owner's incentives for electrical energy savings offered by the WBA will start at $0.10 per kWh at 10 percent better than Title 24 code and increase in a straight line to $0.30 per kWh at 30 percent better than code. For projects that exceed 30 percent better than code, the electric incentive will be $0.30 per kWh saved. The incentives will be capped at 75% of incremental cost or $500,000, whichever is lower. Looking to the future, SBD may offer a significantly higher incentive rate for projects whose aspiration is "Zero Net Energy."

If SBD provides design assistance services to a project that achieves high performance without incurring incremental equipment cost (due to the intrinsic benefits of the integrated design process), an owner incentive will not be awarded due to the incremental cost cap. In these cases, SBD will still claim the resulting energy and demand savings.

In cases where a WBA project initially meets the 10 percent threshold for eligibility to participate, but later experiences project changes that reduce the building's performance to less than 10 percent - but are at least 5 percent better than Title 24 - the project will earn an incentive corresponding to the Systems Approach incentive rates. This will overcome a market barrier by reducing risk to owners to participate in SBD for projects that struggle to achieve 10 percent better than code.

Peak Reduction Incentives
In addition to the traditional incentives offered by SBD, an incentive for peak demand reductions consistent with the CPUC's methodology for determining peak kW reductions will be added. The rationales for directly incentivizing peak reductions are two-fold:

- **Adding a direct demand incentive will encourage measures that may have little or no energy savings, but significant demand reductions.**

  California values energy savings and permanent demand reductions equally. Therefore, the indirect demand reduction incentive currently offered by the WBA, through tying the energy incentive rate to the Time Dependent Valuation (TDV) based compliance margin, does not offer sufficient visibility to the importance of achieving peak demand reduction.

- **A flat incentive for peak demand reductions, in addition to the energy incentive, addresses two industry concerns.**

  As Title 24 becomes progressively more stringent, it is increasingly difficult to achieve the same magnitude of energy savings as under the previous Title 24 code versions. There is also widespread recognition in the CEESP that achieving the state's aggressive goals will require increased incentive levels to offset the effects of diminishing returns.

Design Team Incentives

SBD also offers Design Team Incentives (DTI) for WBA projects to support the extra effort on the part of design teams for integrated energy design and to reward exceptional design accomplishments within the framework of the WBA. In addition, SBD will continue to develop a mechanism by which design firms are offered extensive technical support in building their in-house energy modeling capabilities. This assistance is intended to help design firms overcome the initial learning-curve barriers that have kept many from undertaking energy modeling for energy efficiency measure alternatives analysis when programming buildings.

By forming alliances with design firms to ramp up their internal energy modeling resources, SBD will achieve increased market penetration for the WBA. SBD will support the long-range vision of the CEESP by encouraging the design community to consider energy efficiency as an equally important component of every building's programming.

For 2009 - 11, DTI incentives will equal one-third of the owner's incentive. The threshold for design teams to begin earning a DTI is the same as that of the owner: 10 percent better than code. Additionally, 50 percent of the DTI will be paid to the design team upon acceptance of the Owner Agreement and all supporting analysis and documentation. The design team will be required to conduct energy modeling with comparison of alternatives. These analyses will be contained in a report prepared by the design team that is presented to the project owner and accepted by the utility. The DTI will be capped at $50,000.

If a design team elects not to perform energy modeling for the DTI on a WBA project, SBD will continue to provide comprehensive energy modeling services to the customer and their design team. These Design Assistance (DA) services have proven successful over the past years in providing energy calculations, design facilitation, and energy recommendations that provide the guidance and information building owners need to make well-informed design and construction decisions for their facilities. In many cases building owners find that design assistance is the main influence in their including energy-efficient options in their building - even more influential than a direct incentive. In all such cases, SBD will track and report such results toward its program goals.

The Systems Approach

The systems approach is a performance-based method utilizing energy analysis tools for energy modeling to analyze efficiency choices. This approach is used for projects that do not present sufficient opportunities to warrant the labor intensive assistance services offered through the WBA. The systems approach is designed to make it easy for designers to look at the interaction of systems within their project, rather than individual equipment or fixtures. The systems approach is used for simple facilities where integrated opportunities are limited, as well as projects where program intervention may come in too late in the design phase to effect sweeping programmatic changes to the design.

For 2009 - 11, SBD will continue to offer the same incentives by measure end-use as the non-residential calculated retrofit program (known in 2006-08 as Standard Performance Contract, or SPC). Additionally, while Title 24 typically (though not exclusively) provides the baseline for the systems approach, SBD will apply an existing equipment baseline to major renovation projects in which SBD's influence has motivated the customer to undertake the replacement of existing, inefficient equipment, even if such renovations subsequently trigger Title 24 requirements.

For example, if SBD motivates a customer to replace over 50% of an existing lighting system, which subsequently triggers Title 24 lighting requirements, the program will claim savings from an existing equipment baseline rather than the Title 24 baseline.

This will reduce customer confusion by keeping SBD and the calculated sub program of the Statewide Commercial program, also known as Standard Performance Contact (SPC), out of direct competition with each other. It will also allow major renovation projects with some retrofit activities to participate wholly in one program. The customer experience will be improved and higher levels of energy performance in existing buildings will be promoted, consistent with the aims of the CEESP.

c. Best Practices:

The statewide Savings By Design team has completed process evaluations of the 2006-08 programs. Based on interviews with various market actors and focus groups from the design community, several consistent themes emerged on recommendations to improve the program. Consequently, several enhancements were added to the program.

Process Evaluation Recommendations:

- Provide Early Energy Charrettes - The objective of the charrette would be to review all of the potential energy efficiency aspects of the project, and to explore all feasible "out-of-the-box" ideas that could conceivably be incorporated into the project at an early stage.
- Promote High Efficiency - Participants were skeptical about LEED and its value, yet they all acknowledged that higher levels of energy efficiency were valuable.
- Expand Credit for Unconventional Efficiency Measures - As SBD becomes increasingly ambitious, it will become necessary to update the analysis methods to credit measures that lie outside the T-24 compliance domain, for example, natural ventilation and un-air-conditioned buildings.
- Establish Track for Cutting Edge Projects - Some of the designers suggested that there be a track specifically established to encourage cutting edge projects that significantly diverge from conventional energy efficiency solutions, and which could demonstrate substantial new opportunities for advanced energy efficiency.
- Provide Early Design Team Incentive Payment - Designers value the design team incentives and would like to have them earlier in the design process. Because the typical design team incentives arrive so late, often years after the extra design effort was expended, the link between the reward and the behavior it encourages is lost. If it were easier for designers to receive a portion of the incentive earlier, it would likely be more influential and give SBD a more prominent role in their projects.
- Expand Incentives - Incentives could encourage both commissioning activities and the measurement and evaluation of projects. Commissioning especially is perceived as adding costs, so incentives to offset the costs were encouraged.

Up to 10% of SBD projects will be monitored using Energy Star benchmarking. Feedback from these follow-up evaluations will be shared with the building owner and other IOUs.

Alternative Delivery Methods and Targeted Approaches

SBD will continue to build on the successful Alternative Delivery Method, which invites third-party market players to implement program goals in specific hard-to-reach niches such as facilities with dominant refrigeration loads. For 2009 - 11, the program will explore a similar effort to more effectively extend the reach of the program into hospitals, and possibly the arena of leased commercial spaces with high turnover rates. Other niche markets that may respond to a higher level of technical support will also be considered as they are identified.

In addition to working with individual building owners, SBD has interfaced aggressively with large retail chains to promote energy efficiency and sustainability. Large chains such as Target, Walgreens, Thrifty, Staples, Lowe's, Edwards Theatres, and others have participated in the SBD program.

When each chain proposes opening a series of stores across California, SBD will continue to work directly with their design teams helping them incorporate energy efficiency measures into their new prototype, utilizing a whole building approach. SBD models that prototype across all 16 climate zones in California, to clearly identify energy savings and potential incentives for these customers. With these chains now beginning to focus on green/sustainable stores with renewable energy as part of the design (e.g., Safeway/Vons) this activity will continue to increase in the 2009-11 program cycle.

SBD will extend the potential of targeted approaches to market segments or industries where alternative interventions may be more effective than the traditional design assistance/incentive approach. For example, simplified approaches to working with the segment of rapidly designed-and-constructed building types would consider such facilities as quick service restaurants. A customized targeted approach will focus on market segments such as hospitals and clean room facilities, and other market segments as identified.

d. Innovation:

Savings By design will incorporate several innovative features in the 2009-11 cycle. These are elaborated here:

The Zero Net Energy "Path to Zero" Campaign (See Appendix A)
Many building owners and their design teams are interested in higher performance buildings, but the costs and risks of going beyond known design practice can be substantial. Learning how to design, build and operate the next generation of buildings will continue to challenge current thinking.

Already, approximately 50% - 70% of the square footage of new building stock participate in the SBD program – the program *is* reaching the customers. Now, using Zero Net Energy (ZNE) benchmarks, SBD will work closely with each IOU's internal sustainability offerings to develop an overall strategy needed to move toward the goals established in the CEESP for commercial buildings in achieving the ZNE performance targets.

In addition to SBD, marketing for the ZNE program will be leveraged through other IOU programs, e.g. ZNE PIP at PG&E and Sustainability PIP at SCE. The campaign will focus on subsectors and climate zones having the most potential in achieving ZNE targets in a cost effective manner.

These innovative projects will require additional design time, innovative technologies, creative design solutions, and higher funding levels to achieve these results.

Program Goals
Creating a demand in the marketplace for super efficient, green, LEED+ and/or solar ready, high-performance buildings must be a priority. ZNE's aggressive program goals include the following.

- Buildings will use a minimum of 40% less energy than Title 24 codes requirements
- A performance metric will be adopted (e.g. kBTUs per sq. ft. by building type) to encourage inclusiveness of strategies (e.g. buildings operations and occupant created loads)
- Up to 5% of SBD projects will comply with ZNE goals and outcomes.
- For ZNE pilot projects, the WBA incentives will range up to $0.50 per kWh plus the standard kW incentive.

Any ZNE pilot savings will be counted as part of SBD.

Incentives
Reaching ZNE's goal of energy efficiency 40% below Title 24 will require innovative incentives. ZNE building innovators may be eligible for utility funding such as:

- Advanced computational modeling
- Higher incentive targets
- Additional technical/design team assistance
- Financial assistance for natural ventilation strategies and on-site renewable energy systems – either utility- or customer-owned.

Training
The ZNE program will offer advanced design training for architects, lighting designers, etc. The training, covering subjects including natural ventilation systems and daylight lighting, will take place in workshops and "lunch and learns."

Program Evaluation

Influencing the decision makers as early as possible is crucial in addressing the need for sub-metering/advanced metering to track a

building's performance in key areas such as lighting and plug loads. Those devices then help create feedback loops for the owner and the utility.

All SBD projects will be benchmarked using Energy Star or other appropriate tools (if applicable). Buildings that appear to have performance problems will receive additional review and or services to improve performance, e.g. re-commissioning.

Following the completion of each project, a comprehensive process evaluation and /or internal program reviews will be conducted to determine:

- Successful incentive strategies
- Successful technical/design integrations
- Key marketing/business case messaging

Lessons learned from these evaluations will be applied to the net zero pathway that will improve SBD performance over time.

To analyze the success of this campaign, it is important to not only evaluate each project upon completion, but energy efficiency performance must be monitored for several years following completion. The building owners need to be apprised of the follow-up results so they know how their building is performing. Elements of these follow-up evaluations will include metering for:

- Plug load
- Lighting
- HVAC
- Other loads (process loads deemed important)

The estimated per-project cost of the follow-up metering is approximately $10,000:

- $4,000 hard costs
- $6,000 soft costs

Case Studies
Case studies will be produced for ZNE projects to capture lessons learned and to highlight the elements, design, and performance of ZNE buildings. These case studies, to include information gathered in the follow-up program evaluations, will broaden the market interest, knowledge, and skill sets to make ZNE buildings a reality.

The Hanna Gabriel Wells (HGW) project is an example of a showcase ZNE project that will be highlighted in a case study. This soon-to-be-completed, 5800 cubic feet structure is a project that was jointly funded with Emerging Technologies (ET). The monitoring of the project, which featured that program's technologies, is funded by ET. When the project is complete, a public relations campaign will be launched to generate publicity and promote public tours. Co-promotions with interested organizations such as USGBC are also planned.

Market Transformation
The ZNE program seeks to encourage high-performance building and transform the market by:

- Identifying, demonstrating, building familiarity and lowering costs of energy-savings strategies so that they are more likely to be codified
- Training design professionals on advanced energy savings strategies
- Providing business case related information (financial benefits, leadership benefits, non-energy benefits) to support owner interest in adopting corporate policies related to green and high-performance buildings.

Internal Program Coordination
The ZNE program will coordinate very closely with Emerging Technologies (ET) to profile their technologies. ET will help fund the monitoring and verification of ZNE projects and benefit from lessons learned from the process evaluations.

Coordination with Codes and Standards can help develop reach codes for Title 24.

External Program Coordination
This program would work with various external organizations that are interested in driving ZNE buildings. These organizations will help promote the "success stories" of early adopters.

Simplified Approach for Small Projects
New for 2009 - 11, SBD will offer a mass-market simplified approach for small projects to participate in the program. SBD has historically achieved very high penetration rates with mid-sized and especially large new construction projects. However, numerous barriers exist to deeply penetrating the small-project market. Such barriers are typically centered on the extensive level of design assistance

provided to SBD projects. From the customer's perspective, small projects often do not warrant the high level of involvement and documentation that participating in the standard systems approach or WBA requires. For the SBD program, these small projects are not cost-effective to deliver the extensive suite of design assistance services typically provided to all SBD projects.

To overcome these barriers, the simplified approach will offer web-based advice on common energy efficiency strategies applicable to customers' project types through an internal portal. The customer's Title 24 compliance documentation will be accepted as documentation for implementing these strategies. A project size threshold will be set to prevent overlap between the simplified approach and the systems approach. Incentives will be designed to overcome the capital cost barriers typically present on projects in this size range.

Initially, small offices, religious facilities, elementary schools, and strip malls have been identified as customer segments that will directly benefit from a simplified SBD approach. The simplified approach will target these projects first, adding in other segments as they are identified as having high potential to benefit.

Elementary school projects that apply too late in the design process to participate in SBD will be directed to Third Party New Construction programs as applicable.

Sustainability Incentives
New for 2009 - 11, SBD will offer additional financial incentives beyond direct energy and demand reduction incentives to systems approach and WBA projects that achieve Green Building Certification, perform building commissioning (Cx) during design and construction, and/or establish and follow a building measurement and verification (M&V) plan after occupancy.

US Green Building Council's LEED program and CHPS represent several rating systems for which certification can earn the customer the green building certification incentive (other systems will be used subject to utility consideration and approval). For Cx and M&V incentives, customers must meet all of the requirements of the LEED Energy and Atmosphere Prerequisites and/or credits associated with building commissioning and M&V.

The rationale for providing sustainability incentives is that they are directly supportive of the state's goals in moving the commercial new construction market towards zero-net energy by 2030, as embodied in the CEESP. Points-based green building certification systems award points for increasing energy performance. Green building certification incentive has the benefit of indirectly promoting greater levels of efficiency by raising the profile of all green building strategies and helping to transform the market to make sustainable practices standard.

An incentive for building commissioning directly supports the realization of the energy savings that were modeled in the package of energy efficiency recommendations presented by SBD and chosen by the customer for the project. An incentive for Cx ensures that the facility is operated in a manner consistent with achieving the maximum benefit from the installed energy efficiency measures. This helps to ensure that the state will receive the full benefit of the installed measures.

The Sustainability Incentives will take the form of a multiplier of 1.1 to be applied to the owner's base incentives. To be eligible for the Green Building Certification incentive, the project must participate in the WBA. For the commissioning and building M&V incentives, the project can participate in either the WBA or the SA. Projects participating in the simplified approach method are not eligible for sustainability incentives.

Financing of energy efficiency upgrades continues to be a barrier in achieving full savings potential. To help overcome the barrier of financing higher efficient equipment in Savings By Design projects, the potential for Alternative Financing will be explored. See each Utility's independent PIP for the financing options each may offer customers.

e. Integrated/coordinated Demand Side Management:

Integrated Design

The integrated design process encourages facilities to be designed with energy efficiency included as an objective from the start. When done correctly, it is likely that the overall cost of construction for the energy-efficient building will not exceed the cost of the building at minimum code compliance. The focus of this offering is to provide an incentive to design teams at the earliest stages of the design process.

Often, a barrier to design teams' full participation in integrated design is that the contract with the building owner is established early and usually has no provision for the additional design effort required. Thus, it becomes difficult to achieve full participation in integrated design without a change order to the customer, which is outside of SBD's ability to obtain. To overcome this identified market barrier, SBD will offer design teams a $5,000 stipend to participate in an integrated design process for any WBA project. SBD will set objective criteria to ensure that an integrated design process is undertaken and positive outcome is achieved prior to issuing the design team stipend.

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

Industry Integration
SBD field delivery staff will develop a full spectrum of energy use and sustainability program offerings by collaboratively working with applicable electric, gas, water and other industry groups. Issues such as energy savings associated with water use efficiency and embodied energies in building materials and transportation will be explored and analyzed to identify potential new sources of energy savings.

SBD will interact with the California Lighting Technology Center to encourage aggressive lighting recommendations which revolve around LED task lighting, LED down lights, effective daylighting and various outdoor lighting applications such as parking garages, exterior lights, walkway and parking lot lighting.

Program Integration
SBD field delivery staff will collaborate with demand response and self-generation programs, as appropriate, to combine program offerings into a customer-friendly and easy-to-use program. Technologies, such as building-integrated photovoltaic systems and energy management systems that are flexible enough to respond to new demand response strategies, are obvious strategies that can be integrated into a whole building approach to educate designers in the benefits of their adoption in new construction.

SBD will continue its integrated partnership with the Emerging Technologies group in bringing new and innovative technologies and designs into the mainstream commercial new construction market. One of the highlights of this partnership is the *Office of the Future*, a program designed to address new ideas for energy efficiency in the commercial buildings market.

Office Of The Future is geared primarily to impact the tenant improvement process for existing office space but is also viable for new construction projects and new tenant improvement projects occurring in Class A office building shells. In addition to high quality, energy efficient lighting, *Office of the Future* also addresses plug loads, HVAC performance, advanced metering technologies for performance verification, and demand response thermostats.

The program is being re-designed to be user-friendly so it will be welcomed by the leasing/tenant improvement market and perceived as a business benefit, both from an environmental standpoint and from the potential incentives perspective.

g. Pilots:

The Savings By Design program will explore the potential for utility ownership of major energy efficiency equipment to facilitate the installation of the highest efficiency HVAC systems in commercial buildings. The program recognizes that building owner financing is constrained and, without utility ownership, the system design may not maximize energy savings. The objective is to capture energy efficiency opportunities that would otherwise be lost for the 20 to 30 year life of the HVAC equipment. This would build on the success of programs that incorporate utility ownership of clean energy generation systems on customer facilities.

SBD will seek to identify projects with the following characteristics:

- The project is of sufficient size to warrant the effort (>$2,000,000 investment)
- The building is intended to be owner occupied or owner managed
- The HVAC system is a central plant configuration

At IOU discretion, if an appropriate project is identified and the owner is willing to enter into a contractual agreement with the utility to own and operate the building's HVAC central plant, the utility will file an advice letter for approval of incremental capital and maintenance costs for the project. The utility will demonstrate that the project meets the following criteria:

- The project is cost effective as a stand-alone energy-efficiency project and delivers incremental energy savings beyond what the building owner would otherwise have installed
- The capital requirement is between $2,000,000 and $20,000,000
- The energy savings associated with the project will count toward both the determination of each IOU's Minimum Performance Standard and the determination of its Performance Earnings Basis.

If approved, the utility may sub-contract out the design, construction, and operation of the facility but will serve as its project manager to ensure that it is constructed and operated at the design efficiency levels.

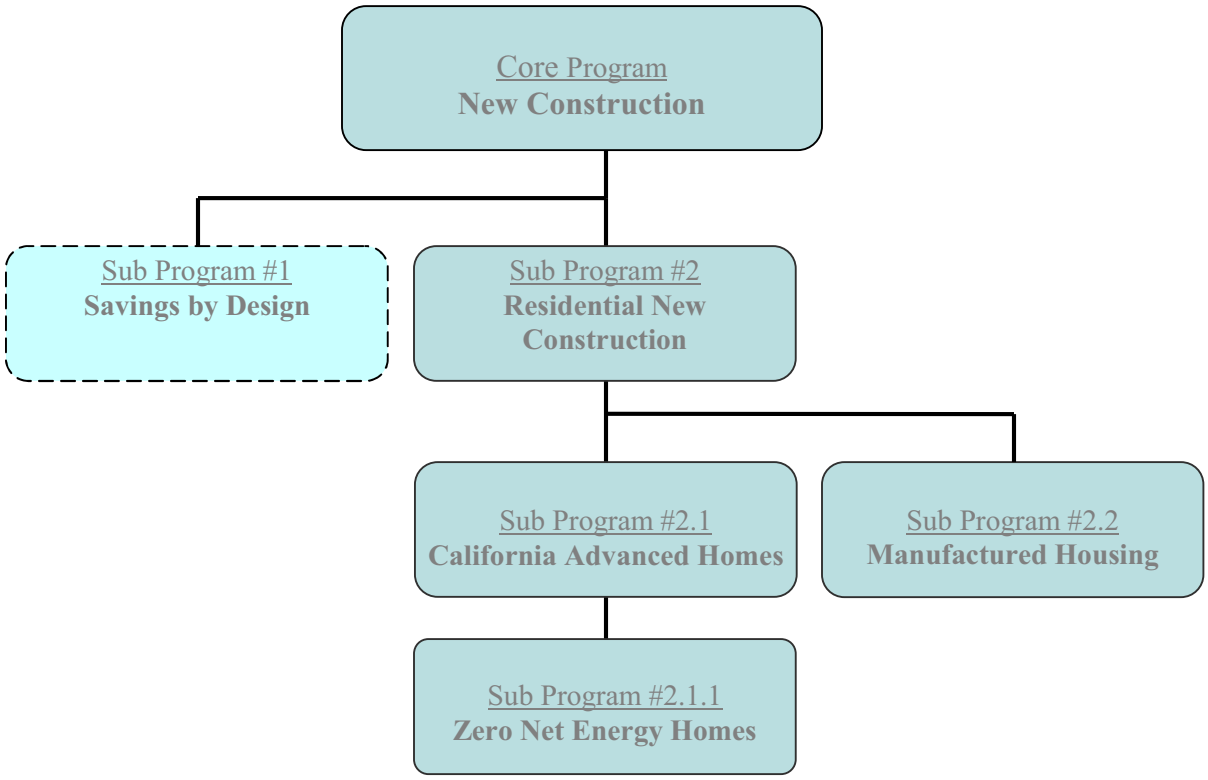
h. EM&V: The utilities are proposing to work with the Energy Division to develop and submit a comprehensive EM&V Plan for 2009-2011 after the program implementation plans are filed. This will include process evaluations and other program-specific studies within the context of broader utility and Energy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

has begun, since plans need to be based on identified program design and implementation issues.

Up to 10% of SBD projects will be monitored using Energy Star benchmarking.

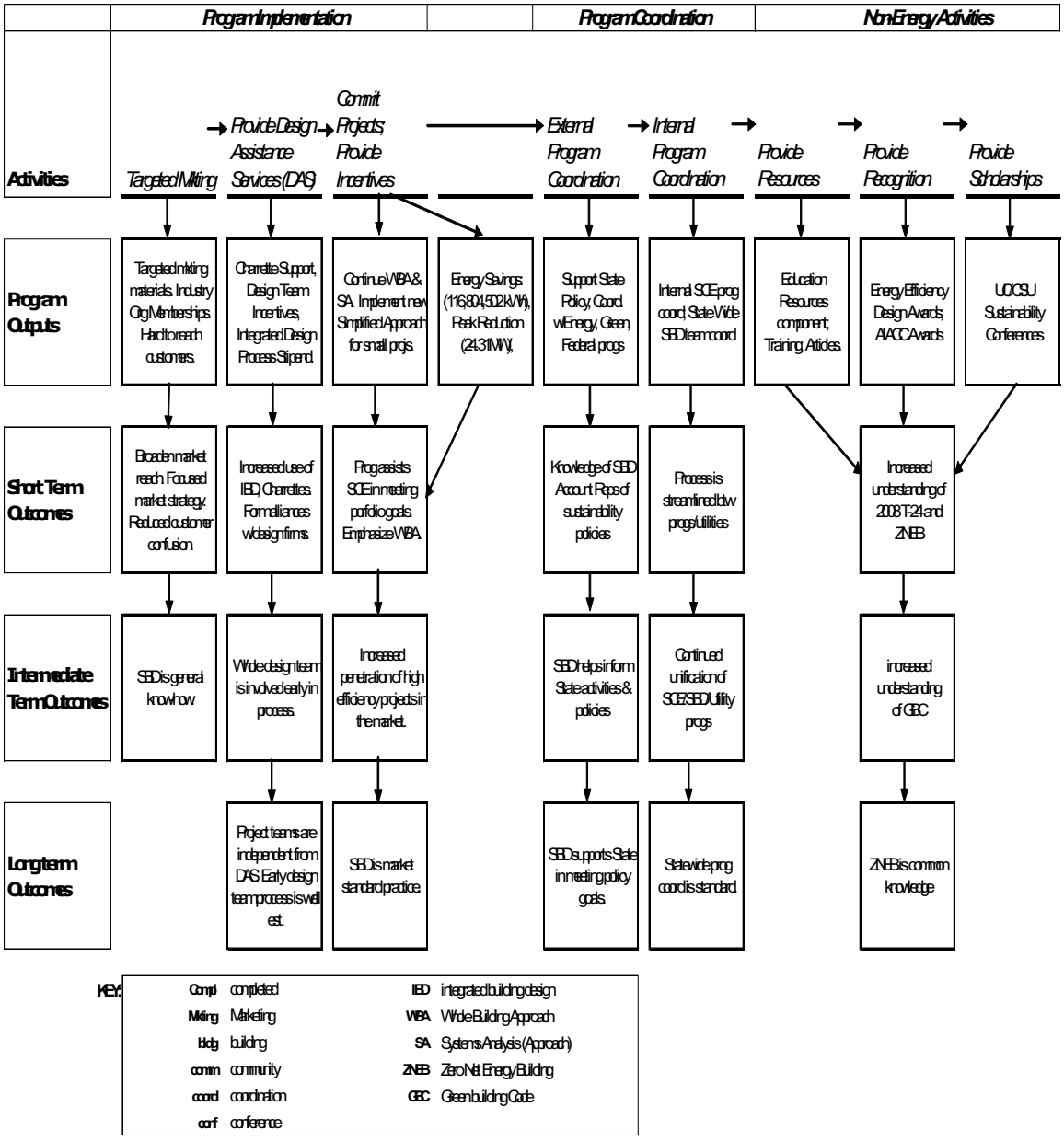
2009 – 2011 Energy Efficiency Programs
New Construction
Program Implementation Plan

7. Diagram of Program:



8. Program Logic Model:

SavingsbyDesign DRAFT 2009-2011 Logic Model



2009 – 2011 Energy Efficiency Programs
New Construction
Program Implementation Plan

Appendix A: Zero Net Energy: Goals and Strategies

Zero Net Energy		
Program Goals	**Program Strategies**	**Action Strategies**
1-1: Establish a long-term progressive path of higher minimum codes and standards ending with ZNE codes and standards for all new buildings by 2030.	• Establish one-or two-tiered voluntary EE standards, coordinated with green building rating systems. • Align Title 24 targets with goals of AB 32 and carbon reduction.	• Establish a minimum of 40% less energy than Title 24 codes requirements • Adopt a performance metric to encourage inclusiveness of strategies (e.g. buildings operations and occupant created loads)
1-2: Expand Titles 20 and 24 to address all significant energy and uses.	• Develop and adopt broader codes and standards for plug loads, such as copy machines, printers, battery chargers, and televisions. • Expand Title 24 to include whole building approaches including metering and data management, automated diagnostic systems, and sub-metering for tenant-occupied space. • Adopt progressive codes and standards for high-performance commercial lighting applications.	• This action area is primarily addressed in the Codes and Standards PIP. SBD currently supports the Whole Building Approach and is proposing metering in limited circumstances in this filing.
1-3: Establish a "Path to Zero" campaign to create demand for high-efficiency buildings.	• Convene leading building industry associations to plan and conduct campaign. • Organize forums to develop and exchange experience and data on emerging technologies, practices and designs that deliver ultra-low and ZNE buildings.	• Increased incentives and design assistance for innovative "Path to Zero" buildings. • Create case studies to highlight showcase ZNE projects • Partner with green-focused organizations to promote completed projects • Utilize public relations to generate media interest • Partner with local governments • Partner with local utilities (such as water districts)
1-4: Develop innovative financial tools	• Develop and pilot innovative financial tools. • Identify building performance metrics or	• On Bill Financing

Zero Net Energy		
Program Goals	**Program Strategies**	**Action Strategies**
for ZNE and ultra-low energy *new* buildings.	documentation needed to inform building performance and valuation.	
1-5: Create additional investment incentives and leverage other funding.	• Investigate other funding support that might be offered, such as local government "feebates" for EE/green construction, federal funding, federal or state tax incentives, GHG reduction benefits, e.g. via carbon offsets.	• Financial assistance for natural ventilation strategies and on-site renewable energy systems – either utility- or customer-owned. • Package additional funding sources, such as those offered by other utilities and any state and federal tax credits.
1-6: Develop a multi-pronged approach to advance the practice of integrated design.	• Promote ID development via Title 24 codes/standards and market activities. • Identify/develop tools and protocols from building commissioning, retro-commissioning, and building M&V to enable ID to be deployed. • From partnerships with industry and architectural/engineering schools to promote the practice of education in ID. • Provide incentive credits for professionals who maintain their accreditation w/training.	• Apply lessons learned from the completed-project process evaluations to the development of future training • Offer advanced design training for architects, lighting designers, etc., covering subjects including natural ventilation systems and daylight lighting.

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1. **Program Name: Residential New Construction (California Advanced Homes, Zero Net Energy Homes, and ENERGY STAR Manufactured Homes)**

Program ID#: TBD

Program Type: This is a core statewide program.

2. **Projected Program Budget Table**

Table 1[23]

Program #	Main Program Name / Sub-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[24] **– by calendar year**

Table 2

Progra	Program Name / Sub-	2009 - 2011	2009 - 2011	2009 - 2011

[23] 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.

[24] For all-electric IOUs, the therm column should include interactive effects.

2009 – 2011 Energy Efficiency Programs
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m #	Programs	Three-Year EE Program Gross kWh Savings	Three-Year EE Program Gross kW Savings	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. Furthermore, in an effort to pursue a whole-house approach, SoCalGas and SCE have entered into an inter-utility arrangement for SCE to sell its therms to SoCalGas and SoCalGas to sell its kWh to SCE.[25] This will allow both utilities to consider solutions for saving both kW and Therms. 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 improved energy efficiency in 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:

[25] An agreement for 09-11 program therm and kWh exchanges has been executed by both parties.

2009 – 2011 Energy Efficiency Programs
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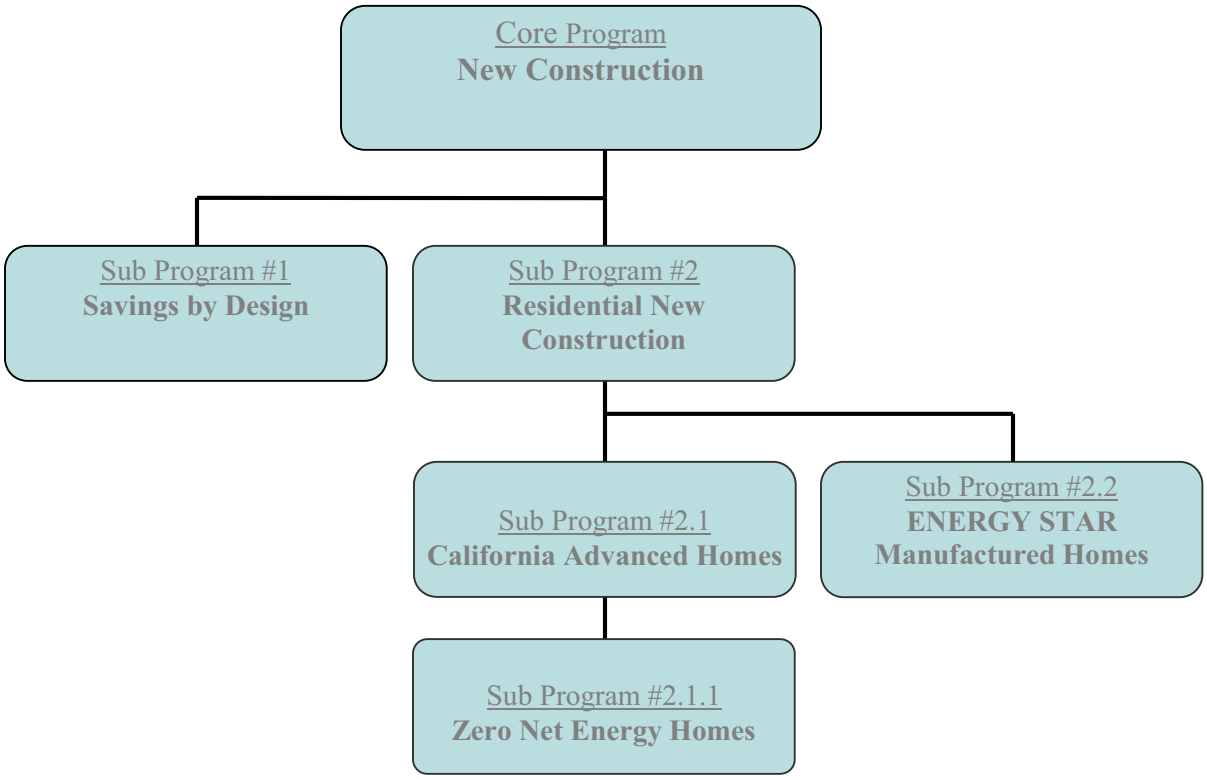
1. Sustainable Communities Program (Name / location differs by IOU) (Third party)
   Covering Master-planned communities, mixed-use projects, campuses, and commercial projects pursuing advanced energy efficiency and green targets.
2. Partnership Programs (Core)

   a. Strategic Planning Sub-Program (ICLEI-ILG-LGC)



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 (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 Technologies, and the New Solar Homes Partnership. In aligning itself with the CEESP, the CAHP targets an interim goal of 50 percent of RNC to Tier II (2005) by 2011, 10 per cent of RNC to 55 percent 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 CEESP 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.[26]

- Whole House Incentive
- Dishwashers
- Aerators/Showerheads
- Clothes washers (Water-agency Partnership)[27]
- Dryers
- Interior Lighting
- Refrigerators

[26] Savings per appliance will be consistent across all IOUs.

[27] 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.

Pending Program Measures, savings/incentive TBD. IOU-dependent[28]

- Programmable Communicating Thermostat (deemed, delivers DR measure)
- Refrigerant Charge Adjustment (deemed, delivers Comp HVAC measure)[29]
- 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.

c) List non-incentive customer services

b. Technical support to Energy Analysts and Design Teams[30]
c. Economic modeling/measure selection support to builder/construction managers
d. Marketing support to builders (sales agent training, marketing materials)
e. DSM coordination (PV, DR, AMI, ET) for builders to maximize demand-side reductions.

Incentive Structure

The pay-for-performance incentive structure for the 2009 - 11 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 structure 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.

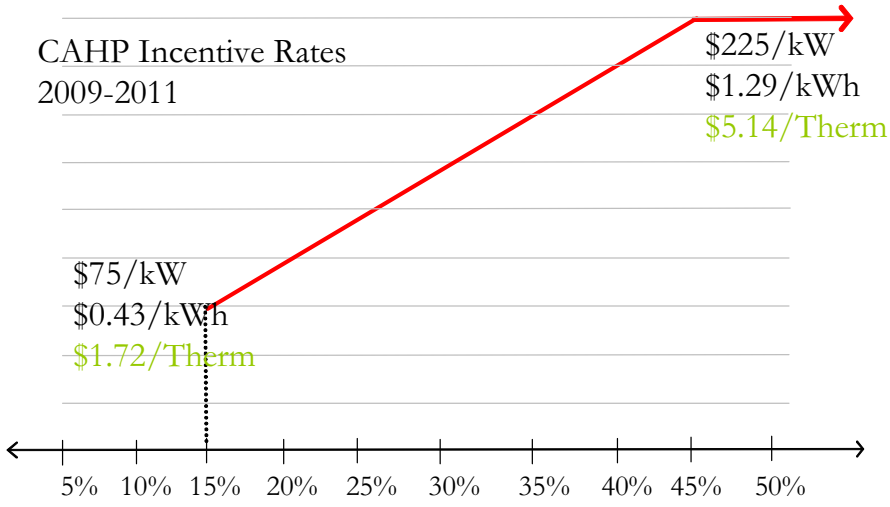
[28] Since funding is coming from other sources (AMI, Comp HVAC, DR), incentives in this group will be deemed rather than calculated. The intent however, is to maintain consistency in deemed amount across IOUs. Other measures, such as whole-house fans and demand recirculation systems need additional research to determine savings.

[29] T24 requires CIL or RCA in prescriptive path. If used for compliance, measure ineligible

[30] 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 for design teams.

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 2009-2011 calculated approach will be as follows:



Performance compared to Title 24

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, from August 1, 2009 until December 31, 2009 for those projects subject to the 2008 Title 24 code. It will not be available after January 1, 2010.[31]

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

[31] Because of the anticipated delay of the launch of the full 2009-2011 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.

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, 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 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 CEESP 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. One utility (SCE) achieved 19% market penetration in the 2005 cycle and is confident it can

improve upon that performance in combination with its single-fuel partner (SOCALGAS) in their joint territory.

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 five 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.

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.

Benefit of calculated incentives for single-fuel utilities

In moving from an itemized to a calculated approach, the single-fuel IOUs are better able to budget and account for energy savings. While the IOUs have traditionally adopted a fuel-neutral approach from the builder's perspective, single-fuel utilities can only pay for and claim savings in their own fuel. This has resulted in unclaimable savings and an increased cost per unit of energy. This is for two reasons.

- The first requires some explanation. To calculate the performance margin in new homes, CAHP follows the Title 24 protocol. That is, the margin is calculated by

finding the difference between the (code-maximum) allowed budgets for heating, ventilation, and air conditioning, (HVAC) and domestic hot water (DHW) with the proposed energy budget loads. The margin is calculated by comparing the difference between allowed budget (AB) and the proposed budget (PB) over the allowed budget (AB) to determine whether the home meets or exceeds code:

$$\frac{AB-PB}{AB} \times 100 = \% < T24$$

In general, particularly with the 2005 T24 update, it has been cheaper to save therms than kilowatt hours. As a result, for electric-only utilities (or areas of single fuel delivery for dual-fuel IOUs such as PG&E's joint territory with Sempra in San Luis Obispo County) projects have met their 15 percent performance target through gas savings. While CAHP encourages builders to save energy where they find it cheapest to do so, electrical energy saved for each dollar spent has continued to decline.

The percentage reduction in *electrical* savings between 2001 and 2005 versions of T24 (~46%, single family) is three times greater than the *overall* reduction in savings (~15%, single family). The decision to move to a calculated savings approach is driven by cost-effectiveness concerns for an electric-only utility. As the chart below illustrates, continuing to pay at the deemed levels of the 2006-2008 program, the price per kWh creates opportunity costs too high for the utility to sustain.[32]

T24 Updates: Impact on $/kWh				
Performance Tier	15% SF, Coastal	15% SF, Inland	20% SF, Inland	35% SF, All CZs
Incentive/Home	$400	$500	$700	$2,000
	2001 T24 kWh/home			
kWh/Home	434	564	773 (est.)	1226 (est.)
$/kWh 2001	$0.92	$0.89	$0.91	$1.63
	2005 T24 kWh/home			
kWh/Home	235	300	415	658
$/kWh 2005	$1.70	$1.67	$1.69	$3.04
	2008 T24 kWh/home (Est. at 15% < 2005)			
kWh/Home	200	255	353	559
$/kWh 2008	$2.00	$1.96	$1.98	$3.58

At the risk of belaboring the point, $1.70/kWh is largely unjustifiable, $3.58/kWh doubly so. At the top end of the current incentive model, $1.29/kWh while still too high, returns to a more reasonable cost, given the special needs of the housing sector.

[32] This represents a simplified analysis for illustrative purposes, which does not take into account NTG, EUL, escalation rates, avoided costs, and the like. It is simply incentive/first-year savings.

Opportunity cost is here understood as the penalty in kWh savings for investing a given PGC dollar in an expensive kWh instead of a cheaper kWh (resulting in a net reduction in energy savings and decrease in overall TRC).

Considering the low current levels of market penetration, and the significant market penetrations (50% to 35% < 2005 T24 by 2011) required by the California Long Term Energy Efficiency Strategic Plan, the need for a reconsideration of the 2006-2008 incentive model is clear.

- The second reason is that SCE and SoCalGas have never had an inter-utility arrangement for SCE to sell its therms to SoCalGas and SoCalGas to sell its kWh to SCE.[33] As an electric utility SCE is unable to claim therm savings or add them to our cost effectiveness calculation when preparing the E3. The therms SCE saves were likewise unclaimed by SoCalGas.[34] Ex post, saved energy is undercounted as a result of the previous program's design. Thus, a calculated approach helps each utility achieve a cost-efficient portfolio by capturing all savings of its fuel. Moreover, a calculated approach properly rewards those who achieve the highest performance and provides appropriate price signals to those at the low end.

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 refrigerator 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

[33] An agreement for 09-11 program therm and kWh exchanges has been executed by both parties.
[34] However, kWh saved by SOCALGAS though never claimed, were captured in SoCalGasSOCALGAS's E3.

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 CEESP, 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.[35] 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.

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

[35] 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.

Program Criterion	Percentage Added to Overall Incentive
	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.
• Solar Thermal	The same $/Therm rate as overall performance level, in effect a doubling of incentives for therms offset by Solar thermal collector.
• 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 CEESP 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 the following.

- 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[36]
- For those units designated by the builder for low-income occupants, SoCalGas'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.

[36] See, http://www.hcd.ca.gov/hpd/hrc/plan/he/, accessed 25 Apr 08.

- 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 will 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 participation 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 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, determined on a case-by-case basis. The Emerging Technologies program may also fund the purchase, installation, and monitoring of candidate technologies. The ZNEH sub-program will also 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.

The ZNEH sub-program offers educational opportunities to builders, architects and other residential construction stakeholders seeking knowledge regarding 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 specifications, 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 for Single Family homes (35% for Multi Family and Low Income housing). 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 or equivalent. 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.

2009 – 2011 Energy Efficiency Programs
New Construction
Program Implementation Plan

The ENERGY STAR Manufactured Homes Sub-program is designed to promote the construction of new manufactured homes in SoCalGas'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 the IOUs' 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 CEESP
- 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.

2009 – 2011 Energy Efficiency Programs
New Construction
Program Implementation Plan

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)
• 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, SCE will pursue zero-peak homes as a reasonable milestone on the way to achieving the CEESP'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 SoCalGas 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.

CAHP Incentive Rationale

The program's most ambitious goal for the 2009 - 11 program cycle is to have 50 percent of the residential new construction market to Tier II standards by 2011 (interim goal), based on the 2005 Title 24 code standards.

Let us assume that the 2008 standards exceed the current 2005 standards by 15 percent, on balance (the rate differs by CZ somewhat). Thus, the Big Bold Energy Efficiency goal of getting half of new homes to 2005 Tier II (at 35 percent better than code by 2011 is the equivalent of getting those same homes to about 20 percent better than the 2008 code. 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.

5. Program Rationale and Expected Outcome

a) **Quantitative Baseline and Market Transformation Information:**

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

Market transformation is embraced as an ideal end state resulting from the collective efforts of the energy efficiency field, but differing understandings of both the MT process and the successful end state have not yet converged. The CPUC defines the end state of MT as "Long-lasting sustainable changes in the structure or functioning of a market achieved by reducing barriers to the adoption of energy efficiency measures to the point where further publicly-funded intervention is no longer appropriate in that specific market."[37] 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[38].

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[39]. Markets are social institutions[40], 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[41] 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[42]. According to York[43], "Market

[37] California Public Utilities Commission Decision, D.98-04-063, Appendix A.
[38] California Public Utilities Commission (2008) *California Long Term Energy Efficiency Strategic Plan,* p. 5. Available at http://www.californiaenergyefficiency.com/docs/EEStrategicPlan.pdf
[39] 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
[40] 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/
[41] 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.
[42] 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.*
[43] York, D., (1999). "A Discussion and Critique of Market Transformation", Energy Center of Wisconsin. Available at http://www.ecw.org/ecwresults/186-1.pdf.

transformation is not likely to be achieved without significant, permanent increases in energy prices. From an economic perspective, there are 3 ways to achieve market transformation: (1) fundamental changes in behavior, (2) provide proper price signals, and (3) permanent subsidy."

The question of what constitutes successful transformation is controversial because of a Catch-22: Market transformation is deemed successful when the changed market is self-sustaining, but that determination cannot be made until after program interventions are ended. Often, however, the need for immediate energy and demand savings or immediate carbon-emissions reductions will mean that program interventions may need to continue, which would interfere with the evaluation of whether MT is self-sustaining. Market transformation success has also been defined in terms of higher sales of efficient measures than would have otherwise occurred against a baseline absent of program interventions. The real world, however, provides no such control condition. Evaluators must estimate these baselines from quantitative factors such as past market sales that may be sparse and/or inaccurate - particularly for new products. Evaluations must also defer to expert judgments on what these baselines may have been as well as on the degree of successful market transformation[44]. 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[45], 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[46]. 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[47]. 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

[44] 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
[45] Rogers (1995) Diffusion of Innovations, 5th Ed.
[46] Example in bottom chart of this graphic from NYTimes: http://www.nytimes.com/imagepages/2008/02/10/opinion/10op.graphic.ready.html
[47] Sebold et al (2001) p. 6-5,

effects is because they are not designed specifically to address this goal (often because of regulatory policy directions given to program designers.)[48]" The Strategic Plan recognizes that regulatory policies are not yet in place to support the success of market transformation efforts[49], but also reflects the CPUC's directive to design energy efficiency programs that can lay the groundwork for either market transformation success or for codes and standards changes.

Above all else, the hallmark of a successful market transformation program is in the coordination of efforts across many stakeholders. The most successful MT programs have involved multiple organizations, providing overlapping market interventions[50]. 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[51] 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.

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

The set of metrics we selected is intentionally a small set, for several reasons. First, as mentioned, the full set of metrics and baselines need to be selected by key participants. Second, we anticipate that market share data for many mid- and low-impact measures will be too sparse to show MT effects and not cost-effective to analyze. Third, we

[48] 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.
[49] CPUC (2008) Strategic Plan, p. 5.
[50] Nadel, Thorne, Saches, Prindle & Elliot (2003).
[51] Peloza & York, (1999).

selected core measures and metrics that would both be indicative of overall portfolio efforts. These measures are also likely to be offered on a broad level by other utilities, providing a greater base of sales and customer data that could be analyzed for far-reaching MT effects.

The IOUs are proposing a metric that is believed to reliably indicate a trend toward market transformation for Energy Efficient in Residential New Construction (RNC). While all metrics fall short of a perfect measure, the ideal metric would have a baseline that is already established that includes a reasonable and easy method of duplication and comparison. Market transformation cannot be measured on a year to year basis but will take several years and measurements to reliably discern trends. With this in mind, the IOUs propose the following metrics:

- Participants in the Statewide Residential New Construction program with projects exceeding Title 24 (2005) standard by specific percentages, as determined from IOU program records.
- Average compliance margin of the Residential New Construction sector, as determined through a sample study of as-built residences.

The overarching purpose for these metrics is to understand how this market is transforming. Future studies could estimate compliance margins relative to code and highlight key changes in measure adoptions driving changes in compliance margins. Drivers of this MT include efforts from Codes and Standards, Marketing, Education, and Outreach, Workforce Education and Training, and the direct RNC program

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

Table 3

Metric A	Metric B
Percent of participants with projects exceeding Title 24 (2005) standard by specific percentages.	Average compliance margin of the Residential New Construction sector.

b) Market Transformation Information

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

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

Table 4

	Residential New Construction Sector Internal Market Transformation Planning Estimates		
	2009	**2010**	**2011**
Metric A	Upward moving trend toward 2011 target.	Upward moving trend toward 2011 target.	Up to 50% of projects 30-35% better than 2005 Title 24; Up to 10% of projects 55% better than 2005 Title 24. (Consistent with Residential Strategy 1-1 in Long Term Strategic Plan)
Metric B	Upward trend in non-participants as-built compliance margins.	Upward trend in non-participants as-built compliance margins.	Upward trend in non-participants as-built compliance margins.

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. 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. 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.

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.

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%[52] 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.

[52] "Synopsis of manufacturer market share and status", Manufactured Research Association, communication, October 2007

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.

d. Quantitative Program Targets:

Table 5 (Goals and # of Homes are specific to each IOU)

Program Name	Program Target by 2009	Program Target by 2010	Program Target by 2011
	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 2005 Title 24 energy efficiency standards by 35%; 10% will surpass 2005 Title 24 standards by 55% (Strategy 1-1)

- **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 Technologies, and the New Solar Homes Partnership. In fully aligning itself with the CEESP, the CAHP targets an interim goal of 50 percent of RNC to Tier II (2005) by 2011, 10 per cent of RNC to 55 percent 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 for Single Family homes, and 35% for Multi Family and Low Income housing. 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, or equivalent. 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 participation criteria align well with existing green building certification programs such as ConSol's California Green Builder and Build it Green's GreenPont Rated Programs.

6) **Program Implementation:**
   a. Statewide IOU Coordination:

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 needed 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 Energy Utilities 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). SoCalGas leverages third-party implementers and in-house account executives.

iii. Incentive levels

The IOUs have agreed upon a common incentive methodology that will be implemented throughout the service territories.

iv. 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.[53] For the multi-family segment of the program, qualifying homes include condominiums, town homes, apartment buildings, and mixed-use projects.

[53] As discussed above, manufactured housing is not subject to Title 24 and uses the national HUD baseline.

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 2009-2011, 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 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 standard**s.**
- 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 2009 - 11 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, SoCalGas 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.

iv. 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

Coordination with 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.

ii. 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.

iii. 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.

iv. 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.

v. Program-specific marketing and outreach efforts

See a) iv above.

vi. 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.

vii. 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.

viii. CEC work on PIER

See note on Emerging Technologies above.

ix. 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.

x. Non-utility market initiatives

The homebuilding industry is facing some of the worst times in its history.[54] 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.[55] 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 further 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.

[54] Alan N. Nevin, CBIA Chief Economist and Principal, Market Pointe Realty Advisors, California Builder Magazine, January/February 2008
[55] California Industry Research Board (CIRB) Report, January 24, 2008

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[56] than homes 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."[57] 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.[58] 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 however, 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

[56] 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.
[57] Wes Keusder, Former Chairman, CBIA, Southern California Builder Magazine Vol. 24
[58] Jan Dimeo, Builder. http://www.builderonline.com/business/surveys-reveal-home-buyer-wishes-for-energy-efficiency-and-beyond.aspx. Accessed 14 Mar 08

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

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. The sliding scale incentive structure was discussed in detail under the common section of this PIP.

The Sempra Energy Utilities 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.

SoCalGas 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.

SoCalGas 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. SoCalGas 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, SoCalGas 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 ZNEH sub program will pursue case study homes that show case sustainability and very high levels of energy efficiency. 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.
    - SoCalGas has made LEED certification as one of the requirements for participation in the ZNEH sub program.

  - SoCalGas will leverage the Build It Green GreenPoint Rated Scale which has, at its top end, the ability to reach the lower limits of LEED for Homes.
- 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, SoCalGas their marketing collaterals to be more informative and professional in appearance.
  - SoCalGas has undergone substantial marketing material revision and will continue to do so.
- 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 SoCalGas 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.

d. 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.

e. 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.

The statewide RNC team is committed to a full integration of all resource types. A first step has been taken by way of a recent joint agreement between SoCalGas and SCE which allows the two utilities to buy back therms and kWh. SCE and SoCalGas are also working closely with MWD and other water utilities to implement water saving technologies wherever possible. Water saving technologies and CO2 reduction are strongly emphasized and tracked in Case Study projects. As these technologies get accepted and recognized, they will become integrated into the base CAHP projects.

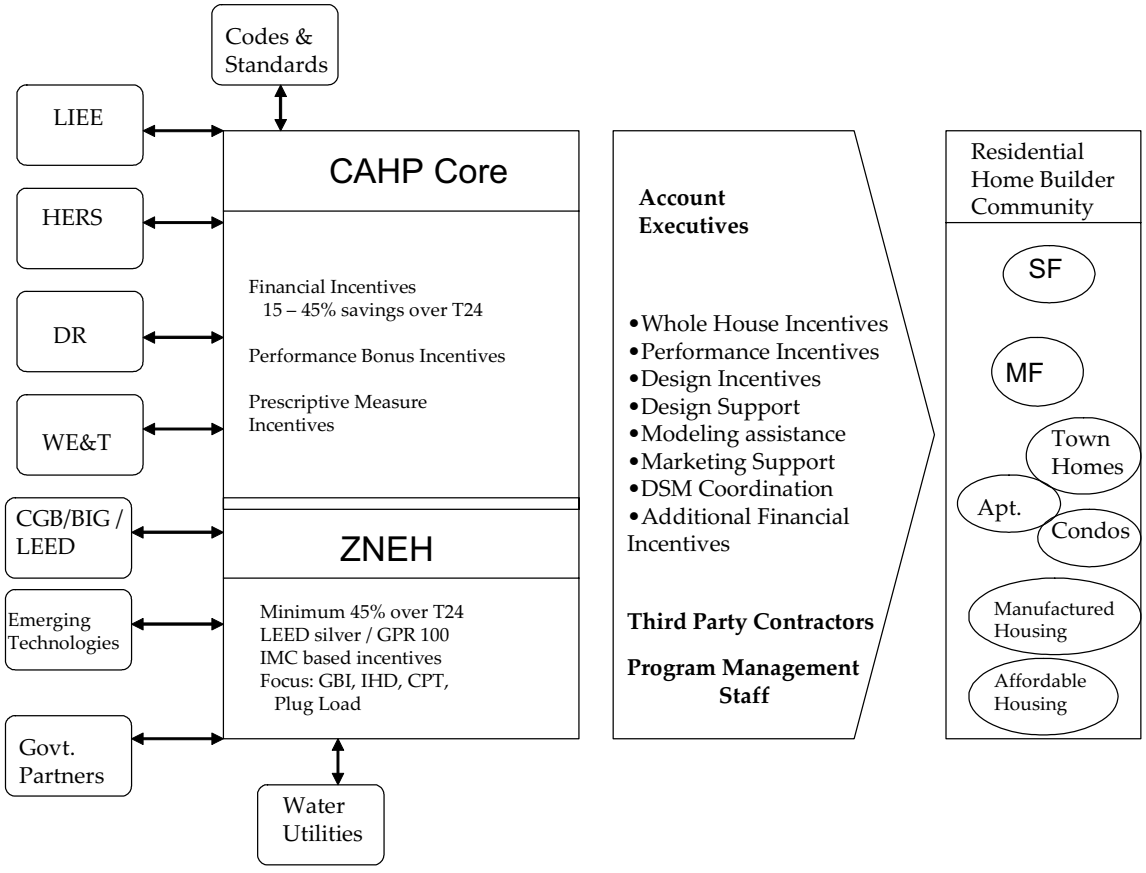
f. Integration across resource types (energy, water, air quality, etc):
As discussed above, the program is looking to partner with relevant stakeholders to identify water, air quality, and waste-diversion opportunities.

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 2009-2011 after the program implementation plans are filed. This will include process evaluations and other program-specific studies within the context of broader utility and Energy Division studies. More detailed plans for process evaluation and other program-specific evaluation efforts cannot be developed until after the final program design is approved by the CPUC and in many cases after program

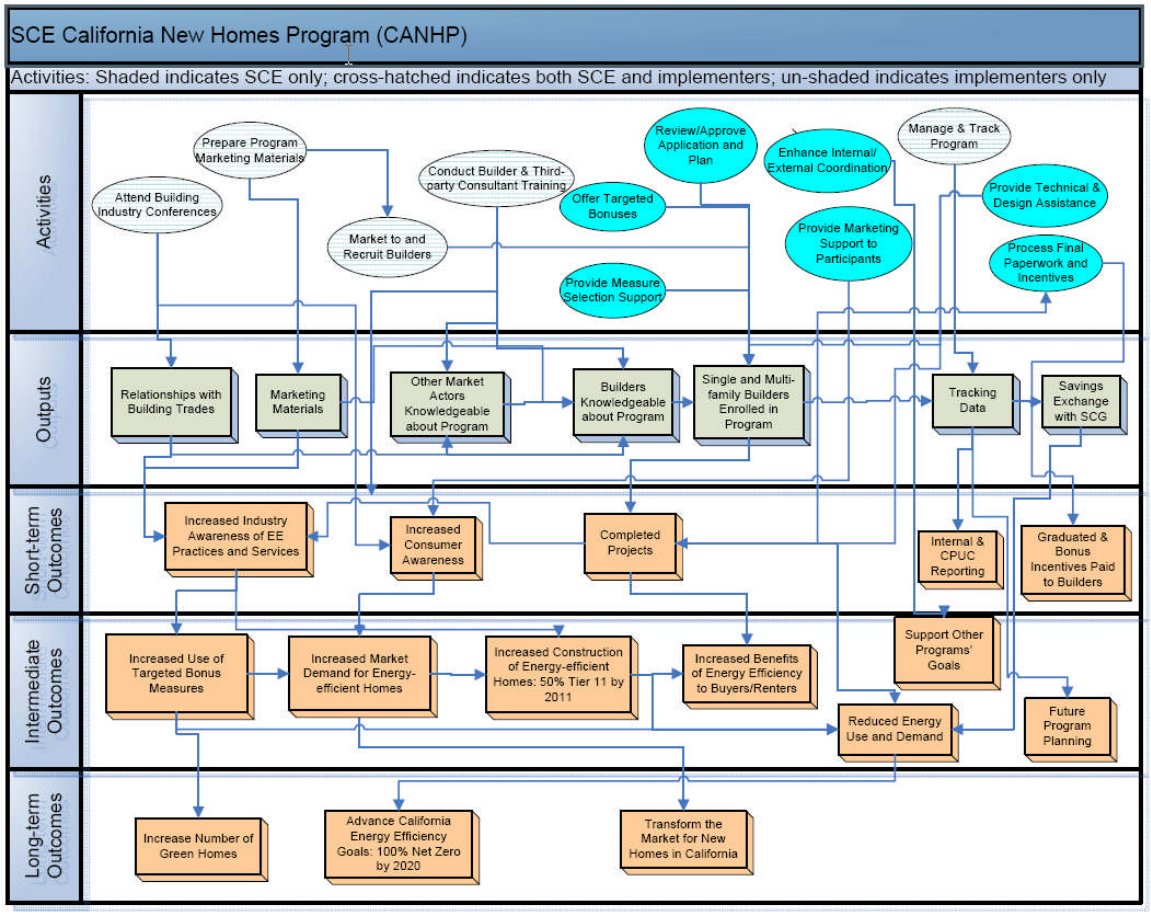
implementation has begun, since plans need to be based on identified program design and implementation issues.

7) Diagram of Program



8) <u>Program Logic Model:</u> Provide a program logic model including sub-programs.

Table X: CAHP & ZNEH Logic Model



2009 – 2011 Energy Efficiency Programs
New Construction
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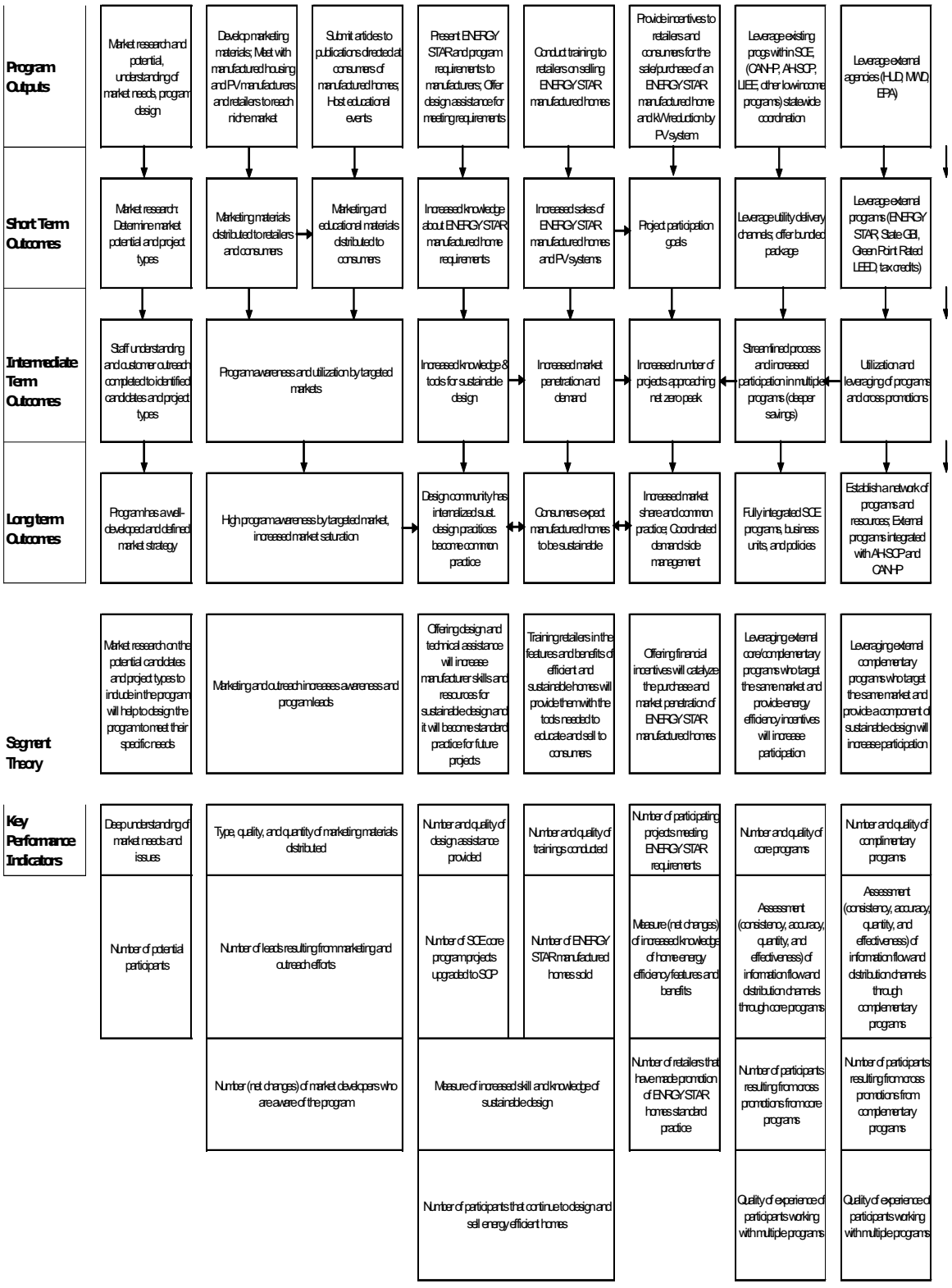
Table XI: Manufactured Housing Logic Model



2009–2011 Energy Efficiency Programs
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1. **Program Name:** Residential and Commercial HVAC Program
   Program ID#: TBD
   Program Type: This is a statewide, core program.

2. **Projected Program Budget Table**

Table 1[1]

Program #	Main Program Name/Sub-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					
	SCG SW HVAC Program					
	#SW-HVACA - Residential Energy Star Quality Insta	$ 130,094	$ 12,740	$ 31,500	$ -	$ 174,335
	#SW-HVACB - Commercial Quality Installation	$ 67,751	$ 12,740	$ 31,500	$ -	$ 111,991
	#SW-HVACC - Commercial Upstream Equipment	$ 46,157	$ 22,120	$ 15,750	$ -	$ 84,027
	#SW-HVACD - Quality Maintenance Program	$ 184,098	$ 19,111	$ -	$ -	$ 203,208
	#SW-HVACE - Technology & Systems Diagnostics	$ 926,527	$ -	$ -	$ -	$ 926,527
	#SW-HVACF - HVAC WE&T	$ 26,303	$ 41,231	$ 78,750	$ -	$ 146,284
	#SW-HVACG - HVAC Core	$ 103,636	$ 6,370	$ -	$ -	$ 110,006
	TOTAL:	**$ 1,484,565**	**$ 114,313**	**$ 157,500**	**$ -**	**$ 1,756,378**

These budget numbers are presented in Appendix C: Energy Division Tables, Graphs Pie Charts: Table 7.1 - 2009 - 2011 IOU Strategic Planning Program Budget

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

2009–2011 Energy Efficiency Programs
Statewide HVAC
Program Implementation Plan

3. Projected Program Gross Impacts Table

Table 2

Program #	Main Program Name/Sub-Programs	2009-2011 Three-Year EE Program Gross kWh Savings	2009-2011 Three-Year EE Program Gross kW Savings	2009-2011 Three-Year EE Program Gross Therm Savings
	Market Sector Programs			
	SCG SW HVAC Program			
	#SW-HVACA - Residential Energy Star Quality Insta	0	0	0
	#SW-HVACB - Commercial Quality Installation	0	0	0
	#SW-HVACC - Commercial Upstream Equipment	0	0	0
	#SW-HVACD - Quality Maintenance Program	0	0	0
	#SW-HVACE - Technology & Systems Diagnostics	0	0	0
	#SW-HVACF - HVAC WE&T	0	0	0
	#SW-HVACG - HVAC Core	0	0	0
	TOTAL:	**0**	**0**	**0**

Note: Energy savings will be captured through existing IOU programs.

These savings values are presented in Appendix C: Energy Division Tables, Graphs & Pie Charts: Table 7.2 - IOU 2009 - 2011 Program Savings Estimates.

4. Program Description

a) The Residential and Commercial HVAC Program is a state-wide 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.

Southern California Gas Company (SoCalGas) and the other IOUs propose building towards this vision for HVAC by implementing a comprehensive set of downstream, midstream, and upstream 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 state-wide HVAC Program and a state-wide HVAC Industry Leadership Task Force, 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).

2009–2011 Energy Efficiency Programs
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Market transformation and direct energy savings and demand reductions will be achieved through a series of Sub-Programs that are described in detail in separate PIPs and summarized below:

ENERGY STAR Residential Quality Installation
This sub-program is applicable to installations of central air conditioning (CAC) systems and air-source heat pump (HP) systems, with a rated capacity up to 65,000 BTU/H. Through this sub-program, a financial incentive will be available to homeowners who have a system installed in accordance with the EPA HVAC Quality Installation Guidelines. The installation requirements are illustrated in detail in *ANSI/ACCA 5 QI-2007: HVAC Quality Installation Specification*. In addition to this incentive, homeowners will also receive an ENERGY STAR certificate for their qualifying installation. Contractors will be actively recruited into the sub-program by offering them the opportunity to receive performance incentives such as utility co-branding opportunities and diagnostic equipment for reaching specific performance milestones.

Commercial Quality Installation
This sub-program is applicable to installations of packaged HVAC systems, with a rated capacity up to 760,000 BTU/H. Through this sub-program, a financial incentive will be available to contractors who complete a system installation in accordance with the appropriate industry standards (e.g. ACCA, SMACNA and ASHRAE). Contractors will be actively recruited into the program by offering them the opportunity to receive financial and performance incentives such as utility co-branding opportunities, diagnostic equipment for reaching specific performance milestones and assistance aligning with the Energy Star Service & Product Provider program.

Upstream HVAC Equipment Incentive
This sub-program offers incentives to up-, and midstream market actors to promote the adoption of qualifying high efficiency HVAC equipment. The logic that underscores this sub-program's design is that a small number of contractors, distributors and manufacturers are in a position to impact hundreds of thousands of customers and influence their choice of equipment by increasing the stocking and promotion of high efficiency HVAC equipment. The Upstream model cost-effectively leverages this market structure and existing relationships. The sub-program also provides paperless rebate application systems to facilitate distributor sales and invoice tracking, which further reduces administrative costs as compared with paper application processing.

Residential & Commercial Quality Maintenance Development
This sub-program may represent 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)[2] procedures applied to existing residential and commercial HVAC equipment. This sub-program intends to (1) quantify those potential savings and (2) and if cost-effective, develop both a residential and a small commercial program to implement a comprehensive, continuously improving O&M activity that captures savings and provides a high ROI to the end-user thus driving the market transformation of the HVAC industry.

Technologies and System Diagnostics Advocacy
This sub-program is a coordinative and advocacy program that addresses the priority need for immediate and comprehensive action addressing elements critical to increasing, optimizing and maintaining the energy and peak electricity efficiency performance of direct expansion (DX)/vapor-compression–based cooling equipment and accelerating the market introduction of a range of advanced evaporative-based cooling technologies. The Program will be implemented by the Western Cooling Efficiency Center and funded by the IOUs. The sub-program includes unprecedented participation by HVAC industry stakeholders in RD&D, design, continuous review and updating, and operation of HVAC-related IOU programs. The sub-program includes cooperation and collaboration with the HVAC industry for the purpose of substantially advancing HVAC-related program quality and effectiveness. A continuous program improvement process will be introduced to provide an active, real-time means for improving program effectiveness and incorporating results in between planning cycles.

HVAC Workforce Education and Training
This sub-program will deliver a dedicated industry-specific effort that offers education and training opportunities targeted at all levels of the HVAC value chain. Prior to starting such an activity, and as outlined in the Strategic Plan, the sub-program will conduct a comprehensive training needs-assessment to determine industry skill gaps, identify opportunities for collaboration with existing HVAC education and training infrastructure, and implement recommendations needed to close gaps at all levels of the industry.

b) 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 all levels of the HVAC value chain (i.e. manufacturers, distributors, contractors and customers) and will be available for equipment (ENERGY STAR Quality Installation and Upstream) and services (ENERGY STAR Quality Installation, Commercial Quality Installation and Quality

[2] While residential maintenance and unitary commercial maintenance are alike in that the equipment being serviced can be similar in form and function, there are dramatic differences in the ways business is marketed and sold, the depth and breadth of maintenance measures normally provided, and the complexity of the customer-contractor relationship. For that reason, in 2009, two separate Quality Maintenance programs will be developed in collaboration with the HVAC industry and be launched in 2010, one for residential and the other for small commercial. For the sake of brevity, however, throughout this Program Implementation Plan and its Sub Program Plans, "quality maintenance," whether residential or commercial is simply referred to as "QM."

Maintenance). Specific financial incentives are provided in Section 4.b of the Sub-Program PIPs while non-financial incentives are discussed throughout the PIPs.

c) The program will be active in a number of 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 HVAC Industry Leadership Task Force that will be initially chartered and funded by the IOUs. The HVAC Industry Leadership Task Force 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, staffed or allocate resources to contribute 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"*

It is envisioned that this HVAC Industry Leadership Task Force 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, such as the CPUC, California Energy Commission, utilities, building owners/managers, university researchers, consumers, and the Federal Government. The HVAC Industry Leadership Task Force 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, 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 longer term issue resolution.

The HVAC Industry Leadership Task Force will ultimately provide the necessary guidance to both California and the western U.S such 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 initial actions of the HVAC Industry Leadership Task Force may include:

- Establishing a formal charter that governs its existence. The charter will be approved by the IOUs and the CPUC prior to authorizing and/or funding the HVAC Industry Leadership Task Force;
- 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 RFQ or similar processes to implement specific aspects of IOU-administered energy efficiency programs;
- Making recommendations for standards/qualification guidelines for trainers, and educators who receive funding from the IOUs;
- Developing an "HVAC Action Plan" that prioritizes specific actions required to address the Strategic Plan;
- Immediately and formally reaching out to utilities in neighboring states including Arizona, Colorado, Nevada, New Mexico, 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/PIER-BERG, LBNL, HVAC industry vendors, and others inside and outside California. Much of this work is continuing in a fragmented way. A cohesive planned/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.

Prior to chartering the HVAC Industry Leadership Task Force, several preparatory actions are required, including:

1. In cooperation with Energy Division, the HVAC Energy Efficiency Advisor, and perhaps CEC, plan and host an "HVAC Energy Efficiency Roundtable" ("The Roundtable) to which will be invited potential candidates for membership/participation in the inaugural "HVAC Industry Leadership Task Force." Topics for discussion at The Roundtable will include:

- The Strategic Plan, with particular emphasis on IOU/HVAC industry collaboration and tactics necessary to achieve the short and long term goals;
- Constructive criticism (lessons learned) about IOU HVAC programs, including the 2006-2008 tune-up programs;
- 2009-2011 HVAC related PIPs filed by the IOUs, with particular emphasis on the Quality Maintenance and Technologies and System Diagnostics Sub Programs;
- Report on the 2006 HVAC Diagnostics Roundtable and subsequent Fault Detection and Diagnostics (FDD) Roundtable in 2007.; and
- Recommendations for the structure, charter, mission and makeup of the HVAC Industry Leadership Task Force.

- High priority issues as established by Roundtable participants, themselves, in facilitated discussions.

Potential guest participants in The Roundtable could include representatives from: Commissioner Grueneich; the Governor's Office; the California Air Resources Board; the Western Governors' Association; or (5) the California Department of Education

2. Negotiate a statement of work with Western Cooling Efficiency Center (WCEC) to actively participate in and co-host the Roundtable in anticipation of its being supported as the home and first line of support for the HVAC Industry Leadership Task Force.

5. Program Rationale and Expected Outcome

a) Quantitative Baseline and Market Transformation Information:

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

Market transformation is embraced as an ideal end state resulting from the collective efforts of the energy efficiency field, but differing understandings of both the MT process and the successful end state have not yet converged. The CPUC defines the end state of MT as "Long-lasting sustainable changes in the structure or functioning of a market achieved by reducing barriers to the adoption of energy efficiency measures to the point where further publicly-funded intervention is no longer appropriate in that specific market."[3] 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[4].

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[5]. Markets are social institutions[6], 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

[3] California Public Utilities Commission Decision, D.98-04-063, Appendix A.
[4] California Public Utilities Commission (2008) *California Long Term Energy Efficiency Strategic Plan,* p. 5. Available at http://www.californiaenergyefficiency.com/docs/EEStrategicPlan.pdf
[5] 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
[6] 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/

as changing behavior, attitudes, and market supply chains[7] 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[8]. According to York[9], "Market transformation is not likely to be achieved without significant, permanent increases in energy prices. From an economic perspective, there are 3 ways to achieve market transformation: (1) fundamental changes in behavior, (2) provide proper price signals, and (3) permanent subsidy."

The question of what constitutes successful transformation is controversial because of a Catch-22: Market transformation is deemed successful when the changed market is self-sustaining, but that determination cannot be made until after program interventions are ended. Often, however, the need for immediate energy and demand savings or immediate carbon-emissions reductions will mean that program interventions may need to continue, which would interfere with the evaluation of whether MT is self-sustaining. Market transformation success has also been defined in terms of higher sales of efficient measures than would have otherwise occurred against a baseline absent of program interventions. The real world, however, provides no such control condition. Evaluators must estimate these baselines from quantitative factors such as past market sales that may be sparse and/or inaccurate - particularly for new products. Evaluations must also defer to expert judgments on what these baselines may have been as well as on the degree of successful market transformation[10]. 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[11], 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[12]. 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[13]. The ability to make causal connections between these

[7] 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.
[8] 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.*
[9] York, D., (1999). "A Discussion and Critique of Market Transformation", Energy Center of Wisconsin. Available at http://www.ecw.org/ecwresults/186-1.pdf.
[10] 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
[11] Rogers (1995) Diffusion of Innovations, 5th Ed.
[12] Example in bottom chart of this graphic from NYTimes: http://www.nytimes.com/imagepages/2008/02/10/opinion/10op.graphic.ready.html
[13] Sebold et al (2001) p. 6-5,

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.)[14]" The Strategic Plan recognizes that regulatory policies are not yet in place to support the success of market transformation efforts[15], but also reflects the CPUC's directive to design energy efficiency programs that can lay the groundwork for either market transformation success or for codes and standards changes.

Above all else, the hallmark of a successful market transformation program is in the coordination of efforts across many stakeholders. The most successful MT programs have involved multiple organizations, providing overlapping market interventions[16]. 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[17] 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.

The metrics and baselines described below in Tables 3 and 4 are presented for the purposes of starting the much-needed discussion between all key participants. These are suggestions, intended to allow key participants to pilot-test processes for

[14] 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.
[15] CPUC (2008) Strategic Plan, p. 5.
[16] Nadel, Thorne, Saches, Prindle & Elliot (2003).
[17] Peloza & York, (1999).

establishing baseline metrics, tracking market transformation progress, and for refining evaluation tools. Early trial of these evaluation metrics will reveal any gaps in data tracking so that we may refine our processes before full-scale market transformation evaluations take place.

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

Therefore, for the HVAC sector, the following approach to quantitative baseline and market transformation information is presented as follows.

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.

With this discussion in mind, the IOUs propose the following metrics for this sector:

Table 3

	Baseline Metric		
	Metric A	**Metric B**	**Metric C**
Measure-based metric	The ratio of high efficiency CEE Tier 1 and Tier 2 equipment over a base case		
Quality Installation (Commercial and Residential)		The ratio of quality installations over a base case	
Workforce Education & Training			The ratio of certified HVAC technicians (ICE and NATE) in the workforce relative a base case of

			HVAC technicians

b) Market Transformation Information

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

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

Table 4

	Internal Market Transformation Planning Estimates		
	2009	**2010**	**2011**
The ratio of high efficiency CEE Tier 1 and Tier 2 equipment over a base case	Improvement over baseline, over time	Improvement over baseline, over time	Improvement over baseline, over time
The ratio of quality installations over a base case	Improvement over baseline, over time	Improvement over baseline, over time	Improvement over baseline, over time
The ratio of certified HVAC technicians (ICE and NATE) in the workforce relative a base case of HVAC technicians	Improvement over baseline, over time	Improvement over baseline, over time	Improvement over baseline, over time

c) Program Design to Overcome Barriers: The program will address the following barriers:

- Lack of awareness: By quantifying the energy efficiency benefits of QI/QM, the benefits of QI/QM (as well as those "premium" HVAC services that prove to exceed the ANSI QI/QM standards) 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 when subsidies are removed.
- Performance uncertainties: Previous 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, and furthermore, this research has not been able to effectively demonstrate the full energy savings benefits of QI/QM. One of the first tasks conducted by the program will be to conduct a comprehensive research study that is vetted by the HVAC industry to quantify the real energy savings that consumers can expect to achieve through QI/QM. This study will also include the appropriate level of behavioral studies to learn why customers don't currently value QI/QM and what factors are needed to motivate consumers to act. This level of study is required to quantify the cost/benefit for delivering and receiving QI/QM services.

- Asymmetric Information: Delivering QI/QM training opportunities through existing industry channels (e.g. distributors, trade associations, labor unions etc.) will provide a higher level of credibility for QI/QM training rather than offering it exclusively through IOUs.
- Bounded rationality: It is logical to assume that the HVAC industry would want to take the necessary training required to deliver high 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. Over the next three years, the IOUs will conduct behavioral research to understand the existing dynamics that will help influence the necessary changes such that the marketplace will value and purchase higher quality services.
- Hidden costs: By encouraging contractors to promote the concepts and value of quality maintenance at the time of system installation, the customer will be more likely to regularly maintain the system and be 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, of 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 statewide QI/QM program effort will work towards demonstrating the value proposition of a high quality contracting business and educating consumers on the energy benefits of QI/QM.

d) Quantitative Program Targets:

The program will achieve the following program targets:

Table 5

	Program Target by 2009	Program Target by 2010	Program Target by 2011
ENERGY STAR Residential QI	Achieve approximately 900 system installations by 2011		
Commercial QI	Achieve approximately 900 system installations by 2011		
Commercial Upstream	Deliver approximately 60,000 tons of efficient commercial		

	equipment by 2011
Quality Maintenance	TBD*
Technology and System Diagnostics Advocacy	TBD*
Workforce Education and Training	Facilitate the delivery of more than 100 QI/QM related training courses through existing industry training channels

**At this point, reasonable targets cannot be determined.*

e) Advancing Strategic Plan goals and objectives:

The program will help to achieve the following near-term strategic goals as identified in Chapter 6 of the Strategic Plan:

- 2-1: Create a Statewide QI/QM Brand – Leveraging the ENERGY STAR brand equity is a cost effective approach to introducing an immediate QI/QM brand. Additional efforts will be dedicated to evaluating whether a California specific brand is viable.
- 2-2: Launch Statewide Brand – IOU sponsored co-branding efforts will be developed based on the branding activity and made available to contractors for promotion of the QI/QM effort.
- 2-3: Provide expanded QI/QM training – Prior to launching the Program, HVAC service technicians will be 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.
- 2-4: Implement contractor accreditation program – Additional benefits will be made available through the Program to support the HVAC WE&T efforts of increasing the level of technician certification. Such efforts may include additional IOU promotion of contractors (e.g. "Gold Star Contractors") who maintain a minimum of percentage of ICE and NATE certified technicians (e.g. 70%), reimbursement of testing costs and/or continuing education units for participating contractors, etc.
- 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 proceedings 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 the dedication towards 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 – Evaluating the use of hand-held and other types of systems in the field will assist in determining viable protocols for both commercial and residential applications. Diagnostic standards development specifically for packaged rooftop HVAC units is being supported through the PIER diagnostics project with WCEC involvement.
- 4-6: Prioritize in-field diagnostic approaches – Conducting the appropriate level of research into existing diagnostic and verification approaches will provide the IOUs and the HVAC industry with the information necessary to target future efforts based on quantifiable energy efficiency benefits. This work is being supported through the PIER diagnostics project with WCEC involvement.

6. Program Implementation

a. Statewide IOU Coordination: The IOUs will jointly participate in California's residential and commercial 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 three-year implementation cycle. The process will be as follows:

- **Designate an 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 HVAC Industry Leadership Task Force 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[18]. The HVAC Program Management Team will determine whether future course corrections are needed, and if so, "activate" a fresh start of the adaptive management cycle to generate the improvements necessary to stay on track.

Additional areas of program coordination include:

i. Program name – Residential and Commercial HVAC Program
ii. Program delivery mechanisms – The Residential and Commercial HVAC Program is the umbrella activity that encompasses the six sub-programs discussed in more detail in their own unique PIP and summarized above in Section 4.a. 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 and leveraging existing industry infrastructures in order to increase its overall effectiveness. Program guidance will be provided to the CPUC/IOUs through the HVAC Industry Leadership Task Force as described above.
iii. Incentive levels – See Section 4.b above and Sub-Program PIPs for more details on specific measure incentive levels.
iv. Marketing and outreach plans – Specific outreach efforts will be made to the industry to keep them engaged in the CLTEESP process (both updates to and implementation of). On a macro level, this outreach will occur through the HVAC Industry Leadership Task Force 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.
v. IOU program interactions – One of the strategies outlined in the CLTEESP 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. In order to achieve the market transformation goals of the CLTEESP, the IOUs will support CEC and CPUC efforts 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 (to be known as the "Joint Program Management Team") will be

[18] The long-term nature of market transformation activities desired by the CLTEESP necessitates a careful review process that allows specific program tactics to fully develop to determine whether they are actually generating the intended market results.

established to ensure that the individual program efforts are aligned and progressing towards the same near and long-term goals.

vi. Similar IOU and POU programs – POUs manage many different types of HVAC programs. However, none of them seek to accomplish the aggressive market transformation goals being proposed by the IOUs. Over the next three years, the IOUs will seek to increase their interactions with the POUs to better align IOU and POU HVAC programs. This may involve the creation of periodic California HVAC Energy Efficiency Summits that seek to increase awareness of the CLTEESP and how programs could/should be designed to help meet its aggressive targets.

b. Program delivery and coordination: The program will be coordinated with the following activities:

i. Emerging Technologies program – The program is expected to interact extensively with the ET 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.

ii. Codes and Standards program – 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.

iii. WE&T efforts – The workforce education and training needs for the HVAC industry are unique to the industry and therefore the IOUs have decided to place the responsibility of managing the effort under the HVAC Program umbrella rather than the Statewide IOU Workforce Training & Education (WE&T) Program umbrella. However, the HVAC WE&T activity will be coordinated with the statewide activity to ensure that the individual efforts are complementary (e.g. HVAC training information will be integrated in the WE&T web portal when it is launched).

iv. Program-specific marketing and outreach efforts – Co-branded marketing support for participating contractors will be necessary to advance statewide QI/QM efforts. 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-purchase displays for equipment dealers will also be developed. (Specific IOU budget information for this marketing activity is provided in Table 1.)

v. Non-energy activities of program – 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.

vi. Non-IOU Programs – The Program will remain engaged with CEC, 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 SkillsUSA.

vii. CEC work on PIER – The Program will interact extensively with the ET Program to ensure the proper focus on remote and on-board diagnostic equipment. Such efforts are already underway with the PIER program. This activity will primarily be managed under the Technology and System Diagnostics Advocacy Program (see the Sub-Program PIP for more details).

viii. CEC work on codes and standards – See Section 6.b.ii.

ix. Non-utility market initiatives – 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.

c. Best Practices: The Statewide HVAC Program demonstrates several examples of programmatic best practices. First, the Program involves the HVAC industry in all aspects of the program including public policy, program design and implementation – both formally through the HVAC Industry Leadership Task Force and informally through various ad-hoc working groups. Industry involvement is a crucial step in achieving the desired market transformation goals. Second, the Program uses an adaptive management process, as described in Section 6.a, to ensure that the Program is responsive to the changing market environment. Included under this process are formal inter-utility coordination meetings between HVAC, Emerging Technologies and Codes and Standards program managers to ensure these three programs are well coordinated and implemented consistent with the goals of the CLTEESP. Finally, the Program includes the appropriate level of focus on technology issues through the Technology and System Diagnostics Advocacy Sub-Program. This Sub-Program takes an active role in advancing the various technological and policy issues required to meet the deep energy savings and demand reduction goals desired by the CLTEESP.

d. Innovation: The Statewide HVAC Program takes an innovative approach to program design through its implementation of a multi-faceted effort to engage all levels of the HVAC value chain. Each sub-program under the core umbrella is designed to influence specific market changes. Within the sub-programs themselves, innovative techniques such as co-branded marketing and workforce training through existing industry channels will be employed to increase the program's effectiveness. In addition, technical innovation is achieved specifically

through a dedicated advocacy effort to advance the state-of the-art in vapor compression cooling and fault detection and diagnostics (see Technology and System Diagnostics Advocacy Sub-Program PIP for more information).

e. 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. Finally, contractors will be encouraged to facilitate the customer's participation in DR programs by providing a completed DR program application to the system owner at the completion of the maintenance service. Additional work will take place during the three-year program cycle to evaluate closer linkages between EE and DR.

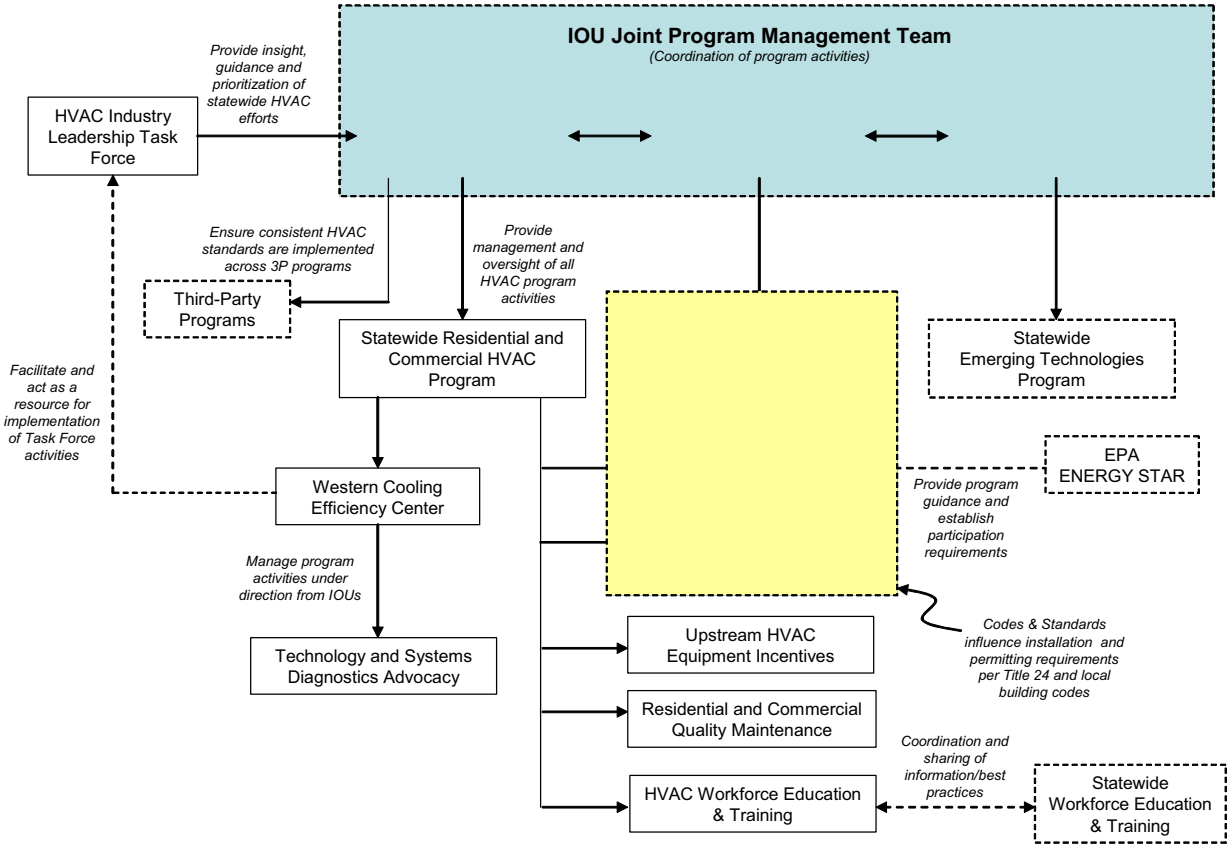
f. Integration across resource types (energy, water, air quality, etc): The program can be designed to support CARB's efforts to regulate GHGs by providing consumer information on the phase-out of existing refrigerants and the move to zero ozone depletion potential (ODP) refrigerants with the customers maintenance invoice. Such information will seek to influence the customer's adoption of newer equipment by explaining the likelihood of increased maintenance costs as existing refrigerants become less available.

g. Pilots: As with any good product/program design, pilots are needed to test the concept prior to full-scale launch. Each individual sub-program may utilize pilots to test the implementation of program concepts, processes and the integration of ever increasing QI/QM standards.

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

2009–2011 Energy Efficiency Programs
Statewide HVAC
Program Implementation Plan

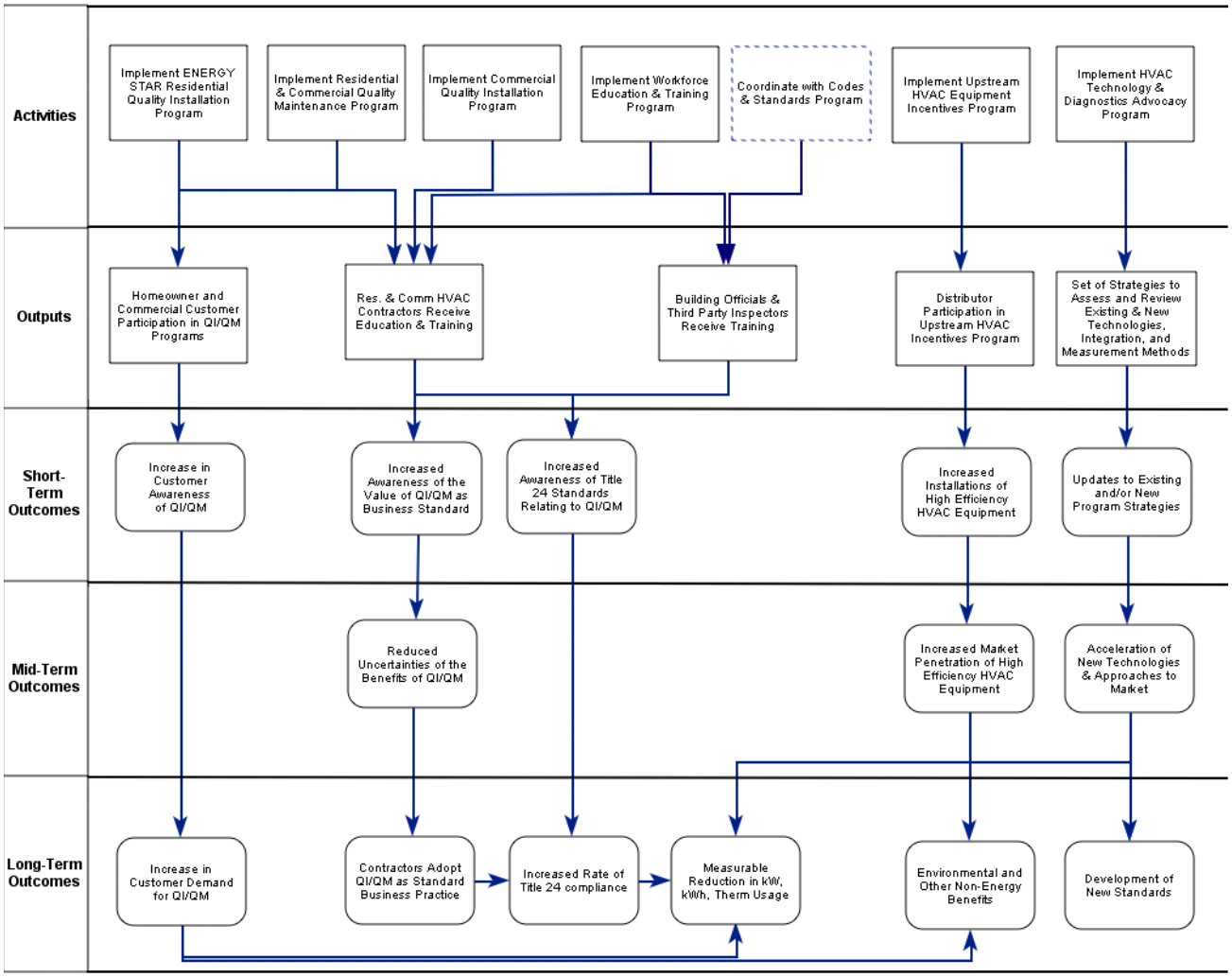
7. Diagram of Program:



2009–2011 Energy Efficiency Programs
Statewide HVAC
Program Implementation Plan

8. Program Logic Model:

Program: Residential & Commercial HVAC Program (Core Program)



2009–2011 Energy Efficiency Programs
Statewide HVAC
Program Implementation Plan

List of Acronyms – Statewide Residential and Commercial HVAC Program

AABC	Associated Air Balance Council
ACCA	Air Conditioning Contractors of America
ACTA	Air Conditioning Trade Association
AHRI	Air-Conditioning, Heating & Refrigeration Institute
ANSI	American National Standards Institute
ASHRAE	American Society of Heating, Refrigerating & Air-conditioning Engineers
BBEES	Big Bold Energy Efficiency Strategies
CAC	Central Air Conditioner
CARB	California Air Resources Board
CARE	Council of Air Conditioning & Refrigeration Educators
CEC	California Energy Commission
CEE	Consortium for Energy Efficiency
CEESP	California Long Energy Efficiency Strategic Plan (also see Strategic Plan)
CEUs	Continuing Education Credits
Strategic Plan	California Long Term Energy Efficiency Strategic Plan (also see CEESP)
CPUC	California Public Utilities Commission
DG	Distributed Generation
DOE	U.S. Department of Energy
DR	Demand Response
DSM	Demand Side Management
EE	Energy Efficiency
EER	Energy Efficiency Rating (steady state)
GHGs	Green House Gases
HARDI	Heating, Air Conditioning & Refrigeration Distributors International
HERS	Home Energy Rating System
HVAC	Heating, Ventilation & Air Conditioning
HVACR	Heating, Ventilation, Air Conditioning & Refrigeration
ICE	Industry Competency Exam
IHACI	Institute of Heating & Air Conditioning Industries
IPLV	Integrated Part Load Value
IOUs	Investor Owned Utilities
IUOE	International Union of Operating Engineers
LADWP	Los Angeles Department of Water & Power
MCAA	Mechanical Contractors Association of America
MSCA	Mechanical Service Contractors of America
NATE	North American Technician Excellence
NCI	National Comfort Institute
NBC	National Balancing Council
NEBB	National Environmental Balancing Bureau
ODP	Ozone Depletion Potential
PAHRA	Partnership for Air-Conditioning, Heating, Refrigeration Accreditation
PHCC	Plumbing-Heating-Cooling Contractors Association

PIP	Program Implementation Program
POUs	Publicly Owned Utilities
QI	Quality Installation (an ANSI approved standard)
QI/QM	Quality Installation/Quality Maintenance (slang combining ANSI standards)
QM	Quality Maintenance (ANSI approved standards)
RSES	Refrigeration Service Engineers Society
SEER	Seasonal Energy Efficiency Rating
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association
SMUD	Sacramento Municipal Utility District
SMWIA	Sheet Metal Workers International Association
STAR	STAR Certification (developed by UA and Ferris State University, also used by MCAA and MSCA)
TABB	Testing, Adjusting & Balancing Bureau
UA	United Association (of Journeymen & Apprentices of the Plumbing & Pipe Fitting Industry of the United States & Canada)
VSPs	Verification Service Providers
WCEC	Western Cooling Efficiency Center
WE&T	Workforce Education & Training

2009–2011 Energy Efficiency Programs
Statewide HVAC
Program Implementation Plan

1. **Program Name:** Upstream HVAC Equipment Incentive
   Program ID#: TBD
   Program Type: This is a statewide, core sub-program

2. Projected Program Budget Table

Table 3[19]

Program #	Main Program Name / Sub-Programs	Total Administrative Cost (Actual)	Total Marketing & Outreach (Actual)	Total Direct Implementation (Actual)	Integration Budget Allocated to other Programs (If Applicable)	Total Budget By Program (Actual)
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

		2009 - 2011	2009 - 2011	2009 - 2011
Program #	Program Name / Sub-Programs	Three Year EE Program Gross kWh Savings	Three Year EE Program Gross kW Savings	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:			

Table 4

[19] 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.

2009–2011 Energy Efficiency Programs
Statewide HVAC
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4. Program Description

a) This sub-program offers incentives to distributors who sell qualifying high efficiency HVAC equipment. The program logic that underscores this sub-program's design is that a small number of distributors and manufacturers are in a position to impact thousands of customers and influence their choice of equipment by increasing the stocking and promotion of high efficiency HVAC equipment. The Upstream model cost-effectively leverages this market structure and existing relationships. The sub-program also provides an online incentive application system to facilitate distributor sales and invoice tracking, which further reduces administrative costs as compared with paper application processing. The installation aspects of equipment included in this program are addressed in the separate Residential ENERGY STAR and Commercial Quality Installation Program Plans.

b) Eligible measures include packaged and split system air conditioners and heat pumps. Units less than 65,000 Btu/hour are rated according to seasonal energy-efficiency rating (SEER) and steady state energy efficiency rating (EER). Units greater than 65,000 Btu/hour are rated according to EER and integrated part-load value (IPLV). See the table below for minimum qualifying efficiency ratings for each size category and corresponding incentive values. It is acknowledged that the table below currently does not include any gas equipment/measures. Gas measures will be included in the program upon further evaluation of their viability and cost-effectiveness. This evaluation will occur through such national efforts as the Consortium for Energy Efficiency's Residential and Commercial HVAC efforts which are ongoing.

Minimum Efficiency Requirements and Incentive Levels

Equipment Type	Size Category	Sub Category	Tier 1	Tier 2	Tier 3
Air Conditioners and Heat Pumps, Air Cooled, Three Phase	<65kBtuh	Split System x/TXV	12.0 EER or 14.0 SEER $90/ton incentive	12.5 EER or 15.0 SEER $150/ton incentive	13.0 EER or 16.0 SEER $450/ton incentive
		Single Package	116 EER or 14.0 SEER $90/ton incentive	12.0 EER or 15.0 SEER $150/ton incentive	12.4 EER or 16.0 SEER $450/ton incentive
	≥65,000 Btuh and <135,000 Btuh	Split System and Single Package	11.0 EER or 11.4 IPLV $85/ton incentive	11.5 EER or 11.9 IPLV $110/ton incentive	12.0 EER or 12.4 IPLV $150/ton incentive
	≥135,000 Btuh and <240,000 Btuh	Split System and Single Package	10.8 EER or 11.2 IPLV $85/ton incentive	11.5 EER or 11.9 IPLV $110/ton incentive	12.0 EER or 12.4 IPLV $132/ton incentive
	≥240,000 Btuh and <760,000 Btuh	Split System and Single Package	10.5 EER or 10.9 IPLV $85/ton incentive	10.8 EER or 12.0 IPLV $110/ton incentive	-
	≥760,000	Split System	9.7 EER or 10.1	10.0 EER or	10.2 EER or

	Btuh	and Single Package	IPLV $85/ton incentive	11.0 IPLV $110/ton incentive	11.0 IPLV $150/ton incentive
Air Conditioners and Heat Pumps, Water and Evaporatively Cooled, Three Phase	<65,000 Btuh	Split System and Single Package	14.0 EER $500/ton incentive	-	-
	≥65,000 Btuh and <135,000 Btuh	Split System and Single Package	14.0 EER $500/ton incentive	-	-
	≥135,000 Btuh	Split System and Single Package	14.0 EER $265/ton incentive	-	-
Air Conditioners and Heat Pumps, Air Cooled, Single Phase	<65,000 Btuh	Split System	12.0 EER and 14.0 SEER $75/ton incentive	-	-
		Single Package	11.0 EER and 14.0 SEER $75/ton incentive	-	-

c) Pending the outcome of the HVAC Quality Maintenance effort (see program plan for more information), the Upstream HVAC Equipment Sub-Program will explore combining inspections with maintenance services for additional HVAC equipment on the rooftop, but no non-incentive customer services are available at this time.

5. Program Rationale and Expected Outcome

a) Quantitative Baseline and Market Transformation Information:

Table 3

	Internal Market Transformation Planning Estimates		
Market Sector and Segment	2009	2010	2011
Metric A			
Metric B			
Metric C			
Metric D			

Refer to the overarching PIP section

b) Market Transformation Information

Table 4

	Internal Market Transformation Planning Estimates		
Market Sector and Segment	2009	2010	2011
Metric A			
Metric B			
Metric C			
Metric D			

Refer to the overarching PIP section.

c) Program Design to Overcome Barriers:

The Program will overcome the following priority barriers:

- Lack of information, time, and resources to assess customer's own energy efficiency opportunities
- Limited facility staff in small businesses, lack of a dedicated energy manager and limited time to research energy efficiency and its benefits;
- Limited time and budgets for selecting contractors and verified service providers to implement energy efficiency measures and projects

The Program is designed to overcome these priority barriers by utilizing the Upstream/Midstream delivery channels, which has the following benefits:

- The delivery process is streamlined. Delivery through contractors, verification service providers (VSPs), distributors, retailers, and manufacturers will provide consistent information on the benefits of energy efficiency.
- The Upstream/Midstream incentives ensure product availability to influence the decision maker at the time of purchase or service;
- Delivery through knowledgeable, verified service providers, retailers, manufacturers and contractors reduces the need for end user analysis, thus allowing more customers to see the benefits of implementing energy efficiency projects/measures;
- The Upstream/Midstream incentive channel controls incentive availability to the most relevant segments to maintain cost effectiveness.
- Smaller per-unit incentives through the Upstream/Midstream channels maintain cost effective standards and reaches a larger number of customers;
- Midstream/Upstream incentives to manufacturers, distributors, contractors and retailers encourage the development and promotion of new energy-efficiency technologies and tiered incentive structure to build towards meeting future codes and standards changes

d) Quantitative Program Targets:

The following targets will be achieved over the three-year program cycle:

Table 5

Program Name	Program Target by 2009	Program Target by 2010	Program Target by 2011
Tons Incentivized	18,000	20,000	22,000

e) Advancing Strategic Plan goals and objectives:

One of the goals of the Strategic Plan is to increase the market penetration of new climate-appropriate HVAC technologies to 15% of equipment shipments by 2015. The Strategic Plan recommends several strategies to accomplish this including:

- Develop a regional (southwest) strategy to develop new technology designed for hot/dry climate conditions
- Commercialize on-board diagnostic systems
- Support incremental improvements to HVAC equipment
- Quality installations

Both Sacramento Municipal Utility District (SMUD), and NV Energy (formerly Nevada Power and Sierra Pacific) currently offer a similar Upstream HVAC programs. The California Upstream HVAC Program will look to leverage these existing relationships in addition to engaging the DOE, Southwest Energy Efficiency Project (SWEEP), Western Cooling Efficiency Center (WCEC), and manufacturers to create a regional strategy to develop and increase the commercialization of new climate-appropriate HVAC technologies, such as on-board diagnostic systems and advanced packaged rooftop HVAC units. The Upstream HVAC sub-program will serve as an incubator program for increasing the market penetration of promising HVAC technologies.

The sub-program will also greatly support incremental improvement to HVAC equipment immediately by providing incentives in January 2010 for various high-efficiency HVAC equipment categories. The eligible equipment categories are based on the Consortium for Energy Efficiency HVAC specifications, which have multiple tiers designed to increase the market share of high-efficiency equipment. Furthermore, by leveraging the geographic area of the Upstream HVAC sub-program throughout California and Nevada, the result will be increased distributor participation, which will lead to increased market share of high-efficiency equipment sufficient to argue for standards changes. The sub-program will also recruit other California utilities, specifically LADWP, to implement a similar Upstream HVAC program.

Finally, most HVAC distributors and manufacturers have not actively engaged in the area of quality installations. However they are supplying the contractors who are in the best position to ensure that quality installations occur. The program can continue to engage these market actors for ideas and program modifications to ensure their support of quality installations. As newer technology and techniques arise that can impact this area, this channel can become an avenue of support or inclusion of the new technology or techniques.

6. Program Implementation

a. Statewide IOU Coordination: The IOUs will be delivering this sub-program through a common Third Party implementer who also manages similar upstream programs for SMUD and NV Energy:

i. Program name – Upstream HVAC Equipment Incentive Program

ii. Program delivery mechanisms – The three IOUs and SMUD will offer upstream HVAC distributor incentives which use the same online participation process. Other IOUs and POUs will be approached and offered inclusion.

iii. Incentive levels – The three IOUs will offer the incentive levels shown in shown in Section 4.b and will coordinate with SMUD to make every effort to make incentive levels consistent statewide.

iv. Marketing and outreach plans – The sub-program will coordinate outreach activities to distributors in other geographic areas that ship into and across service territories and will continue communication with the industry to see where additional collaboration can occur to maximize marketing and outreach resources

v. IOU program interactions – The IOUs are engaged in communications with the CEC and other Agencies via the Codes and Standards process and will be able to coordinate and communicate voluntary programs and incentives with mandatory codes that become enacted for the future. Increasing the communication regarding the CPUC Strategic Plan will allow all entities to move and plan towards the same objectives.

vi. Similar IOU and POU programs – As mentioned in ii above, the three IOUs and SMUD will be implementing similar Upstream HVAC Equipment Programs. Additional efforts to coordinate with other POUs will occur to establish this program as a true statewide effort.

b. Program delivery and coordination: The Program will be coordinated with the following activities:

i. Emerging Technologies program – As Emerging Technologies identify new technology which should be included in the Portfolio, an incentive level and any supplemental marketing can be included for this technology via this program design.

ii. Codes and Standards program – As technologies advance and market penetration increases to an acceptable level, the minimum threshold for eligibility in California can increase to lock in the higher efficiency levels and continue an upward level of efficiency for HVAC equipment.

iii. WE&T efforts – The IOUs will leverage distributor relationships established through this Program to deliver training modules developed through the HVAC WE&T Program and the Codes & Standards Program.

iv. Program-specific marketing and outreach efforts (provide budget) – The primary outreach vehicle between the Program and participating distributors is via the website: www.cainstantrebate.com. The cost of operating this website is shared between the participating IOUs and POUs. Additional marketing and outreach activities exist through personal contact between the program staff and participating distributors. Targeted QI/QM marketing materials can be distributed to contractors via these established distributor channels.

v. Non-energy activities of program – N/A

vi. Non-IOU Programs – The sub-program will leverage its involvement with the WCEC to continually evaluate and include new equipment technologies as they become more commercially viable.

vii. CEC work on PIER – See above in Section 6.b.vii.

viii. CEC work on codes and standards – See above in Section 6.b.ii.

ix. Non-utility market initiatives – N/A

c. Best Practices: In Fall of 2007, ACEEE awarded this Upstream Program Design being implemented by PG&E the "Exemplary" Award. This essentially designated this Program Model as the highest performing program to promote HVAC equipment as compared to all programs across the United States.

d. Innovation: A critical component of this sub-program is its use of a an electronic application and participation process that provides transparency to both the participating manufacturers and distributors as well as the host IOU to be able to see what is occurring for applications that involve them. That this system allows participants to know the status in aggregate or down to a customer application

level makes participation easy and efficient. For manufacturers and distributors, a paperless participation system is critical for ease of participation and for utilities there is reduction in cost per kWh saved from administrative costs over a paper review process. This approach is innovative because no other programs are using a similar online application tool.

e. Integrated/coordinated Demand Side Management: While the initial rollout of this sub-program will not have a strong integrating component, the potential for including and incenting equipment that increases the ability of the equipment to be included in DR programs is readily apparent. Manufacturer equipment with built-in controllability via wireless or powerline carrier or other could be integrated relatively easily once the appropriate incentives and messaging are determined.

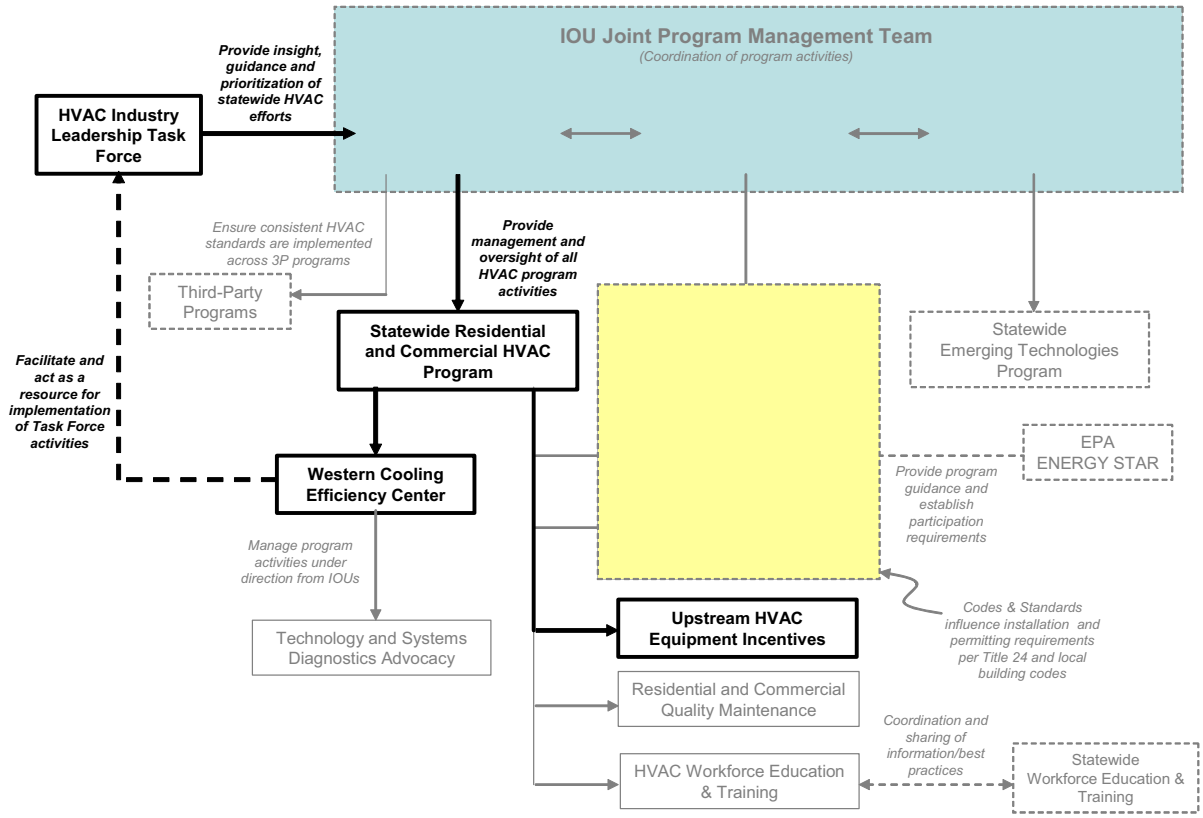
f. Integration across resource types (energy, water, air quality, etc): N/A

g. Pilots: N/A

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

2009–2011 Energy Efficiency Programs
Statewide HVAC
Program Implementation Plan

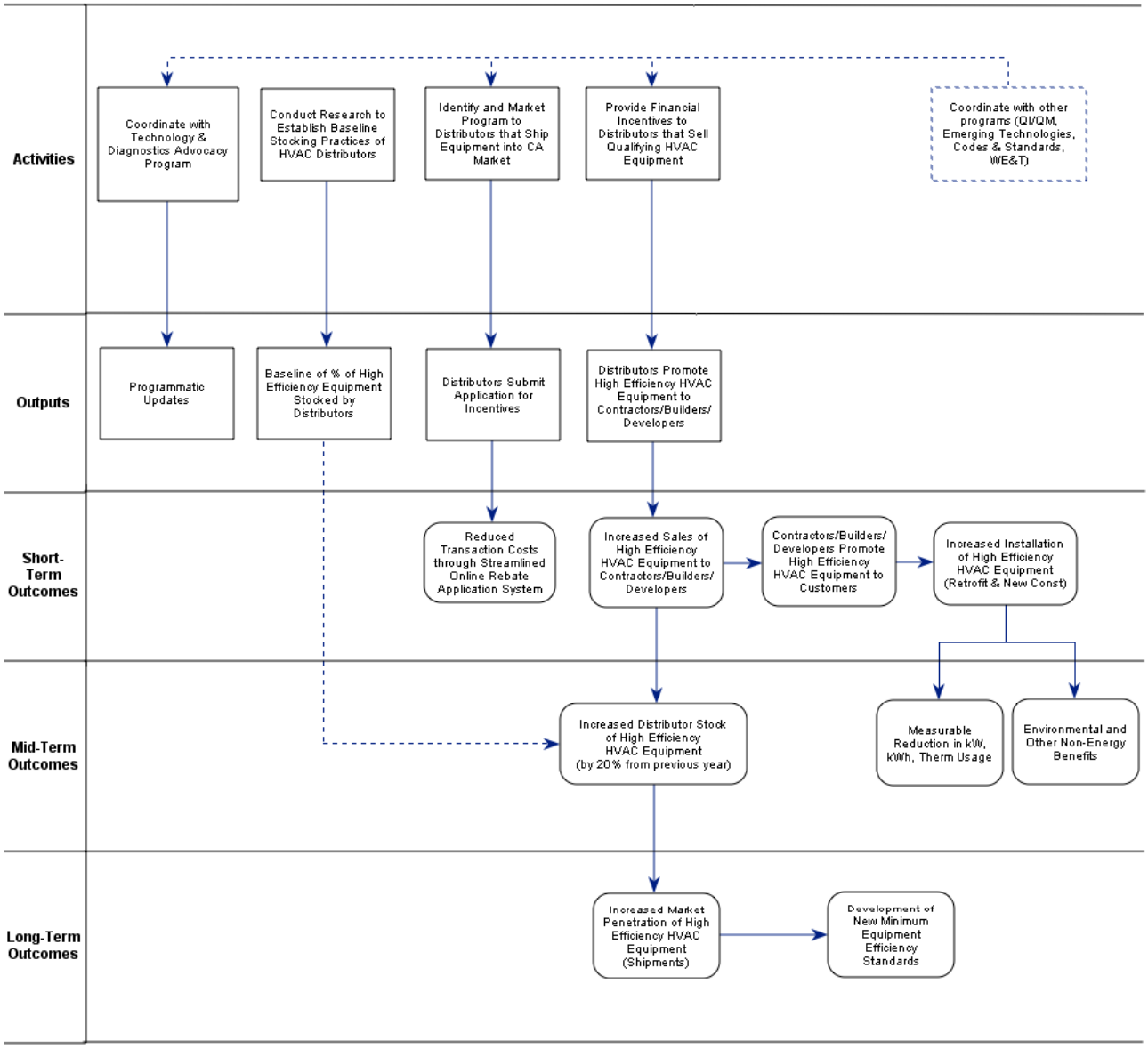
7. Diagram of Program:



2009–2011 Energy Efficiency Programs
Statewide HVAC
Program Implementation Plan

8. Program Logic Model:

Program: Residential & Commercial HVAC Program
Sub Program: Upstream HVAC Equipment Incentives Program



2009–2011 Energy Efficiency Programs
Statewide HVAC
Program Implementation Plan

1. **Program Name:** HVAC Technologies and System Diagnostics Advocacy
   Program ID#: TBD
   Program Type: This is a statewide, core sub-program

2. Projected Program Budget Table

Table 1[20]

Program #	Main Program Name / Sub-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					
	Etc.					
	TOTAL:					

3. Projected Program Gross Impacts Table

Table 2

Program #	Program Name / Sub-Programs	2009 - 2011 Three-Year EE Program Gross kWh Savings	2009 - 2011 Three-Year EE Program Gross kW Savings	2009 - 2011 Three-Year EE Program Gross Therm Savings
Market Sector Programs				
	Core Program #1			
	Sub-Program #1			
	Sub-Program #2			
	Etc.			
	TOTAL:			

[20] 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.

2009–2011 Energy Efficiency Programs
Statewide HVAC
Program Implementation Plan

4. Program Description

a) This is a coordinative and advocacy program that addresses the priority need for immediate and comprehensive action addressing elements critical to increasing, optimizing and maintaining the energy and peak electricity efficiency performance of direct expansion (DX)/vapor-compression–based cooling equipment and accelerating the market introduction of a range of advanced evaporative-based cooling technologies. The Program will be implemented by the Western Cooling Efficiency Center and funded by the IOUs. The sub-program includes unprecedented participation by HVAC industry stakeholders in RD&D, design, continuous review and updating, and operation of HVAC-related IOU programs. The sub-program includes unprecedented cooperation/collaboration with the HVAC industry for the purpose of substantially advancing HVAC-related program quality and effectiveness. A continuous program improvement process will be introduced to provide an active, real-time means for improving program effectiveness and incorporating results in between planning cycles.

This sub-program results will bring positive benefits by (1) providing higher levels of HVAC energy/demand efficiency in equipment design, installation, operation, maintenance; (2) improving quality assurance throughout the HVAC supply chain; (3) providing up-to-date workforce education and training content, and (4) supporting improved compliance with current and as yet to be proposed advanced codes and standards in California.

b) This sub-program is primarily a non-resource program focused on technical and policy issues, but may provide incentives to assist in the commercialization of new technologies (i.e., "Golden Carrot" type programs such as the Super Efficient Refrigerator Program of the early 1990s[21]). Cost-sharing from other in- and out-of-state partners will be sought on all projects as appropriate.

c) Resolution of technical issues will also directly support the HVAC-related Zero Net Energy (ZNE) goals in an integrated manner through the substantiation of the benefits of the combination of the highest efficiency, most fully featured equipment along with robust maintenance practices. Approaching ZNE goals in the residential and small commercial sectors requires the identification, assessment, availability, and implementation of new building designs, construction materials, lighting and HVAC equipment, and a change in service practice. Of necessity where mechanical cooling is deemed to be needed, equipment requirements for ZNE buildings must include the most efficient, robust vapor-compression/DX cooling technology along side advanced evaporative cooling approaches and hybrids of the two system types, applied and sized appropriately. The road to ZNE consists of many technical improvement steps, both small and large and everything in between including climate optimized and control optimized systems.

[21] Note that the sector report to the HVAC section of the Strategic Plan specifically called for such Golden Carrot programs as a means to encourage manufactures to include on-board diagnostic systems on HVAC equipment.

2009–2011 Energy Efficiency Programs
Statewide HVAC
Program Implementation Plan

5. Program Rationale and Expected Outcome

a. Quantitative Baseline and Market Transformation Information:

Table 3

	Internal Market Transformation Planning Estimates		
Market Sector and Segment	2009	2010	2011
Metric A			
Metric B			
Metric C			
Metric D			

Refer to the overarching PIP section.

b. Market Transformation Information:

Table 4

	Internal Market Transformation Planning Estimates		
Market Sector and Segment	2009	2010	2011
Metric A			
Metric B			
Metric C			
Metric D			

Refer to the overarching PIP section.

c. Program Design to Overcome Barriers:

The sub-program will address following priority barriers:

- Lack of more accurate and easy to use diagnostic tools to improve system performance and service quality in RCA programs.
- Lack of HVAC equipment that provides more robust field performance.
- Lack of climate optimized cooling equipment.
- Limited use by HVAC contractors of emerging industry standards to improve installation and maintenance practice.
- Limited understanding of consumers about cooling equipment efficiency.
- Lack of specific industry standards that support increased field performance, diagnostics and service of equipment.

These barriers will be addressed through a prioritized, integrated, multi-level approach that directs increased attention, focus and resources to increasing technical excellence, financial accountability and IOU program effectiveness as further described in Section 5.e.

d. Quantitative Program Targets: See Section 5.a above.

Table 5

Program Name	Program Target by 2009	Program Target by 2010	Program Target by 2011
Technology and System Diagnostics	TBD		

e) Advancing Strategic Plan goals and objectives:

This sub-program directly addresses the Goal 4 objectives outlined in Chapter 6 of the Strategic Plan and is aimed at substantiating effective technical approaches to the installation, maintenance and servicing of residential and small commercial HVAC systems that deliver reliable energy and demand savings. Completion of the individual technical components outlined below[22], and others that will surface during and beyond the 2009-11 program cycle, will solve fundamental issues that have hindered significant advancements in the HVAC industry and provide state-of-the-art content to the HVAC Workforce Education and Training effort. The sub-program will achieve its objectives by expanding opportunities for HVAC industry participants to become involved in the design and implementation of IOU HVAC programs. This will increase the overall credibility and effectiveness of the entire suite of HVAC programs.

Strategy 4-1 – Pursue regional climate optimized equipment standards through DOE rulemaking process.

4.1.1

IOU staff in close consultation with WCEC/CEC and other appropriate parties will continue to stay attentive to and engaged in the federal climate optimized cooling standard proceeding as it continues into 2011. The IOUs and WCEC will reach out to utilities including Arizona Public Service, Nevada Power (already involved through the PIER hot dry a/c project), New Mexico Public Service, Salt River Project and others to ensure that these utilities are also engaged in the federal rulemaking. The Northwest Energy Efficiency Alliance, Bonneville Power Administration and the Energy Trust of Oregon are other important allies that will be contacted. Formal IOU comments to the proceeding will be shared with these organizations, potentially with multiple companies signing on in support of the comments. A formal liaison will be assigned as the rulemaking proceeds to ensure timely involvement as needed. A PG&E Codes and Standards staff person has already been selected to work with the WCEC as the California IOU liaison as the federal rulemaking proceeds.

[22] This section is only intended to illustrate a number of energy-efficiency related issues that exist within the industry at the time of this writing. The IOUs do not explicitly support or endorse any of the technical approaches, issues or products discussed in this PIP. Funding may be provided to resolve these or similar issues and will be evaluated by the IOUs with the support of the HVAC Industry Leadership Task Force.

Sub-Program Benefits: With federal preemption limiting California's ability to adopt more stringent cooling standards reflecting climate conditions, a federally recognized climate optimized standard could allow higher efficiency equipment in the marketplace without the need for utility incentives.

4.1.2:
IOUs will continue to expand the climate optimized/hot dry cooling work in California through Emerging Technology (ET) and pilot program efforts. The results of these activities are critical inputs to the federal climate optimized standards rulemaking including technology options, costs, savings, environmental benefits, market interest and impacts. This sub-program will coordinate with ET activities to ensure the appropriate level of attention on hot/dry air conditioning through an inter-utility program management team (consisting of the appropriate program managers from the four IOUs) that meets quarterly basis to discuss program integration and implementation issues.

Sub-Program Benefits: The results will accelerate the deployment of climate optimized equipment first in California and throughout the Southwest region.

Strategy 4-3 – Accelerate market penetration of advanced technologies by HVAC industry promotions and updating/expanding current utility programs include the new technologies as appropriate.

4-3.1 Western Cooling Challenge:
The WCEC has launched the Challenge to establish new high efficiency RTUs [10-ton prototype] that respond more optimally to the hotter, drier climate conditions in California and in the western regions. Twelve companies are participating with seven Original Equipment Manufacturers (OEMs), two as OEMs and as component suppliers, and three as component suppliers. This activity corresponds to strategic needs for climate optimized HVAC technology and industry promotion. The IOUs will provide additional financial resources as needed to support or expand the Challenge. Given the limits of vapor-compression/direct expansion-based cooling, hybrid systems are a major contender for next generation cooling technology where sufficient water resources are available.

Sub-Program Benefits: Completed lab and field-testing indicate that climate optimized vapor-compression/DX cooling equipment could save 20-30% energy and demand in California.

4-3.2 Advanced Rooftop Unit (ARTU):
The ARTU was supported as part of PIER's Advanced, Automated Fault Detection and Diagnostics Commercialization program that ended in 2007. The commercial package ARTU features definition includes 36 items that enhance the field performance, maintenance and serviceability of package RTUs. They include the following components: Operational Performance, Maintenance and Serviceability, Reliability and Robustness, and Diagnostics and Monitoring. Many of the features

are already found in commercial units, but only in the high tier, most expensive model lines with the smallest market share. These features need to migrate downward to all RTUs as critical to reaching and maintaining performance efficiency of units in the field. A number of the 'advanced' features are controls-related and have very low marginal cost. The ARTU feature set represents the next evolution in high performance equipment and as such is a priority for IOU attention.

There is at least one feature in the ARTU feature list that the IOUs will change: the recommendation of Consortium for Energy Efficiency (CEE) Tier 1 (Energy Star level) equipment efficiency levels for an ARTU. In 2005, when the project began, CEE Tier 2 equipment was very new to the market. The project's technical advisory group did not anticipate the rapid upward movement of equipment efficiencies chosen for utility incentive programs. Therefore, the ARTU minimum efficiency level must now be placed at the CEE Tier 2 level. The PIER Market Connections activity supporting the ARTU proposed the ARTU to the CEE as a potential Voluntary Initiative to be developed and tested by CEE members including potentially, California IOU CEE members. The ARTU feature set is also being proposed and discussed as the platform for a new Tier specification that would apply in addition to the standard SEER/EER/IPLV efficiency metrics.

In order to support and accelerate the CEE Voluntary Initiative, the California IOU CEE members will initiate next steps to move the ARTU forward. These steps include assessment of the benefit-cost of the ARTU features, the design of ARTU feature set tiers in relation to establishing tier options to be promoted through pilot energy efficiency program that will be designed in 2009, and review of the data from the ARTU testing completed in 2006 at SCE's Refrigeration & Thermal Test Center. This review will indicate whether additional testing protocols and testing is required to validate specific ARTU features. Additional testing protocols will be supported, planned, initiated, and reviewed for potential national advocacy benefits.

Sub-Program Benefits: Implementation of ARTU features across RTU model lines would provide a major boost to QI/QM installation and maintenance practices by providing a more robust equipment package that needs less maintenance and is equipped with embedded service diagnostics that help technicians achieve quality service standards at less cost and complexity.

4-3.3 Premium Ventilation Package:
The Bonneville Power Administration recently funded the Premium Ventilation Package project. The potential for additional savings from the primarily controls-related measures included in the package bear a direct relationship to the future design of RTU service resource programs in California. The measures that will be tested as additions to the AirCare Plus RTU service platform include:

- Optimum start
- Resistance heat lockout for heat pumps
- Ventilation lockout during morning warm-up

- Premium economizer
- Demand Controlled Ventilation
- VSD fan control

Utility and regional energy efficiency organizations in the Pacific Northwest and the Northeast have been working to establish a technically sound and cost-effective approach to utility-sponsored commercial building RTU service programs for existing RTUs. The regions have been working together on an RTU Savings Research project. Current thinking in the PNW is that the conventional/standard approach to utility RTU service programs that includes refrigeration charge and airflow checking [with airflow the major concern], thermostat replacement/reset [with the largest savings potential and most limited persistence], and economizer repair, may not provide sufficient cost-benefit to the ratepayers, the customer or the HVAC service contractor. The conventional measure package expanded to include at least some of the Premium Ventilation Package control features may provide a more cost-effective solution with more substantial energy savings. The IOUs will keep engaged with the Bonneville Power Administration to monitor and participate in project review on an active and ongoing basis. As results are available, the continuous improvement framework described in the core Residential and Commercial HVAC Program will ensure that this information is integrated into the Quality Maintenance sub-program.

Sub-Program Benefits: The Premium Ventilation Package of features, derived in part from the ARTU project, are estimated to save 1950-6700 kWh/year in existing RTU systems.

4.3.4 Residential Low Capacity/Low Flow HVAC Systems:

A research, design, development and testing program for the design/installation/operation of the low capacity/low flow HVAC systems that are needed in low/zero energy homes will be established with complete collaboration of whole building sector stakeholders and HVAC equipment manufactures. These homes have small heating and cooling requirements resulting in low air flows (<20 cfm) that current residential HVAC systems are not able to reliably control and supply. More effective controls and control sequences along with embedded diagnostic capabilities with remote performance communications linkages will have to be integrated with the equipment. Climate optimized and control optimized systems will be developed. The financial costs for this effort will be co-funded with financial participation from HVAC OEMs, CEC and other organizations inside and outside California.

Sub-Program Benefits: Appropriate technology is required to meet the energy requirements of a new generation of low or zero net energy homes.

4.3.5 Package Unit Retrofit Control Package:

Portland Energy Conservation, Inc. (PECI) proposed two activities to the recent PIER Buildings Program RFP that are appropriate for inclusion in the Technology and System Diagnostic Advocacy Program. However, PECI's overall proposal was rejected by the CEC. PECI proposed to research and develop a modern retrofit control package with the most efficient and effective economizer sequence, demand management features, integrated start-up checkout, and simplified ongoing fault diagnostics that will make retrofitting rooftop units more reliable and attractive to utility programs. The project will develop a sequence and specification for a control retrofit package with on-board diagnostics intended for existing rooftop package HVAC units. PECI contacted and plans to work with manufacturers – Honeywell, Ice-Energy, and ICM Corporation – to test an actual prototype that can be commercialized rapidly, resulting in savings potential that can be delivered more reliably and quickly than the current market progress. The developed product will form the basis for following generations of work that may include programmable communicating thermostats, demand controlled ventilation, and variable speed drives. The overall project goals are to develop an expert-sourced specification, create a prototype of an incremental product that can be delivered in a reasonable time frame, determine savings for the product so it can be embraced by utility programs, and promote the technology to energy program managers so it will create market demand. The HVAC Industry Leadership Task Force will review this proposal in detail as part of a roadmap and action plan development. *[Also supports Strategy 4.4]*

Sub-Program Benefits: Smarter, small HVAC system controls are beginning to emerge in the market. This project would accelerate the market deployment of advanced control equipment especially through the potential manufacturer partnerships that have been identified.

4.3.6 Advanced HVAC Performance Monitoring Savings Validation:

PECI's other HVAC PIER proposal was aimed at adding a savings validation component to an existing effort encompassing the statewide deployment of advanced HVAC performance monitoring and fault detection and diagnostics (FDD), and optimized building control technology with Bank of America and Field Diagnostic Services, Inc. (FDSI). Results of the work would be publicly available and be useful to informing building owners and operators of the benefits of advanced maintenance approaches. The value proposition is based on leveraging the significant investment already being made by Bank of America in installing an enterprise-level building control system and in adding FDSI's advanced HVAC performance monitoring and optimal building control technology. Bank of America is deploying the technology to over 3,200 banking centers across the U.S. including over 400 locations in California. The proposed research project leverages the investment in technology being made by Bank of America, and completes a savings validation that is not part of the current plan. The results of this proposal will be reviewed in detail as part of a roadmap and action plan development and integrated into the Quality Maintenance sub-program as appropriate.

Sub-Program Benefits: The availability of results from the use of advanced diagnostic technology by a large corporation across 400 California buildings may provide key lessons for educating building owners about the benefits of advanced maintenance practices aimed at producing cost-effective results. The results will also support WE&T objectives.

4-3.7 PNW RTU Savings Research Project:

A key impact of the research on the potential for savings in utility RTU service programs from standard service measures has been the development by Honeywell of a new dry-bulb sensor (C7660) for use in a widely used Honeywell economizer controller (W7459). The existing dry-bulb sensor (C7650) in this controller was discovered by PNW utility-supported researchers to have a 6-10°F deadband, effectively limiting economizer cooling potential when milder overnight conditions existed and depending on how the installing contractor set the controller logic. Honeywell is now offering its HVAC OEM customers a new sensor that provides appropriate deadband limits (defined as no more than 2°F in the ARTU feature set), provides easier and more accurate installer set up, and is field replaceable having the identical form factor as the old sensor. The IOUs will immediately assess the benefit-cost of the new sensor for potential inclusion in California utility-funded existing RTU service programs, both IOU and POU. State agencies will be briefed on the issue as well with collaborative development of a sensor replacement program in state-owned and leased buildings. In addition, IOUs and POUs must ensure that the old sensor is not used in any new RTUs coming into the state an being supported through IOU energy efficiency programs. This is a small likelihood with new equipment. For existing units, replacing this sensor could be a part of an expanded RTU service package. As appropriate, the issue with the older sensor will immediately become a part of the course content for the HVAC WE&T Program related to economizers. New Buildings Institute (NBI), the research project manager, will provide additional findings from the project to the IOUs for assessment in relation to immediate program design considerations.

Sub-Program Benefits: The old sensor is limiting economizer cooling savings during milder cooling season overnight climate conditions across California. The new sensor will provide a improvement in performance in existing RTUs.

4-3.8 Hot/Dry Air Conditioning Pilot:

The IOUs propose to develop a pilot program approach for introduction of the Hot Dry Air Conditioner technology to the market place. It is envisioned that the Pilot will offer a tiered incentive program. This delivery mechanism will be employed that will ensure that only qualifying equipment is installed, that it is installed properly and that the necessary market acceptance information is obtained to effectively expand the program in the future.

The Pilot will test a three tier structure based on the CEC HDAC performance specification at 115 degrees F, modified as necessary to ensure that an adequate

number of commercially available OEM equipment qualifies for the first tier rebate. The second tier will be set at a minimum EER of 8 (the CEC HDAC performance specification) and will encourage the installation of OEM equipment with improved controls or equipment with advanced air-cooled heat exchangers. The third tier will be set at a minimum level appropriate for evaporatively cooled refrigerant based air conditioning technologies. The HDAC Pilot will include both residential and small commercial technologies.

It is anticipated that a web based list of qualifying products will be developed for the Pilot and shared statewide regionally throughout the western states.

Task 4-3.9 Natural Gas Savings:
A significant effort is required to sufficiently address improving energy efficiency in residential and commercial natural gas heating systems. This effort will be implemented in conjunction with the Consortium for Energy Efficiency (CEE) Gas Committee work plan. CEE member utilities work collaboratively on such topics of interest. This provides important leverage for accomplishing program goals. CEE members are proposing to eliminate AFUE 90% furnaces as the CEE Tier 1 efficiency level and move to only promote 92% and 94% AFUE products. CEE members will be looking into gas heating QI issues and coordinating with ENERGY STAR program specifications. Also, CEE will be adding an additional Tier and a controls component to its boiler specification. The IOUs will actively work with CEE staff and other members to address and support these initiatives and incorporate results into its programs as part of the overall continuous program improvement process. The IOUs will make sure that the QM component is addressed along with the QI component through WE&T and related program channels.

The IOU HVAC Program Management Team will also influence appropriate Emerging Technology initiatives, WE&T activities and pilot programs to address heating equipment sizing, fan power, equipment maintenance, equipment efficiency, early replacement and carbon impacts. With a scope that includes detailed examination of carbon impacts, ET plans assessments and potential follow-on demonstration projects of OEM Dual-fuel Package Units, gas absorption heat pumps, and de-superheater integration with combined hydronic systems. Dual-fuel systems, both package and split, will also be assessed with respect to DR potential. In addition, as described in Task 4.6.3: The IOUs, working with LBNL and other interested parties, will actively support development of test procedures that could either be stand-alone or become part of the ASHRAE 103 [Method of Testing for Annual Fuel Utilization Efficiency of Residential Central Furnaces and Boilers] and ASHRAE 210/240 thermal performance testing standards. The procedures cover pressure difference, accounting for power factor, accounting for ancillary power consumption (e.g., combustion air blowers) and differences between furnace controls.

Finally, as described in Task 4.6.3: The IOUs will support as needed the work that LBNL and the CEC are doing on a National Standard Method Of Testing Furnaces/Air Handlers for Air Leakage. LBNL has funding from the CEC and

through ASHRAE (SPC 193) to develop a national standard test method. There is little use in sealing ducts properly if the system still leaks 100 cfm from the mechanical components. Data indicates that furnaces leak about 50 cfm with a wide range of variation. This national standard should be complete and available in 2009. When the standard is available, the IOUs will assess its related efficiency benefits for use in program design.

Strategy 4-4 – Adopt a progressive set of building codes that support the deployment of peak efficient equipment.

The Advocacy Sub-Program will support development of building codes aimed at deployment of peak efficient equipment aimed at equipment improvements including the ARTU, climate optimized cooling, the Western Cooling Challenge, and through national advocacy work with AHRI, ASHRAE, efficiency advocates including the American Council for An Energy Efficient Economy and the Natural Resources Defense Council, and other HVAC industry stakeholders.

Peak efficiency also includes a component for DR/DSM for smaller commercial buildings. The Advocacy Sub-Program will produce a detailed impact and market assessment on the demand response/demand side management approaches currently in use by the IOUs to determine if the current approaches are meeting demand management needs and/or require expansion, updating or revision. Continuous DR tool effectiveness assessment will be an ongoing responsibility of the sub-program. In addition, the IOUs will carry out the recommendations for further DR tool development for small commercial buildings being carried out through ongoing work by the Demand Response Research Center (DRRC) at LBNL. The work includes, but is not limited to:

a) Exploring methods to deploy Open Automated Demand Response, a set of standard, continuous, open communication signals and systems provided over the Internet to allow facilities to automate their demand response. This project is aimed at smaller commercial buildings that do not have centralized or sophisticated control systems and concentrates and compares various communication means to deliver automated DR signals to these buildings.

b) Further testing of the use of a customized Programmable Communicating Thermostat (PCT) based on a residential DR PCT design for achieving DR in small commercial buildings.

c) Further testing of financial and related rate design DR approaches in appropriate markets.

Specific recommendations for further DR tool development are forthcoming in DRRC reports. These new approaches need further technical development and market conditioning. The Program will support the recommendations for continuing the work through the HVAC Industry Leadership Task Force and with continued support

from the CEC, which provides financial resources to DRRC for ongoing DR work. SMUD has also provided support for the recent DR market testing and may continue to do so. The sub-program will follow up on a project on FDD for residential applications that was completed for SMUD to determine its feasibility for use.

In addition, the Program will recommend approaches on DR/DSM integration with AMI infrastructure improvements that are planned and underway. Overall, the sub-program will add emphasis and focus on understanding, integrating and accelerating DR/DSM approaches through existing and new DR, and energy efficiency programs.

Sub-Program Benefits: Code requirements for peak efficiency will lead to high market penetration of higher efficiency equipment. DR/DSM options will have greater market and utility system impact to achieve statewide demand management objectives.

Strategy 4-5 – Adopt nationwide standards/guidelines for onboard diagnostics functionality and specifications for designated sensor mount locations.

4-5.1 PIER FDD:
New Buildings Institute (NBI) and the Western Cooling Efficiency Center (WCEC) have been awarded a PIER Buildings Program contract for a range of activities in small commercial FDD. The work that PIER has approved is directly responsive to several goals in the HVAC sector strategy of the Strategic Plan. Southern California Gas and Southern California Edison committed financial and/or technical resources to the project. The proposed project outputs are directly related to program design specifications/requirements for commercial HVAC programs. The results of the PIER project will be monitored and then, based on the results, a plan will be developed to further commercialize the FDD technology.

Sub-program Benefits: The overall PIER FDD program is directly responsive to the HVAC sector goal in both the CPUC and CEC's strategic plans. The PIER funding provides significant off IOU-budget support to sector efforts.

4-5.2 National Diagnostic Protocol Evaluator:
As described in the HVAC Quality Maintenance Sub-Program, a level of uncertainty exists surround the energy benefits of equipment service-based measures such as refrigerant charge and airflow (RCA) currently offered in IOU energy efficiency programs. PIER is supporting Dr. Jim Braun, Purdue University, for the development of a national benchmark evaluation protocol for refrigeration charge checking and evaporator/condenser airflow diagnostics. When the evaluator tool is available, the IOUs will require all of the refrigeration charge checking tools used by vendors in any IOU HVAC QM programs be evaluated with the tool. It is expected that most if not all current vendors will submit their tools as part of the protocol development and calibration process. *[Also supports near-term strategy 4.6]*

Sub-Program Benefits: By providing a nationally recognized protocol, the IOUs will have a tool to evaluate the claims of refrigeration diagnostics vendors. The results will be important to IOU HVAC program design in the near and mid-term.

4-5.3 RTU FDD Technology and Market Assessment:
The PIER FDD project contractors will review all known data/information on the type, use, and cost/benefit of current onboard FDD capabilities including remote communications functionality in commercially available package RTUs. Market user information will be will be collected in order to establish the conditions favorable for FDD use, to inform industry vendors on market interest and value, and to provide market transformation indicators for use in IOU FDD program elements.

Sub-Program Benefits: This work will result in technology reviews that could be further substantiated as needed through the ET framework. This work will also inform WE&T content, market conditioning and form the basis for proposing minimum FDD RTU standards for IOU programs and/or Title 24.

4-5.4 Prioritize In-Field Diagnostic and Maintenance approaches:
This work will initially focus on existing data and field experience. Some laboratory testing may be involved. *[Also supports near-term strategy 4.6]*

Sub-Program Benefits: Results will inform the Quality Maintenance Sub-Program and other industry stakeholders on approaches to more effective program and financial incentive design, and contribute to advancing HVAC WE&T content.

4-5.5 FDD Working Group:
A key stakeholder group is required to address the establishment of minimum FDD standards in California and perhaps nationally in package HVAC. Establishing this stakeholder group will be a priority objective for the sub-program. It is anticipated that the FDD working group will become a sub-group as part of the overall HVAC Industry Leadership Task Force framework discussed in the core Residential and Commercial HVAC Program. *[Activity meets overall Near and Mid Term Goals]*

Sub-Program Benefits: Establishing an active FDD stakeholder working group under the umbrella of the HVAC Industry Leadership Task Force is an effective approach to market understanding, potential market transformation, and to validate a potential submission to Title 24 for FDD as a prescriptive measure.

4-5.5 RTU FDD Prescriptive Measure – Title 24:
The sub-program will develop and submit for public comment, in part depending on direction provided by the FDD stakeholder group and CEC staff, a template for FDD with remote communications functionality for package RTUs as a Prescriptive Measure in the next Title 24 Nonresidential Standards revision. *[Also supports strategy 4.4]*

Sub-Program Benefits: Establishment of a minimum FDD standard and/or guideline will provide a new tool to support quality maintenance practices in the field. Submission to Title 24 of an FDD prescriptive measure will provide the strongest market signal as to the importance of effective equipment performance maintenance.

PIER FDD Project Schedule: The overall FDD project begins approximately mid-2nd quarter of 2009 and continues into the 2nd quarter of 2012. Given the cross cutting nature of the project including technology review, market research with building owners/managers, HVAC product vendors, engineering analysis, and the need for a stakeholders group, the project will need close coordination and communication with IOU ET staff, program staff, and codes and standards staff. This coordination will be realized through the inter-utility program management team (consisting of the appropriate program managers from the ET, Codes and Standards and HVAC programs at each of the four IOUs) that will meet on a quarterly basis, as well as through the PIER contractors NBI and WCEC directly.

4-5.6 Sensor Mount Locations:

The sub-program will immediately review the work done by Reid Hart, formerly of the Eugene (OR) Water and Electric Board on outside sensor placement issues. Other work may be available for review as well. Honeywell is evaluating new outdoor sensor enclosures based on Reid's work. In addition, the sub-program needs to review the features of the Western Premium Economizer program along with the economizer service approach found in the AirCare Plus program by PECI for providing an optimized economizer service package. This economizer assessment is directly linked to activities described in the PECI-proposed retrofit control package, the Premium Ventilation project, the ARTU and the Western Cooling Challenge. With this information in hand along with other experience/date from California or elsewhere, the appropriate programmatic response will be made to establish and promote more effective sensor mounting in the field and at the HVAC OEM level, as needed.

Sub-Program Benefits: Sensor placement is critical for achieving and maintaining RTU energy savings through effective control system performance.

4-5.7 HVAC Roundtable Recommendations:

In October 2006, a national HVAC Roundtable, supported by PIER was held in California that included HVAC-related professionals from private industry, utility programs, researchers and efficiency advocates. The list of recommendations from the Roundtable directly informed the basis for several of the goals and recommended actions identified by the Strategic Plan and the CEC's Report to the Legislature. Several recommended actions are directed at the HVAC industry and national organization such as the Air Conditioning, Heating and Refrigeration Institute (AHRI), American Society of Heating Refrigeration and Air Conditioning Engineers (ASHRAE) and the US Department of Energy. The Advocacy Sub-Program, in conjunction with the WCEC, will determine the most appropriate approaches to these national stakeholders on these issues. The IOUs will offer co-funding for resolving

certain technical issues. Other utilities and regional market transformation organizations such as the Northeast Energy Partnerships and the Northwest Energy Efficiency Alliance will be brought into this national process to show additional breadth and depth of interest to the national stakeholders. A positive response from the HVAC industry and DOE can best be leveraged by a clear and sustained message by the IOUs, local HVAC stakeholders, and utility/energy efficiency industry allies. Discussions are underway about convening a California-focused HVAC Roundtable prior to finalizing the PIPs in the July-August 2009 timeframe.

Of the Roundtable recommendations numbered 1-5 and 8-9, formal and informal communications is assumed to be required to succeed on a national scale with the HVAC OEMs, AHRI, and related private and public organizations including, but not limited to: USDOE, state energy agencies, efficiency advocates, utility regulators potentially through the National Association of Regulatory Utility Commissioners (NARUC), along with national and regional energy efficiency organizations. The IOUs, in conjunction with the WCEC, will consider options for an advocacy agenda to discuss, prioritize and address the following items with HVAC industry stakeholder involvement:

1. **Low Ambient Charge Checking Protocol:**
There is an immediate need for the HVAC industry to update and expand the range of in-field unit refrigeration charge diagnostic protocols down to 50°F outside temperature, 40°F degree wet-bulb (basically a dry coil), with an upper limit of 115°F outside. The Carrier representative noted that for a fixed metering device, the lower limit has probably already been reached. Most current equipment with thermostatic expansion valves (TxV's) could probably not go much lower (60°F), however with better (wider range/extended range) TxV valves, a lower range might be possible. *This work has been initially addressed through a PIER BERG research grant, but additional work needs to be completed to finalize the low ambient approach initially indicated to be possible at 50°F dry-bulb.*

Sub-Program Benefits: HVAC technicians are most available to provide maintenance services outside of the cooling season during which they have little time except to respond to customer emergencies. The ability to conduct charge checking as needed more months of the year with a more accurate set of tools is critical to offering effective HVAC-service related programs.

2. Technical Review of Refrigerant Charge Diagnostic Tables/Charts:
There is an immediate need for manufacturers to review and revise as needed, the current refrigerant cycle tables along with evaporator and condenser performance charts partly in relation to the low ambient item noted above, and also for other reasons including differences in operating pressures in newer higher efficiency vs. older lower efficiency units. The Carrier representative noted that not taking into account the different operating pressures of new higher efficiency units, could result in overcharging.

Sub-Program Benefits: More accurate diagnostic tools, in this case the foundational metrics for charge diagnostics, leads to more effective performance maintenance of the equipment.

3. Industry Standard Unit Data for Field Service:

There is a critical need for manufacturers to provide data labeling via stickers, plates, or potentially an RFID tag, with enhanced data sets such as superheat/subcooling charts for a wide range of conditions (indoor & outdoor dry bulb/ wet bulb temperatures), permanently affixed to each unit. Depending on the approach chosen, a standard graphic layout and mounting location should be established industry wide.

Sub-Program Benefits: An industry standard approach will help service technicians perform field diagnosis and correction as needed.

4. Minimum FDD Standards:

The industry should develop a minimum standard for onboard diagnostics functionality for all units. It could take the form of a universal plug point for all manufacturers with a universal protocol for data requirements, data analysis and data display. *The new PIER FDD project will expand these standards to include embedded remote communications capability so as to enable remote diagnostics by service technicians, owner/managers, and utility program operators for QI/QM, M&V, and persistence of savings evaluation requirements.*

Sub-Program Benefits: An industry standard will help service technicians with diagnosis and repair of operating faults.

5. Industry Standards Sensor Mount Locations:

Manufacturers should create a standard or specification for designated sensor mount locations for conducting field diagnostics. Manufacturers should mark appropriate locations for technicians to attach sensors. At least one manufacturer has a product with sensor mounting locations marked. One manufacturer provides a sensor port accessible without requiring the service technician to open the unit for certain service work.

Sub-Program Benefits: An industry standard will help service technicians with diagnosis and repair of operating faults.

6. Prioritize In-Field Service Approaches:

There is a need to prioritize in-field diagnostic approaches based on benefit-cost of the energy savings, cost to diagnose/repair, and the frequency of occurrence of faults. This might be determined by review and analysis of existing field experience. *This recommendation is being addressed through the previously mentioned PIER FDD project.*

Sub-Program Benefits: Prioritization of service benefits will enable more effective IOU diagnostic and system maintenance program design.

7. Definition of Coil Cleaning:
There is a critical need to define a clean coil and how to measure it, including quantification of ROI for coil cleaning, equipment life, energy performance and reliability.

Sub-Program Benefits: Clarification of the benefits will enable more effective IOU diagnostic program design.

8. HVAC Information Clearinghouse:
There is a critical need to gather protocols and incoming R&D/field data, and post them to a publicly accessible place. The collection of such information will allow researchers, practitioners and IOU HVAC program designers to examine the quality of the data including sensor and instrument types, accuracies, measurement uncertainties, and testing methods as well as equipment operating experience. AHRI will be consulted about the need for such an information hosting service and determine what options are available nationally. There is a potential role for WCEC in this service. If it is determined that WCEC is an appropriate institution to develop and host this service, IOU funding will be used to initiate and support the activity from 2009-2015. Outside funding will be sought immediately to supplement and/or displace IOU funds over time. The service will need dedicated staff resources to continuously update and assess the information being gathered.

Sub-Program Benefits: This type of information sharing will benefit utility program administrators, WE&T stakeholders, and a wide range of industry participants by providing access to timely, useful information on a wide range of HVAC issues. This increased information and awareness will enhance understanding of market transformation needs and lead to continuous improvement of IOU HVAC-related programs.

9. National Testing Protocols:
There is a need to revise DOE/ASHRAE/AHRI test pressures for furnaces and air handlers, and require measured blower power. Fan power should be included as a required measurement to help determine the impact of airflow on overall energy savings. Fan power, especially with electronically commutated motors has a bigger percentage impact on total system efficiency moving forward, especially in commercial systems with integrated ventilation or economizers. A revised testing approach will be developed and proposed to the national stakeholders and other utility and efficiency-related organizations will be recruited in support of this effort.

Sub-Program Benefits: A test protocol will allow analysis and establishment of fan power efficiency standards that could improve system energy efficiency.

10. California IOU RCA Program Revision:
For California utility-sponsored RCA programs, there is a need to modify the existing

protocols that currently pass poorly performing units. This issue will be assessed in the RCA program revision process that is being proposed through the Quality Maintenance Sub-Program and will be considered in the ongoing continuous improvement process for upgrading HVAC programs.

Sub-Program Benefits: Quality standards will be increased and areas for additional training will be identified.

11. R&D on HVAC Technician-Friendly Airflow Measurement Techniques:

An investigation of alternative airflow measurement techniques including virtual sensors will be pursued.

Sub-Program Benefits: Airflow measurements will occur more often and measurement accuracy will be increased.

12. TxV Installation Quality:

Field experience indicates that TXV sensing bulb insulation, orientation, contact, and location must be corrected prior to diagnosing and/or correcting RCA. This issue will be assessed in the Quality Maintenance Sub-Program that is being proposed. In addition, new expansion valve technologies[23] that assert better control of refrigerant flow thus providing more reliable energy savings and increased compressor life will be evaluated to determine their potential use in updated program offerings.

Sub-Program Benefits: This will improve the accuracy in diagnosing the need for charge and airflow correction.

13. Existing Unit Sizing Check:

HVAC system sizing is a major efficiency issue, and the integration of proper sizing within the utility field diagnostic/service protocol will be evaluated. The potential market responses to proper equipment sizing must be understood to effectively integrate into Quality Installation programs (i.e. downsizing equipment could result in a negative market reaction if contractors and consumers believe that they will have inadequate cooling capacity for the conditioned space.)

Sub-Program Benefits: This field program element would provide valuable information on the nature of the sizing problem. The information would support program design features found to be cost-effective.

4-5.8 Fault Detection and Diagnostics (FDD) Roundtable:

In June 2007, with PIER support, an FDD Roundtable was held in California that included FDD-related professionals from private industry, utility programs,

[23] For example, Microstaq recently announced the release of a new silicon expansion valve (SEV) that precisely meters refrigerant into the evaporator and is a replacement for mechanical TXVs.

researchers, the CEC, state agencies, and efficiency advocates. The group addressed a list of technical and market challenges that have slowed market uptake of FDD for small and larger commercial HVAC systems. The group created a 'roadmap' consisting of several action items to be led by various organizations and collaborative efforts. Sempra Utilities has requested and received a proposal from WCEC to initiate the first FDD Roundtable action item step to characterize a few major FDD tools as to their benefit-cost and usability in larger commercial buildings. Some of the work done through this project will impact the small commercial market as well as be directly relevant to the Strategic Plan Commercial Sector strategy. The recommendations from the FDD Roundtable will be reviewed as part of the development of an overall HVAC roadmap and action plan.

Sub-Program Benefits: Implementation of the Roundtable recommendations would accelerate market transformation opportunities for increased market use of FDD capabilities that in turn would increase quality performance maintenance practices in IOU programs for both HVAC and whole building design.

Strategy 4-6 – Prioritize in-field diagnostic and maintenance approaches based on the anticipated size of the savings, cost of repairs, and the frequency of faults occurring.

4-6.1 PIER FDD:
The PIER FDD project element discussed in 4-5.1 directly addresses this strategic element.

Sub-Program Benefits: addressed previously.

4-6.2 Low Ambient Charge Checking:
Through a PIER Build Energy Research Grant (BERG) research project, Keith Temple from Field Diagnostics Services, Inc. (FDSI) proposed and completed initial research on the potential for conducting in-field refrigeration cycle diagnostics at lower ambient temperatures than currently specified. Experimental data and simulation results were used to characterize performance at low outdoor ambient air temperature and low indoor (return) air wet-bulb temperature conditions. Proposed enhancements to the existing protocols, focusing on refrigerant charge and indoor airflow verification, were developed including (1) superheat verification for TxV systems, (2) the use of both superheat and subcooling to evaluate refrigerant charge for non-TxV systems, addressing cases when superheat alone is not adequate, (3) new performance expectations for superheat (expanded) and subcooling (new) for non-TxV system, and (4) expanded performance expectations for the Temperature Split airflow evaluation method. Based on the available data, the expanded protocols were successful at identifying refrigerant charge (low and high) and indoor airflow faults (low and high). The following recommendations will be considered as part of the Quality Maintenance Sub-Program that is being proposed. Expanding the analytical approach to include laboratory and field-testing as appropriate will also be

considered. The completed work and conclusions are based solely on simulation analysis.

a) A parallel implementation of the enhanced protocol will address both the unitary HVAC system verification requirements of Title 24 and the protocols adopted by the HVAC QM Program. The first phase of implementation could focus on addressing deficiencies in the current protocols through the following activities:

- A revised target superheat table is recommended to address the indoor dry-bulb temperature dependence at low indoor air wet-bulb temperatures.
- A revised target temperature split table is recommended to address the outdoor temperature dependence and the offset between the existing table and the current (experimental and simulation) data.
- Additionally, field measurement locations will be clarified to clearly identify their positions relative to the indoor fan.
- The refrigerant charge evaluation procedure for TxV systems could be improved by requiring superheat verification.

b) The second phase of implementation will address the specific protocol enhancements associated with low ambient testing, after additional research (e.g., further validation testing) has been completed. This would include:

- An expanded protocol for non-TxV charge evaluation that includes both superheat and sub-cooling evaluation, including appropriate performance expectations
- An expanded target temperature split table would also be necessary to address the low ambient test conditions. This two phase approach would provide short-term benefits with relatively low technical risk.

Sub-Program Benefits: Completion of the low ambient protocol would allow HVAC service technicians to conduct refrigeration diagnostics in the field outside the cooling season when they are too busy responding to emergency calls to conduct more thorough service diagnostics.

4.6.3 Lawrence Berkeley National Laboratory (LBNL) HVAC Activities

LBNL researchers are working on a number of HVAC efficiency related topics relevant to the Strategic Plan and the entire suite of proposed HVAC sub-programs including:

a) National Standard Method Of Testing Furnaces/Air Handlers for Air Leakage. LBNL has funding from the CEC and through ASHRAE (SPC 193) to develop a national standard test method. There is little use in sealing ducts properly if the system still leaks 100 cfm from the mechanical components. Data indicates that furnaces leak about 50 cfm with a wide range of variation. This national standard should be complete and available in 2009. LBNL is investigating different measurement techniques. Currently it looks like simple pressurization may be a

viable option – with some possible complications with regards to positive and negative pressure testing and isolating positive and negative pressure sections of equipment. Manufacturers support this standard development because they want a single national standard to test to rather than a patchwork of state-by-state legislation/requirements/tests methods. Currently, Florida has requirements for low leakage rates and California needs a similar standard. This issue will be addressed as it is resolved. *[Also supports near-term strategies 4-3 and 4-4]*

Sub-Program Benefits: This project is not a direct responsibility of the HVAC Industry Leadership Task Force, but is necessary to setting formal limits on cabinet air leakage, thereby increasing system operating efficiency.

b) ASHRAE Standards Improvement. Working with CEC support to develop test procedures that could either be stand-alone or become part of the ASHRAE 103 [Method of Testing for Annual Fuel Utilization Efficiency of Residential Central Furnaces and Boilers] and ASHRAE 210/240 thermal performance testing standards. The procedures cover pressure difference, accounting for power factor, accounting for ancillary power consumption (e.g., combustion air blowers) and differences between furnace controls. These issues will be addressed as they are resolved. *[Also supports near-term strategies 4-3 and 4-4]*

Sub-Program Benefits: This project is not a direct responsibility of the Advocacy Sub-Program, but is necessary to increasing system operating efficiency.

c) In-Building Vent Air Grille Selection/Placement. LBNL staff and others note that the issue of vent air grille selection and placement is a significant component to providing adequate indoor comfort. Getting the right throw and reducing airflow resistance and noise are not typically done and can be since it appears relatively simple to do. Chitwood Energy Management and Integrated Building and Construction Solutions are expert advocates in this area. Recommendations from these and other parties will be solicited and next steps on further product development will be initiated if needed. Additionally, technical information will be disseminated to the market through the WE&T channel and through energy efficiency program design. *[Also supports near-term strategy 4-3]*

Sub-Program Benefits: The benefits of vent grille selection and placement included customer comfort and increased system operating efficiency from reduced airflow resistance and therefore, reduced energy use.

e) System Design. LBNL staff and others note that there is an immediate need for more effective design guidance for residential HVAC systems. Without an actual design there is no baseline condition to compare to for diagnostics/testing and for code and utility program compliance to ensure that systems are correctly installed. The IOUs will address this issue through the ENERGY STAR Residential Quality Installation and HVAC WE&T Programs.

Sub-Program Benefits: Properly designed HVAC systems are a fundamental key to managing energy use and peak demand in these systems.

f) RTU Diagnostics. Proprietary work is ongoing with Target Corporation to develop a set of diagnostic algorithms. The results of these algorithms will be evaluated and integrated into HVAC programs as they become publicly available.

Sub-Program Benefits: Public access to diagnostic tools provides an opportunity for market uptake of advanced diagnostic capabilities to improve HVAC system maintenance.

4.6.4 National Center for Energy Management and Buildings Technologies (NCEMBT) Activity:

a) Premium Rooftop Equipment (RTU) Operations and Maintenance (O&M) Initiative. The initiative seeks to reduce the energy required and energy wasted in about one half of the existing commercial and institutional buildings in California by 20%. The initiative is aimed at half of the commercial building floor space in California that is conditioned by unitary packaged rooftop equipment (RTU). The proposed program supports the CPUC "Big Bold Strategies for Energy Efficiency in California" with focus on one requirement: "The HVAC industry will be reshaped to ensure optimal equipment performance."

To achieve the stated energy reduction goal the current status of the existing packaged HVAC equipment and its operation needs to be well understood so that energy-efficient and cost-effective intervention measures can be designed and implemented. New tools and evaluation methods will be developed on which the HVAC practitioners will be trained, thus enhancing their skills. In conjunction with the San Diego California Joint Apprenticeship Training Center and the California Polytechnic State University, San Luis Obispo the team will a) develop methodologies to determine current thermal and ventilation loads and rebalance HVAC systems in light commercial applications; b) develop and field test a protocol to rebalance HVAC systems to current loads; c) confirm in the laboratory the scientific and technical basis for the O&M concept; and d) HVAC practitioners will apply the proposed intervention in the field while the research findings will form the basis for recommendations for economic and public policy.

The proposed O&M initiative goes beyond simple recommissioning of existing systems, i.e., bringing the system to design intent. It takes in consideration the fact the most installed RTUs are oversized due to current design and installation practices. For example, an 8-ton cooling load is most likely be met with a 10–ton RTU; as such, this system will be over designed and underperform resulting in operational waste. This system could be rebalanced by, for example, adjusting the system flows, both air and refrigerant¸ to more closely match its capacity to the actual building cooling load, and thus, increase its operational efficiency. However, before the RTU can be rebalanced, the actual load needs to be

accurately determined in cost-effective and efficient manner. Thus, the project will develop procedures to do so derived from existing building recommissioning methods.

The results of the laboratory and field test will provide the basis for development of a core curriculum for teaching the O&M concept to HVAC practitioners and engineers as well as incorporate it into higher education teachings.

Sub-Program Benefits: a) Reducing the energy required and energy wasted in light commercial application by 20% represents potential annual savings of 1,708 GWh, a reduction of 1,550 MW of peak demand and a reduction of 534,608 metric tons of greenhouse gases. b) Reaching out to 16,000 technicians employed by 625 contractors in California via training and education derived from the results of this program has a potential of adding 7,000,000 new labor hours at full impact. c) At full implementation level, the program could potentially add 1,400,000 labor-hours annually for optimization of RTU equipment.

b) Best Light Commercial HVAC Duct Leakage Practices - Air duct leakage in residential buildings has been receiving a lot of attention and effort in trying to mitigate its unwanted effects, which can increase energy usage. California Energy Code Title 24 requires duct leakage to be less than 6% of the supply airflow in typical new homes. A similar approach for light commercial systems does not exist at this time. A number of field studies investigated duct leakage in light commercial buildings. The overall consensus was that duct leakage in these buildings is higher than in residential ones. Modera et.al., estimated that eliminating duct leakage could save as much as 1 kWh/ft² of building floor area per year.

A new method, Zone DeltaP, has been developed by the University of Nevada Las Vegas under funding from the National Center for Energy Management and Building Technologies (NCEMBT). The Zone DeltaP method, derived from the duct pressurization technique, allows to *quantify and locate* the leaks within the air distribution system.. Zone bags are used to create artificial restrictions inside the duct and consequently different levels of leak pressures and flows. When the zone bag is inflated inside the duct, two different levels of pressures and leak flows (upstream and downstream of the zone bag) are artificially created. A very simple calculation is then performed to estimate the leakage in these two locations. The method was developed for residential air distribution systems, but it is applicable to light commercial systems as well.

Under a recent PIER funded project a new training facility “The House That Teaches” has been established at the Bay Area Trust Fund Joint Apprenticeship Training Center (JATC) in San Jose. This project builds upon the approaches and methods developed under these programs to teach duct leakage measurement practices to HVAC installers and technicians. The team will conduct laboratory

testing on rectangular ducts to determine what or even if any modifications need to be done to the Zone DeltaP method to conduct the proposed work. This will be done by our research partners at the California Polytechnic State University, San Luis Obispo. Assuming successful laboratory demonstration of the method, a limited number of HVAC practitioners will be trained in the application of the ZoneDeltaP method.

This pilot training program will involve classroom lecture and hands-on experience. With the assistance of the HVAC practitioners the team will conduct a field test using the ZoneDeltaP test in 30 to 40 light commercial systems. This should provide a reasonable statistical sample of what the method can do and how efficiently it can be performed cost-wise. The ultimate aim of the field test is to apply intervention techniques for "leaky duct systems", demonstrate it effectiveness and verify the energy savings potential of properly sealed light commercial air distribution systems. The savings potential will be derived form performing energy consumption monitoring before and after the intervention.

Sub-Program Benefits: Assuming 47 percent of commercial floor space in California is cooled by light commercial systems and using the previous developed estimate of 1kWh/ft²/yr savings, the program at full-implementation may save as much as 345 GWh annually with corresponding reductions in peak demand and greenhouse gases emissions.

c) Best Residential HVAC Duct Leakage Practices - There is a need to "connect" these results to the marketplace via development of best practices for training of HVAC contractors/technicians and education of building owners/operators. Under a recent PIER funded project a new training facility "The House That Teaches" has been established at the Bay Area Trust Fund Joint Apprenticeship Training Center (JATC) in San Jose. This is one of sixteen JATCs in California that serve 13,000 sheet metal workers and HVAC technicians (out of the 150,000 total SMWIA members), as well as 170 mechanical contractors statewide (out of 4500 SMACNA members nationally). This facility, "The House That Teaches", gives this training center the unique capabilities to research and develop residential best practices for expanded hands-on training with new HVAC products, installation techniques and Title 24 requirements.

This project builds upon the approaches and methods developed under these programs and will use "The House That Teaches" to teach duct leakage measurement practices to HVAC installers and technicians. The team will train a limited number of HVAC practitioners in the application of the ZoneDeltaP method. This pilot training program will involve classroom lecture and hands-on experience. The important lesson to be discovered from this program is for the students to find out how to use the ZoneDeltaP method and to judicially select a starting point for the zone bag application given a specific duct system. This method as mentioned earlier will determine not only localized leaks but also the total global leak and where is the location(s) of the large leaks.

With the assistance of the HVAC practitioners the team will conduct a field test in California using the ZoneDeltaP test in 30 to 40 homes. This should give a reasonable statistical sample of what the method can do and how efficiently it can be performed cost-wise. The ultimate aim of the field test is to apply intervention techniques for "leaky duct systems", i.e. sealing the larger leaks of these ducts to try to achieve a leak rate of 6% or lower leakage as compared to the supply air flow in the system.

Sub-Program Benefits: Assuming an 15 percent cooling energy reduction for households with central air conditioning older than fours years, the potential savings amount to 475 GWh with corresponding reductions in peak demand and greenhouse gases emissions.

6. Program Implementation

a. Statewide IOU Coordination: The IOUs propose managing this Program under the auspices of the Western Cooling Efficiency Center (WCEC). The WCEC is in the unique position to spearhead the many HVAC technical and policy issues proposed herein. The WCEC would ultimately be accountable to the IOUs for providing final deliverables for the various projects assigned, but the WCEC would be responsible for managing the day-to-day project activities, budget and staffing. The IOUs will provide annual funding to the WCEC during the 2009-2011 program cycle to support the work plan. The prioritization of project activities will be established through the HVAC Industry Leadership Task Force described in the core Residential and Commercial HVAC Program. WCEC management will have the authority to direct and redirect sub-program activities and related funding as necessary with the advice of the IOUs and the HVAC Industry Leadership Task Force.

i. Program name – HVAC Technologies and System Diagnostics Advocacy

ii. Program delivery mechanisms – The WCEC will act as a regional center for HVAC technical and policy issues and will be jointly funded by the IOUs as a non-resource program.

iii. Incentive levels – N/A

iv. Marketing and outreach plans – N/A

v. IOU program interactions – The WCEC is in position as an independent organization to interact with other agencies on a state and regional effort to dramatically affect the energy and peak demand performance of HVAC systems and appropriately address climate optimized solutions.

vi. Similar IOU and POU programs – Through this sub-program activity, the IOUs will engage the POUs in an effort to speak with one common voice in California on HVAC issues.

b. Program delivery and coordination: The Program will be coordinated with the following activities:

i. Emerging Technologies program – The Emerging Technologies Program provides a portion of the WCEC's operating budget to work on technical demonstrations and lab tests. This sub-program will go beyond the current support offered by the ET programs to provide the necessary funding to WCEC to implement a dedicated effort that addresses other technical and policy issues that currently go unaddressed by the typical ET project. All activities pursued under this sub-program will require coordination with ET and PIER projects to eliminate the possibility of a duplication of efforts and to accelerate use of results. Additional coordination activities will be realized through the Joint Program Management Team as described in the core Residential and Commercial HVAC Program.

ii. Codes and Standards program – As technologies and processes are addressed through this Program and become adopted by the industry and IOU programs, the minimum threshold for eligibility in California can increase to lock in the higher efficiency levels and continue an upward level of efficiency and performance enhancing features for HVAC equipment. Additional coordination activities will be realized through the Joint Program Management Team as described in the core Residential and Commercial HVAC Program.

iii. WE&T efforts – The issues addressed through this Technology and System Diagnostics Advocacy Sub-Program effort will help to provide current and relevant information to the HVAC WE&T Program and will help that program continually evolve to ensure that the existing and future HVAC workforce is educated on the most up-to-date technologies and QI/QM practices.

iv. Program-specific marketing and outreach efforts (provide budget) – N/A

v. Non-energy activities of program – The proposed sub-program represents a concentrated effort on existing HVAC technology and resource issues. As the near-term energy savings from this effort is difficult to quantify, it is being proposed exclusively as a non-resource effort.

vi. Non-IOU Programs – The Program will leverage its involvement through the WCEC to pursue regional strategies that involve the California POUs and other utilities and utility-related organizations in Arizona, Nevada, New Mexico and the Pacific Northwest.

vii. CEC work on PIER – See above in Section 6.b.i.

viii. CEC work on codes and standards – See above in Section 6.b.ii.

ix. Non-utility market initiatives – Various national HVAC related efforts are currently ongoing (e.g. USDOE climate optimized rule making). The Technology and System Diagnostics Advocacy Program seeks to participate in all of these initiatives. Centralizing this interaction through the WCEC allows for a concentrated/coordinated effort on the issues most pertinent to California.

c. Best Practices: A snapshot of 'advanced' or best-in-class HVAC-related technology currently available will be undertaken immediately. It is likely that much of this information is in hand, but not necessarily easily accessible. USDOE will be asked to share its future HVAC technology assessment that was completed in 2008. This request will be made as one of the first actions under this sub-program.

d. Innovation: This Program represents a break from the "business as usual" approach and seeks to fund the WCEC, an industry leading non-profit entity, at unprecedented levels to tackle and resolve fundamental technical and policy issues that have prevented significant energy and demand savings from being realized from the installation and maintenance of HVAC systems. This approach will truly allow the focus required to accomplish the state's Big/Bold HVAC energy efficiency goals.

e. Integrated/coordinated Demand Side Management: One of the main tasks of the HVAC Industry Leadership Task Force is to improve integrated DSM through more active involvement in state and national projects. See Section 5.c for more discussion.

f. Integration across resource types (energy, water, air quality, etc): This Program will keep engaged in the evaluation of water issues related to evaporative cooling technologies (i.e. water quality, availability, etc.)

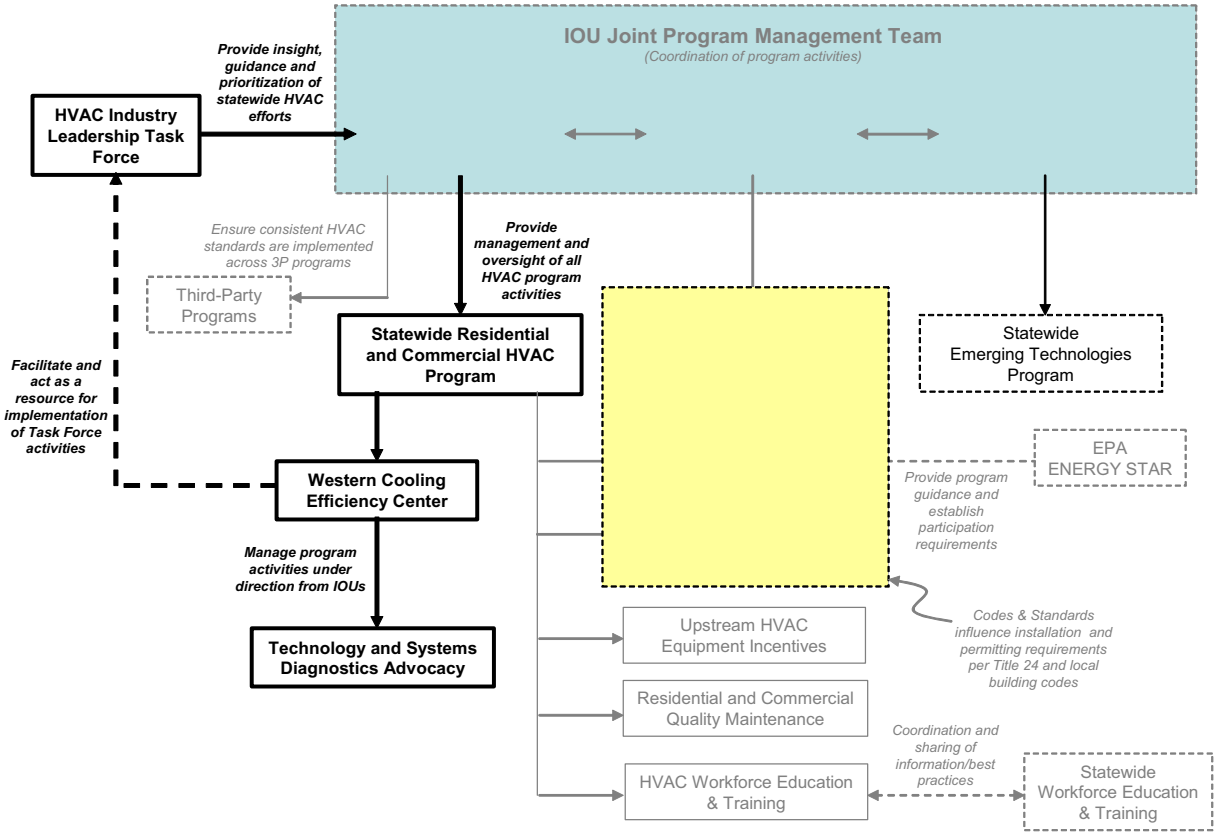
g. Pilots: Pilot program/project activities that are required to establish improved HVAC energy efficiency and DR benefits will be considered and implemented throughout the course of this program cycle. These pilots will be part of the continuous improvement process that seeks to keep evolving the program to address new and innovative technologies. One such pilot is the Hot/Dry Air Conditioning Pilot described in Section 5.e.

h. EM&V: The utilities are proposing to work with the Energy Division to develop and submit a comprehensive EM&V Plan for 2009-2011 after the program implementation plans are filed. This will include process evaluations and other program-specific studies within the context of broader utility and Energy Division

studies. More detailed plans for process evaluation and other program-specific evaluation efforts cannot be developed until after the final program design is approved by the CPUC and in many cases after program implementation has begun, since plans need to be based on identified program design and implementation issues.

2009–2011 Energy Efficiency Programs
Statewide HVAC
Program Implementation Plan

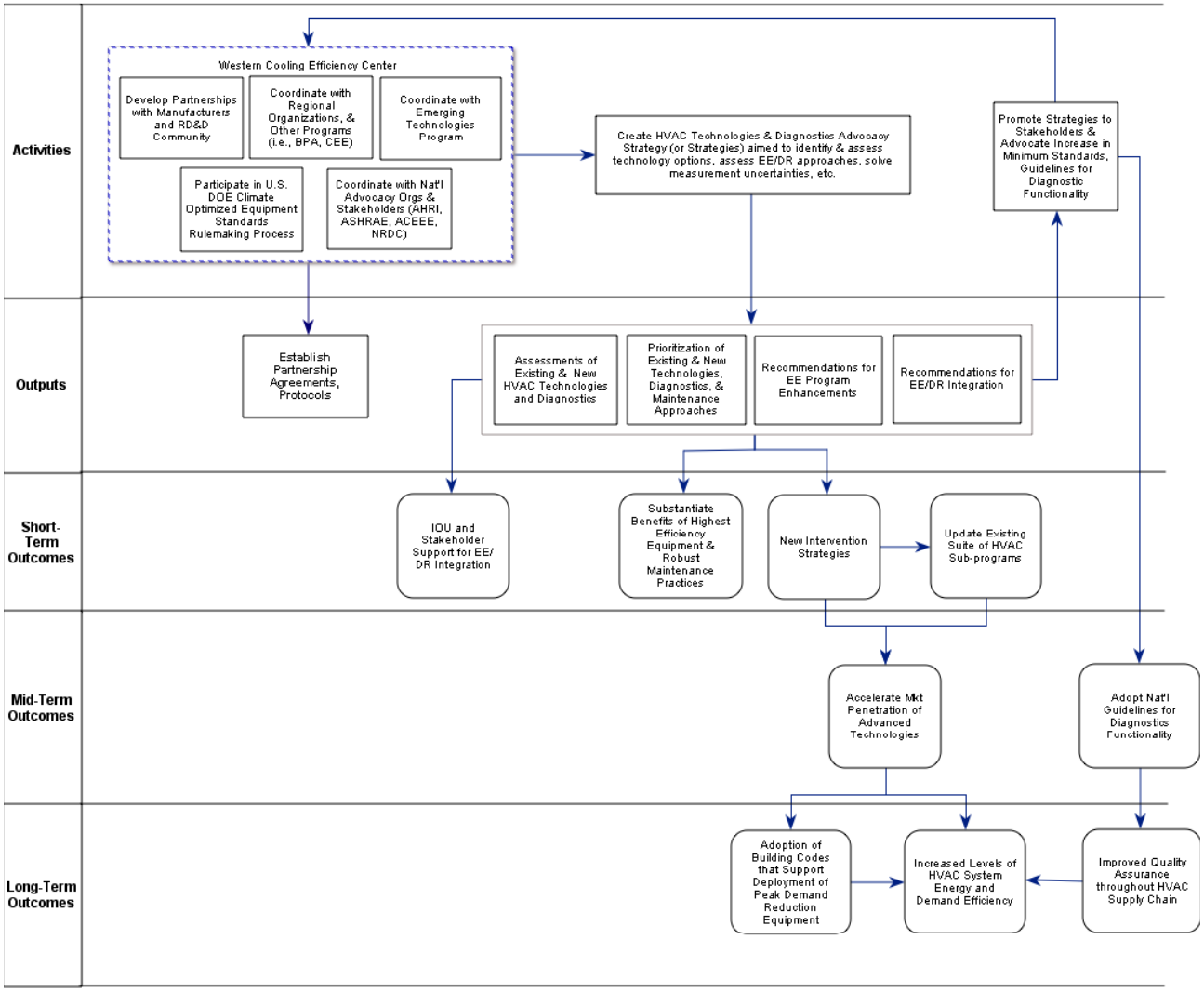
7. Diagram of Program:



2009–2011 Energy Efficiency Programs
Statewide HVAC
Program Implementation Plan

8. Program Logic Model:

Program: Residential & Commercial HVAC Program
Sub Program: HVAC Technologies and System Diagnostics Advocacy



2009–2011 Energy Efficiency Programs
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1. Program Name: Commercial Quality Installation
   Program ID#: TBD
   Program Type: Sub-Program

2. Projected Program Budget Table

Table 1[24]

Program #	Main Program Name / Sub-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					
	Etc.					
	TOTAL:					

3. Projected Program Gross Impacts Table

Table 2

Program #	Program Name / Sub-Programs	2009 - 2011 Three-Year EE Program Gross kWh Savings	2009 - 2011 Three-Year EE Program Gross kW Savings	2009 - 2011 Three-Year EE Program Gross Therm Savings
Market Sector Programs				
	Core Program #1			
	Sub-Program #1			
	Sub-Program #2			
	Etc.			
	TOTAL:			

[24] 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.

4. Program Description
   a) This sub-program is applicable to installations of packaged HVAC systems, with a rated capacity up to 760,000 BTU/H. Through this sub-program, a financial bonus incentive will be available to contractors who complete a system installation in accordance with the appropriate industry standards (e.g. ACCA, SMACNA and ASHRAE) and who participate in other energy efficiency programs. This program will drive the adoption of these standards through the other commercial programs offered by the utility. Contractors will be actively recruited into the program by offering them the opportunity to receive financial and performance incentives such as utility co-branding opportunities, diagnostic equipment for reaching specific performance milestones and assistance aligning with the Energy Star Service & Product Provider program.

   b) The following incentives will be available through the sub-program:

QI Requirement	Incentive
Equipment Sizing and Selection	$150 per system
Equipment Installation	$250 per system
Duct Distribution and Air Balance	$300 per duct system
System Documentation	$50 per system

- The following non-incentive services will be offered through this sub-program:
- Active enrollment and promotion of qualified contractors (i.e. those who maintain a minimum of 70 percent of their technician workforce with current Industry Competency Exam (ICE) and/or North American Technician Excellence (NATE) certification or similar proof of proficiency, such as AABC, NBI, NEBB, TABB or state recognized Journeyman Mechanic certification)
- Co-branded customer-oriented marketing materials for contractors
- IOU promotion of QI through nonresidential audits and other customer marketing
- Contractor “perks” to encourage participation (e.g. coop marketing assistance, participation bonuses, etc.)
- Contractor training on quality installation practices, selling and marketing QI/QM, QI/QM service management, etc.

5. Program Rationale and Expected Outcome

a) Quantitative Baseline and Market Transformation Information:

Table 3

	Internal Market Transformation Planning Estimates		
Market Sector and Segment	2009	2010	2011
Metric A			
Metric B			
Metric C			
Metric D			

Refer to the overarching PIP section.

b. Market Transformation Information:

Table 4

	Internal Market Transformation Planning Estimates		
Market Sector and Segment	2009	2010	2011
Metric A			
Metric B			
Metric C			
Metric D			

Refer to the overarching PIP section.

c. Program Design to Overcome Barriers: The program will address the following barriers:

- Product Cost: Substantial incentives for equipment and QI will offset a substantial percentage of the 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 to consumers, contractors and building inspectors (See HVAC WE&T Sub Program for more information), will ensure that the importance of complying with Title 24 will be better understood by program participants. Additionally, requiring demonstrated code compliance (e.g. through submittal of applicable Title 24 mechanical acceptance forms: MECH-1-A thru MECH-8-A) 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 will increase consumer confidence that they have a reliable source of quality contractors. Moreover, satisfied customers will recommend these contractors

to business associates and thus create additional momentum for using contractors with a high quality reputation.

- Hassle or transaction costs: Streamlined incentive application processes that require the same information required for Title 24 compliance (e.g. through submittal of applicable Title 24 mechanical acceptance forms: MECH-1-A thru MECH-8-A), will reduce the hassle of participating in the program (or vice versa complying with permit requirements).
- Hidden costs: Promoting the concepts and establishing the value proposition of quality maintenance at the time of system installation will increase the confidence that customers will understand that there are indeed energy efficiency performance benefits resulting from maintenance and will continue such periodic maintenance over the life of their system.

d. Quantitative Program Targets: The program will achieve the following program targets:

Table 5

Commercial QI Program	Program Target by 2009	Program Target by 2010	Program Target by 2011
Contractor information sessions	2	10	20
Recruit participating contractors	5	30	45
Systems installed	0	300	900

e. Advancing Strategic Plan goals and objectives: The program will help to achieve the following near-term strategic goals as identified in Chapter 6 of the Strategic Plan:

- 2-1: Create a Statewide QI/QM Brand – Leveraging the ENERGY STAR brand equity is a cost effective approach to introducing an immediate QI brand. Additional efforts will be dedicate to evaluating whether a California specific brand is viable.
- 2-2: Launch Statewide Brand – IOU sponsored co-branding efforts will be developed based on the branding activity and made available to contractors for promotion of the QI/QM effort.
- 2-3: Provide expanded QI/QM training – In order to participate in the program, contractors will be required to attend specific training sessions that introduce them to the appropriate industry standards (e.g., ACCA, SMACNA, and ASHRAE). See HVAC WE&T Program PIP for more discussion about QI training.
- 2-4: Implement contractor accreditation program – Additional benefits will be made available through the Program to support the HVAC WE&T efforts of increasing the level of technician certification. Such efforts may include additional IOU promotion of contractors (e.g. “Gold Star Contractors”) who maintain a minimum of percentage of NATE certified technicians (e.g. 70%),

reimbursement of testing costs and/or continuing education units (CEUs) for participating contractors, etc.

6. Program Implementation

a. Statewide IOU Coordination: All California IOUs will offer The Commercial QI Program in a consistent manner. Specific areas of coordination include:
   i. Program name – Commercial Quality Installation Program
   ii. Program delivery mechanisms – The IOUs will manage the program through a combination of Statewide, local, third-party programs and internal administrative staff and will follow the adaptive management process discussed in the core Residential and Commercial Statewide HVAC Program. The program will be targeted to consumers and contractors to create a push/pull dynamic that influences sustained market changes.
   iii. Incentive levels – See Section 4.b above.
   iv. Marketing and outreach plans – In order to support the statewide branding activities, common outreach materials will be developed by the IOUs. These materials will only be available to participating contractors and will allow for co-branding with the contractor name. Additional point-of-purchase information on QI/QM will be made available for equipment dealer locations and building departments.
   v. IOU program interactions – In order to support the need for increased code compliance, the program will cooperate with the CEC's 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, third-party programs and Codes and Standards activities to ensure that code compliance becomes fully integrated into these programs.
   vi. Similar IOU and POU programs – 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 throughout California that advance the strategic goals of the CLTEESP.

b. Program delivery and coordination: The program will be coordinated with the following activities:
   i. Emerging Technologies program – Insofar as Emerging HVAC Technologies provide a cost effective solution for commercial customers, the Commercial QI Program will support the Quality Installation of those systems.
   ii. Codes and Standards program – Efforts will be coordinated to ensure that a consistent message is delivered regarding code compliance and QI/QM. Codes and Standards will take the lead on compliance items while the Commercial QI Program will take the lead on QI/QM efforts, but will leverage similar delivery channels to increase effectiveness. Additionally, coordination activities will be realized through the Joint Program Management Team as described in the core Residential and Commercial HVAC Program. (For additional information about

specific Codes and Standards HVAC activities, refer to Section 6 of the Codes and Standards PIP.)

iii. WE&T efforts – Participating contractors will be required to attend program-specific QI/QM training in order to participate in the program. See HVAC WE&T Sub-Program for more information.

iv. Program-specific marketing and outreach efforts – Co-branded marketing support will be available for participating contractors in order to promote the statewide QI/QM efforts. Such support will 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-purchase displays for equipment dealers and local building departments will also be developed. (Specific IOU budget information for this marketing activity is provided in Table 1.)

v. Non-energy activities of program – The direct energy benefits of the program result from the quality installation of packaged HVAC systems to be realized in other Statewide, local, third-party programs. Other activities will be required to support these energy savings goals. These activities include significant efforts in contractor training and consumer marketing.

vi. Non-IOU Programs – CEE has recently re-launched its commercial HVAC program. Its first task has been to review its existing commercial QI specification. The IOUs will take an active role in this process to ensure that California's quality needs are appropriately reflected in the specification.

vii. CEC work on PIER – See Section 6.b.i.

viii. CEC work on codes and standards – Similar to the coordination with the Codes and Standards Program, the Commercial QI Program will work in cooperation with the CEC's training and compliance efforts targeted at local building departments. The Codes and Standards Program will take the lead on this effort. (For additional information about the Codes and Standards HVAC activities, refer to Section 6 of the Codes and Standards PIP.)

ix. Non-utility market initiatives – The tenets of QI/QM 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/QM 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.

c. Best Practices: The use of industry accepted design and construction standards represents a "best practice" in air conditioning system installations. Industry standards have been developed and vetted by national committees of industry experts and represent the best available information to use for program design. Additionally, networking through organizations such as CEE and the HVAC Industry Leadership Task Force will provide opportunities for frequent feedback on QI efforts being implemented across the country and within California.

d. Innovation: Delivering this program through active partnership with the industry will increase the likelihood of its success. Such partnership will include the development of co-branded marketing materials and the active promotion of

participating contractors. Historically, IOUs have resisted recommending contractors due to liability issues. Introducing stringent participation requirements and effective training will mitigate these liability issues. Additional innovation will likely result through a continuous improvement process that will be employed to evaluate the viability of offering additional incentives for installations that exceed established program standards (e.g. National Comfort Institute).

e. 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 QI/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. Finally, contractors will be encouraged to facilitate the customer's participation in DR programs by including a DR program application with the owner documents provided at the completion of the system installation. Additional work will take place during the three-year program cycle to evaluate closer linkages between EE and DR.

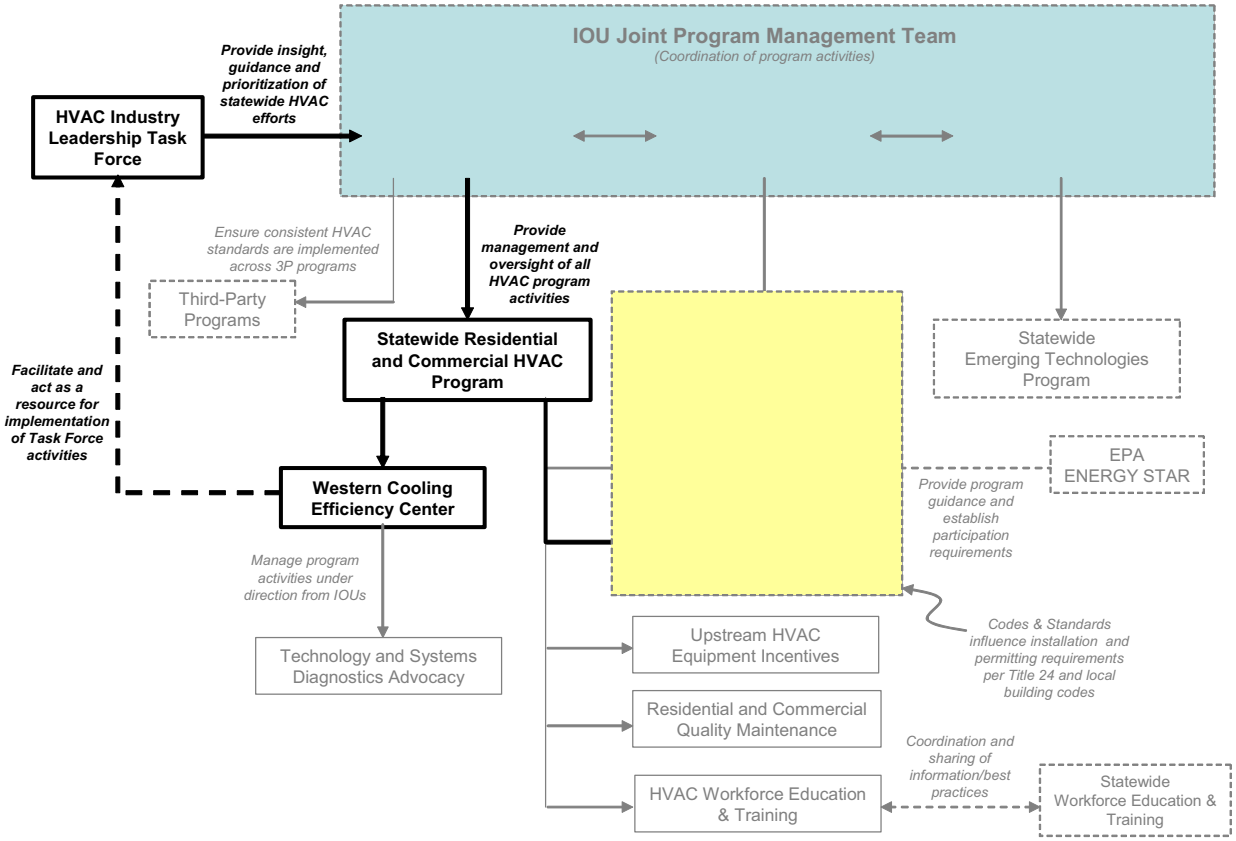
f. Integration across resource types (energy, water, air quality, etc): The program can be designed to support CARB's efforts to regulate GHGs by supporting the early adoption of equipment designed to operate using R-410a refrigerants. As CARB introduces further regulation of refrigerants, the program will adopt these regulations ahead of their formal introduction.

g. Pilots: No pilot programs are planned as part of this effort, though activities associated with improving QI may be piloted before full-implementation to ensure more coherent market adoption on roll-out.

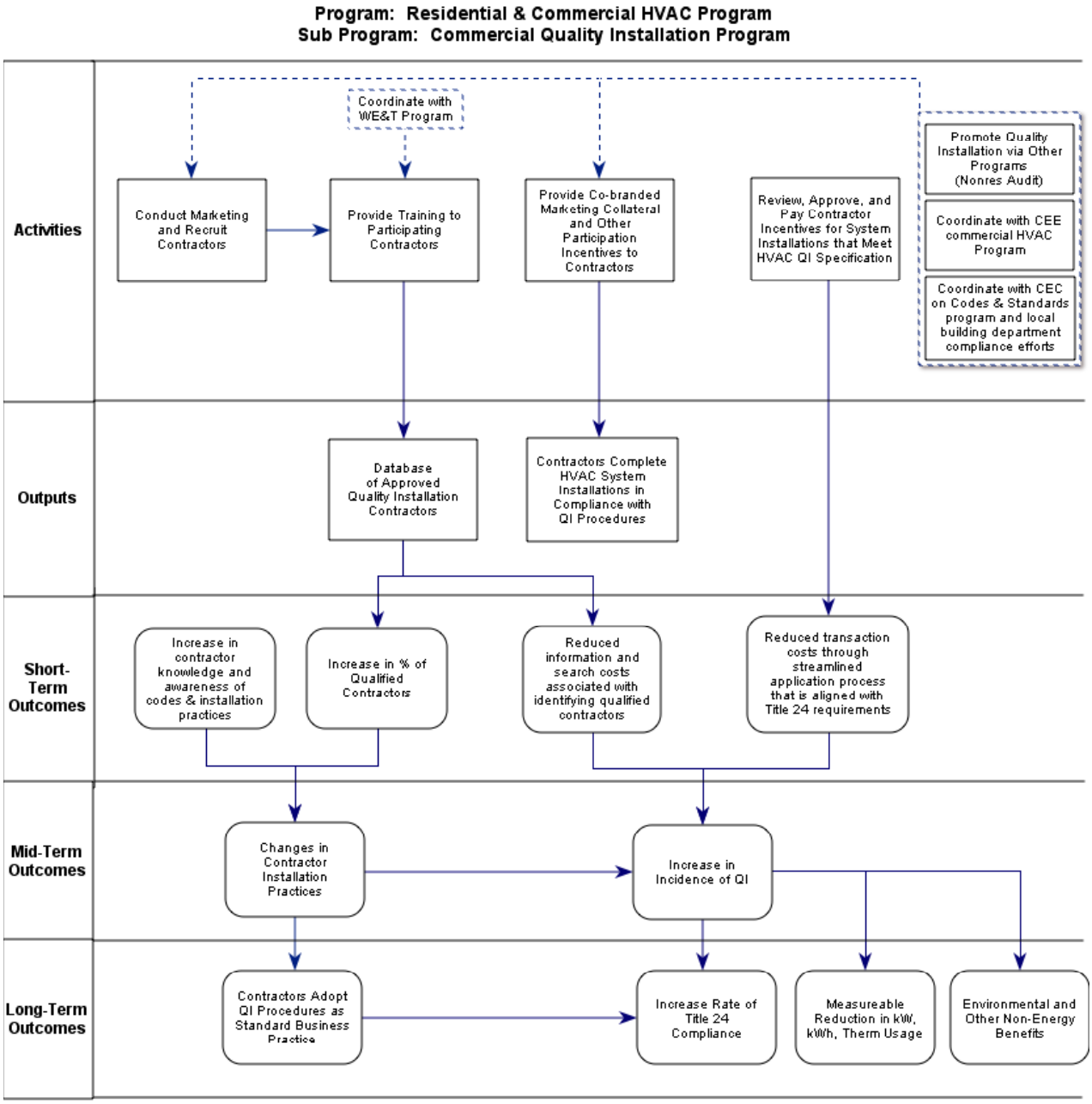
h. EM&V: The utilities are proposing to work with the Energy Division to develop and submit a comprehensive EM&V Plan for 2009-2011 after the program implementation plans are filed. This will include process evaluations and other program-specific studies within the context of broader utility and Energy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

2009–2011 Energy Efficiency Programs
Statewide HVAC
Program Implementation Plan

7. Diagram of Program:



8. Program Logic Model:



2009–2011 Energy Efficiency Programs
Statewide HVAC
Program Implementation Plan

1. Program Name: ENERGY STAR Residential Quality Installation Program
   Program ID#: TBD
   Program Type: Sub-Program

2. Projected Program Budget Table

Table 1[25]

Program #	Main Program Name / Sub-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					
	Etc.					
	TOTAL:					

3. Projected Program Gross Impacts Table

Table 2

Program #	Program Name / Sub-Programs	2009 - 2011 Three-Year EE Program Gross kWh Savings	2009 - 2011 Three-Year EE Program Gross kW Savings	2009 - 2011 Three-Year EE Program Gross Therm Savings
Market Sector Programs				
	Core Program #1			
	Sub-Program #1			
	Sub-Program #2			
	Etc.			
	TOTAL:			

[25] 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.

4. Program Description
   a) This sub-program is applicable to installations of central HVAC systems and air-source heat pump (HP) systems, with a rated capacity up to 65,000 BTU/H. Through this sub-program, a financial incentive will be available to homeowners who have a system installed in accordance with the EPA HVAC Quality Installation Guidelines. The installation requirements are illustrated in detail in *ANSI/ACCA 5 QI-2007: HVAC Quality Installation Specification*. In addition to this incentive, homeowners will also receive an ENERGY STAR certificate for their qualifying installation. Contractors will be actively recruited into the sub-program by offering them the opportunity to receive performance incentives such as utility co-branding opportunities and diagnostic equipment for reaching specific performance milestones.

   b) The following incentives will be available through the sub-program:

Equipment Type	Level	SEER	EER	HSPF	Equipment Incentive	QI Incentive*
Split Central CAC	Minimum	13	-	-	$ 0	$750
	Tier 1	14.5	12	-	$250	$750
	Tier 2	15	12.5	-	$500	$750
Packaged CAC	Minimum	13	-	-	$ 0	$750
	Tier 1	14	11	-	$250	$750
	Tier 2	14 or higher	12 or higher	-	$500	$750
Split Heat Pump	Minimum	13	-	7.7	$ 0	$750
	Tier 1	14.5	12	8.5	$250	$750
	Tier 2	15 or higher	12.5 or higher	8.5 or higher	$500	$750
Packaged Heat Pump	Minimum	13	-	7.7	$ 0	$750
	Tier 1	14	11	8	$250	$750
	Tier 2	14 or higher	12 or higher	8 or higher	$500	$750

**QI incentives for minimum standard equipment will be offered initially to support the market transformation aspects of the statewide HVAC initiative with the goal of making QI common practice. As QI becomes the norm, incentives for minimum standard equipment will be eliminated in order to drive the installation of higher SEER/EER equipment.*

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

- Active enrollment and promotion of qualified contractors (i.e. those who maintain a minimum of 70 percent of their technician workforce with current Industry Competency Exam (ICE) and/or North American Technician Excellence (NATE) certification or similar proof of proficiency, such as AABC, NBC, NEBB, TABB, STAR, or state recognized Journeyman Mechanic certifications)
- Co-branded customer-oriented marketing materials for contractors

- IOU promotion of QI through residential audits and other customer marketing
- Contractor "perks" to encourage participation (e.g. coop marketing assistance, participation bonuses, etc.)
- Contractor training on quality installation practices

5. Program Rationale and Expected Outcome

a) Quantitative Baseline and Market Transformation Information:

Table 3

	Internal Market Transformation Planning Estimates		
Market Sector and Segment	2009	2010	2011
Metric A			
Metric B			
Metric C			
Metric D			

Refer to the overarching PIP section.

b) Market Transformation Information:

Table 4

	Internal Market Transformation Planning Estimates		
Market Sector and Segment	2009	2010	2011
Metric A			
Metric B			
Metric C			
Metric D			

Refer to the overarching PIP section.

c) Program Design to Overcome Barriers: The program will address the following barriers:

- Product Cost: Substantial incentives for equipment and QI will offset a substantial percentage of the 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 to consumers, contractors and building inspectors (See HVAC WE&T Sub Program for more information), will ensure that the importance of 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 that they have 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 high quality reputation.
- Hassle or transaction costs: Streamlined incentive application processes that require the same information required for Title 24 compliance (e.g. CF-6R), will reduce the hassle of participating in the program (or vice versa 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 quality maintenance at the time of system installation will increase the confidence that customers will understand that there are indeed energy efficiency performance benefits resulting from maintenance and will continue such periodic maintenance over the life of their system.

d) Quantitative Program Targets: The program will achieve the following targets:

Table 5

ENERGY STAR QI Program	Program Target by 2009	Program Target by 2010	Program Target by 2011
Contractor information sessions	2	10	20
Recruit participating contractors	5	30	45
Systems installed	0	300	900

e) Advancing Strategic Plan goals and objectives: The program will help to achieve the following near-term strategic goals as identified in Chapter 6 of the Strategic Plan:

- 2-1: Create a Statewide QI/QM Brand – Leveraging the ENERGY STAR brand equity is a cost effective approach to introducing an immediate QI brand. Additional efforts will be dedicate to evaluating whether a California specific brand is viable.
- 2-2: Launch Statewide Brand – IOU sponsored co-branding efforts will be developed based on the branding activity and made available to contractors for promotion of the QI/QM effort.
- 2-3: Provide expanded QI/QM training – In order to participate in the program, contractors will be required to attend specific training sessions that introduce them to the *ANSI/ACCA 5 QI-2007: HVAC Quality Installation Specification* (see HVAC WE&T Program PIP for more discussion about QI training).
- 2-4: Implement contractor accreditation program – Additional benefits will be made available through the Program to support the HVAC WE&T efforts of

increasing the level of technician certification. Such efforts may include additional IOU promotion of contractors (e.g. "Gold Star Contractors") who maintain a minimum of percentage of NATE certified technicians (e.g. 70%), reimbursement of testing costs and/or CEU credits for participating contractors, etc.

6. Program Implementation

a. Statewide IOU Coordination: All California IOUs will offer The ENERGY STAR Residential QI Program in a consistent manner. Specific areas of coordination include:
   i. Program name – ENERGY STAR Residential Quality Installation Program
   ii. Program delivery mechanisms – The IOUs will manage the program through a combination of third-party programs and internal administrative staff and will follow the adaptive management process discussed in the core Residential and Commercial HVAC Program. The program will be targeted to consumers and contractors to create a push/pull dynamic that influences sustained market changes.
   iii. Incentive levels – See Section 4.b above.
   iv. Marketing and outreach plans – In order to support the statewide branding activities, common outreach materials will be developed by the IOUs in partnership with ENERGY STAR. These materials will only be available to participating contractors and will allow for co-branding with the contractor name. Additional point-of-purchase information on QI/QM will be made available for equipment dealer locations and building departments.
   v. IOU program interactions – In order to support the need for increased code compliance, the program will cooperate with the CEC's 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 becomes fully integrated into these programs.
   vi. Similar IOU and POU programs – The ENERGY STAR Residential QI program was introduced in early 2008. Several utilities such as 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. 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 throughout California that advance the strategic goals of the CLTEESP.

b. Program delivery and coordination: The program will be coordinated with the following activities:
   i. Emerging Technologies program – N/A (this program does not seek to influence emerging technologies).

ii. Codes and Standards program – Efforts will be coordinated to ensure that a consistent message is delivered regarding code compliance and QI/QM. Codes and Standards will take the lead on compliance items while the ENERGY STAR Residential QI Program will take the lead on QI/QM efforts, but will leverage similar delivery channels to increase effectiveness. Additionally, coordination activities will be realized through the Joint Program Management Team as described in the core Residential and Commercial HVAC Program. (For additional information about specific Codes and Standards HVAC activities, refer to Section 6 of the Codes and Standards PIP.)

iii. WE&T efforts – Participating contractors will be required to attend program-specific QI/QM training in order to participate in the program. See HVAC WE&T Sub-Program for more information.

iv. Program-specific marketing and outreach efforts – Co-branded marketing support will be available for participating contractors in order to promote the statewide QI/QM efforts. Such support will 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-purchase displays for equipment dealers and local building departments will also be developed. (Specific IOU budget information for this marketing activity is provided in Table 1.)

v. Non-energy activities of program – 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.

vi. Non-IOU Programs – Federal tax credits are available for qualifying equipment (i.e. meet CEE Tier 2 levels).

vii. CEC work on PIER – N/A (this program does not seek to influence emerging technologies.)

viii. CEC work on codes and standards – Similar to the coordination with the Codes and Standards Program, the ENERGY STAR Residential QI Program will work in cooperation with the CEC's training and compliance efforts targeted at local building departments. The Codes and Standards Program will take the lead on this effort. (For additional information about the Codes and Standards HVAC activities, refer to Section 6 of the Codes and Standards PIP.)

ix. Non-utility market initiatives – The tenets of QI/QM 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/QM 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.

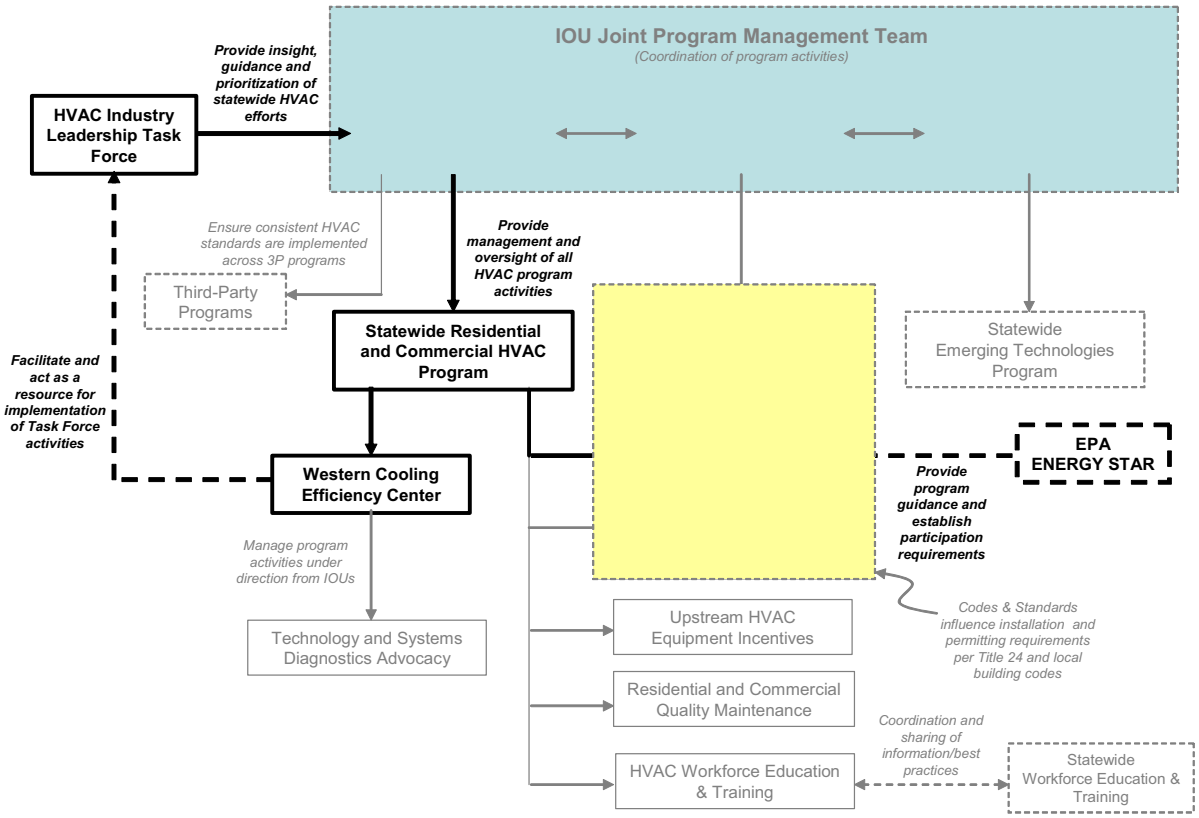
c. Best Practices: *ANSI/ACCA 5 QI-2007: HVAC Quality Installation Specification* represents a "best practice" in air conditioning system installations. This standard was developed by a national committee of industry experts and has been validated as the sole Quality Installation standard through its ANSI recognized status. Both

PG&E and SCE piloted the use of the QI Standard by partnering with ENERGY STAR during the 2006-08 program cycle. The ENERGY STAR QI program design has been modified based on the results from these pilot programs. Additionally, networking through ENERGY STAR and organizations such as CEE will provide opportunities for frequent feedback on QI efforts being implemented across the country.

d. Innovation: Delivering this program through active partnership with the industry will increase the likelihood of its success. Such partnership will include the development of co-branded marketing materials and the active promotion of participating contractors. Historically, IOUs have resisted recommending contractors due to liability issues. Introducing stringent participation requirements and effective training will mitigate these liability issues. Additional innovation results through a continuous improvement process that will be employed to evaluate the viability of offering additional incentives for installations that exceed established program standards (e.g. National Comfort Institute).
e. 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 QI/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. Finally, contractors will be encouraged to facilitate the customer's participation in DR programs by including a completed DR program application with the owner documents provided at the completion of the system installation. Additional work will take place during the three-year program cycle to evaluate closer linkages between EE and DR.
e. Integration across resource types (energy, water, air quality, etc): The program can be designed to support CARB's efforts to regulate GHGs by supporting the early adoption of equipment designed to operate using R-410a refrigerants. As CARB introduces further regulation of refrigerants, the program will adopt these regulations ahead of their formal introduction.
f. Pilots: No pilot programs are planned as part of this effort.
g. EM&V: The IOUs will work with CPUC staff to establish a continuous EM&V approach that will provide the IOUs (and CPUC) timely feedback on the effectiveness of programs in the field. A minimum six-month reporting schedule will be established. The HVAC Industry Leadership Task Force and the internal IOU Program Management Team will collaborate on the new EM&V approach. Existing methods will be evaluated for effectiveness and modifications made or new methods developed as needed.

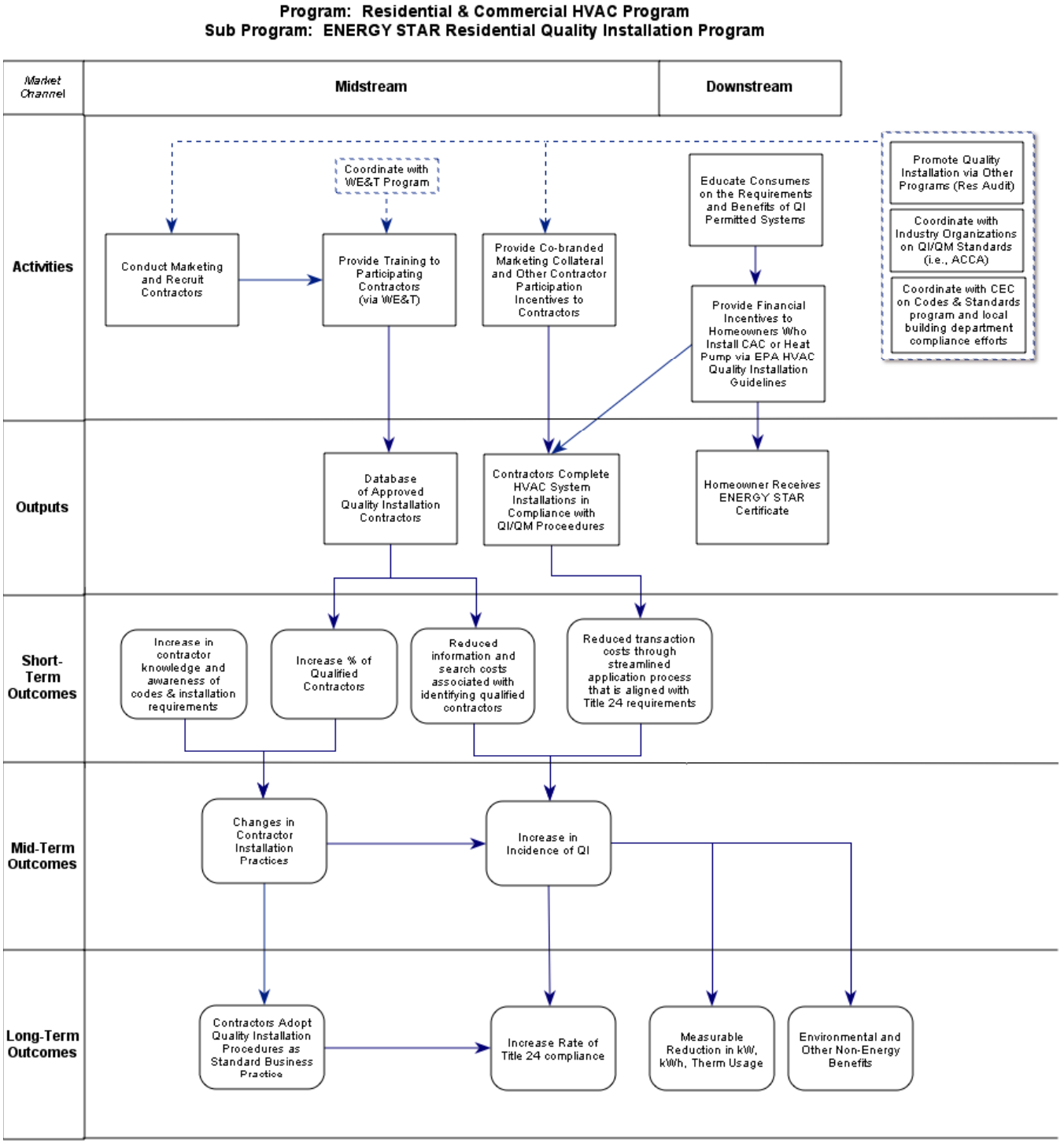
2009–2011 Energy Efficiency Programs
Statewide HVAC
Program Implementation Plan

7. Diagram of Program:



2009–2011 Energy Efficiency Programs
Statewide HVAC
Program Implementation Plan

8. Program Logic Model:



2009–2011 Energy Efficiency Programs
Statewide HVAC
Program Implementation Plan

1. Program Name: Residential Quality Maintenance and Commercial Quality Maintenance Development
   Program ID#: TBD
   Program Type: Sub-Program

2. Projected Program Budget Table

Table 1[26]

Program #	Main Program Name / Sub-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					
	Etc.					
	TOTAL:					

3. Projected Program Gross Impacts Table

Table 2

Program #	Program Name / Sub-Programs	2009 - 2011 Three-Year EE Program Gross kWh Savings	2009 - 2011 Three-Year EE Program Gross kW Savings	2009 - 2011 Three-Year EE Program Gross Therm Savings
Market Sector Programs				
	Core Program #1			
	Sub-Program #1			
	Sub-Program #2			
	Etc.			
	TOTAL:			

[26] 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.

4. Program Description
   a) This sub-program may represent 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 procedures applied to existing residential and commercial HVAC equipment. This sub-program intends to (1) quantify those potential savings and (2) develop and implement both a residential and commercial maintenance program focused on comprehensive, continuously improving O&M activities that capture those savings and provide a high ROI to the end-user thus driving the intense level of market transformation of the HVAC industry envisioned by the CLTEESP.

   b) At this point, providing a list of measures and incentive levels is premature as a valid QM-based program must be well planned and vetted through the HVAC industry. As will be described below, perpetuating the existing RCA and Duct Sealing programs is not a prudent use of ratepayer funds. While there's no doubt that a system operates at its most efficient state when refrigerant charge and airflow are properly corrected, and duct leakage is minimized, program design and implementation have not proven to be effective in achieving energy savings or as transformational as desired.

   c) This sub-program will be designed during the first year of the program funding cycle and therefore will not be providing incentives at least initially. The program development process will be performed with industry involvement (under the auspices of the HVAC Industry Leadership Task Force described in the core Residential and Commercial HVAC PIP and in Section 6.a.ii below) to ensure that (1) the measures eventually included in the program can be reasonably assured to save energy and lower peak demand; (2) a clear value proposition can be demonstrated so that contractors will see the path for a profitable business opportunity based on QM and customers will understand the benefits of equipment maintained to a higher level of quality; (3) an effective training program is in place to ensure that the technicians can properly implement the QM services; and (4) the processes employed to document that work performed in the field meets minimum program quality control standards and can be validated.

5. Program Rationale and Expected Outcome

a) Quantitative Baseline and Market Transformation Information:

Table 3

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

Refer to the overarching PIP section.

b) Market Transformation Information:

Table 4

	Internal Market Transformation Planning Estimates		
Market Sector and Segment	2009	2010	2011
Metric A			
Metric B			
Metric C			
Metric D			

Refer to the overarching PIP section.

c) Program Design to Overcome Barriers: The program will address the following barriers:

- Lack of awareness: By quantifying the energy efficiency benefits of QM, the benefits of 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. One of the first tasks conducted by the program will be to conduct a comprehensive research study that is vetted by the HVAC industry to quantify the real energy savings that consumers can expect to achieve through ongoing maintenance of their system. This study will also include the appropriate level of behavioral studies to learn why customers don't currently value maintenance and what factors are needed to motivate consumers to act. This level of study is required to quantify the cost/benefit for delivering and receiving QM services.

- Asymmetric Information: Delivering QM training opportunities through existing industry channels (e.g. distributors, trade associations, etc.) will provide a higher level of credibility for 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 HVAC QM Program will conduct the necessary behavioral research to understand the existing dynamics that will help influence the necessary changes such that the marketplace will value and purchase higher quality services.
- Hidden costs: By promoting the concepts and value of quality maintenance at the time of system installation, the customer will be 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 QM to consumers and consumers not understanding the linkages between comfort and energy use. The HVAC QM Program will demonstrate the value proposition of a high quality contracting business and educating consumers on the energy benefits of QI/QM.

d) Quantitative Program Targets: The program will achieve the following program targets:

Table 5

	Program Target by 2009	Program Target by 2010	Program Target by 2011
Residential QM	TBD*		
Commercial QM	TBD*		

**At this point, reasonable targets cannot be determined. Previous IOU RCA and Duct Sealing programs can serve as a proxy for the number of units "touched" by the program on an annual basis, but whether this constitutes quality maintenance is less certain.*

e) Advancing Strategic Plan goals and objectives: The program will help to achieve the following near-term strategic goals as identified in Chapter 6 of the CLTEESP:

- 2-1: Create a Statewide QI/QM Brand – Leveraging the ENERGY STAR brand equity (ENERGY STAR Quality HVAC Installation program, ENERGY STAR Service & Product Provider program, and ENERGY STAR for Small Business & Congregations) is a cost effective approach to introducing an immediate QI/QM brand. In order to help residential and

commercial consumers more clearly recognize contractors and technicians who can truly deliver QI/QM, the IOUs will also aggressively help the HVAC industry to more firmly establish the higher value/consumer benefit of its own widely accepted industry credentials. 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, etc. In addition, the IOUs will provide financial resources to organizations (e.g. ACCA and SMACNA) to make existing and newly developed ANSI QI/QM standards available to the California contractor/technician community at no cost. Additional efforts will be dedicated to evaluating whether a California specific brand is viable.

- 2-2: Launch Statewide Brand – IOU sponsored co-branding efforts will be developed based on the branding activity and made available to contractors for promotion of the QI/QM effort. The IOUs will 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, by purchasing ad space in association eLetters and on California chapter association websites, and by purchasing a series of professionally produced webinars/infomercials from the above news organizations.
- 2-3: Provide expanded QI/QM training – Prior to launching the consumer side of the QI/QM Program, HVAC service technicians will be 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. Nearly all economists and government leaders agree that negative impacts of the current worldwide financial crisis are likely to linger for years. Thus, the IOUs will work closely with the 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 the task at hand.
- 2-4: Implement contractor accreditation program – Additional consideration will be made to promote NATE certification (e.g. additional contractor incentives that reimburse participating contractors for testing costs).
- 4-5: Develop standards for on-board diagnostic functionality – Evaluating the use of hand held and other types of systems in the field will assist in determining viable protocols for both commercial and residential applications.
- 4-6: Prioritize in-field diagnostic approaches – Conducting the appropriate level of research into existing diagnostic and verification approaches will provide the IOUs and the HVAC industry with the information necessary to target future efforts based on quantifiable energy efficiency benefits.

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Statewide HVAC
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6. Program Implementation
   a. Statewide IOU Coordination: SoCalGas and the other California IOUs will jointly lead industry efforts to design and implement a viable commercial and residential QM program. Specific areas of coordination include:
      i) Program name – HVAC Quality Maintenance (QM) Program
      ii) Program delivery mechanisms – The IOUs will design the Program under the auspices of the HVAC Industry Leadership Task Force as described in the core Residential and Commercial HVAC PIP. Management of the actual delivery aspects would be dependent on the eventual program design, but would likely include a combination of third-party programs and internal administrative staff and will follow the adaptive management process discussed in the core Residential and Commercial HVAC Program. The program will be targeted to consumers and contractors to create a push/pull dynamic that influences sustained market changes.
      iii) Incentive levels – See Section 4.b above.
      iv) Marketing and outreach plans – Program marketing cannot fully be determined until the Program design is complete. However, it is expected that common outreach materials will be developed by the IOUs in partnership with industry associations such as ACCA, ASHRAE, AHRI, SMACNA, MCAA, PHCC, RSES, HARDI, IHACI, ACTA, SMWIA, UA, IUOE, and others who demonstrate interest. These materials will only be available to participating contractors and will allow for co-branding with the contractor name. Additional point-of-purchase information on QM will be made available for equipment dealer locations and building departments (where residential customers may be receptive to "neutral" public service messages).
      v) IOU program interactions – One of the strategies outlined in the CLTEESP 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. In order to achieve the market transformation goals of the CLTEESP, the IOUs will support CEC and CPUC efforts to develop one common effort.
      vi) Similar IOU and POU programs – 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 by delivering a comprehensive suite of maintenance services that comply with or exceed ANSI standards (premium maintenance) designed to address the full range of efficiency measures available for commercial and residential HVAC systems. In an effort to offer this program in a cost effective manner, SoCalGas plans to jointly implement this program with SCE to comprehensively capture electric and gas saving from HVAC systems.

   b. Program delivery and coordination: The program will be coordinated with the following activities:
      i) Emerging Technologies program – The HVAC QM Program is expected to interact extensively with the ET Program to ensure the proper focus on remote

and on-board diagnostic equipment. Coordination activities will be realized through the Joint Program Management Team as described in the core Residential and Commercial HVAC Program.

ii) Codes and Standards program – This service-based program is not affected nor regulated by building codes. However, in that the HERS Phase II regulation, which becomes effective in third quarter 2009, is a valid delivery mechanism for this Program, closer linkages will be made with Codes and Standards efforts and their work with the CEC. Coordination activities will be realized through the Joint Program Management Team as described in the core Residential and Commercial HVAC Program.

iii) WE&T efforts – Participating contractors will be required to attend program-specific QM training in order to participate in the program. See HVAC WE&T Sub-Program for more information.

iv) Program-specific marketing and outreach efforts – Co-branded marketing support for participating contractors will be necessary to advance statewide QM efforts. Such support will 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. Additional general promotional materials such as point-of-purchase displays for equipment dealers will also be developed. (Specific IOU budget information for this marketing activity is provided in Table 1.)

vii. Non-energy activities of program – 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. These activities include significant efforts in program design, systems development, contractor training and consumer marketing.

viii. Non-IOU Programs – The program will interact with the HVAC industry to develop and introduce increasingly stronger QM standards that ensure systems are operating in their most efficient state.

ix. CEC work on PIER – The program will interact extensively with the ET Program to ensure the proper focus on remote and on-board diagnostic equipment. Such efforts are already underway with the PIER program. This activity will primarily be managed under the Technology and System Diagnostics Advocacy program

x. CEC work on codes and standards – See Section 6.b.ii.

xi. Non-utility market initiatives – 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, etc.). 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.

c. Best Practices: As described in Section 5.a, the IOUs have been managing RCA and Duct Sealing programs for several years and have seen that the results they deliver are uncertain at best. This Program seeks to create a new standard for

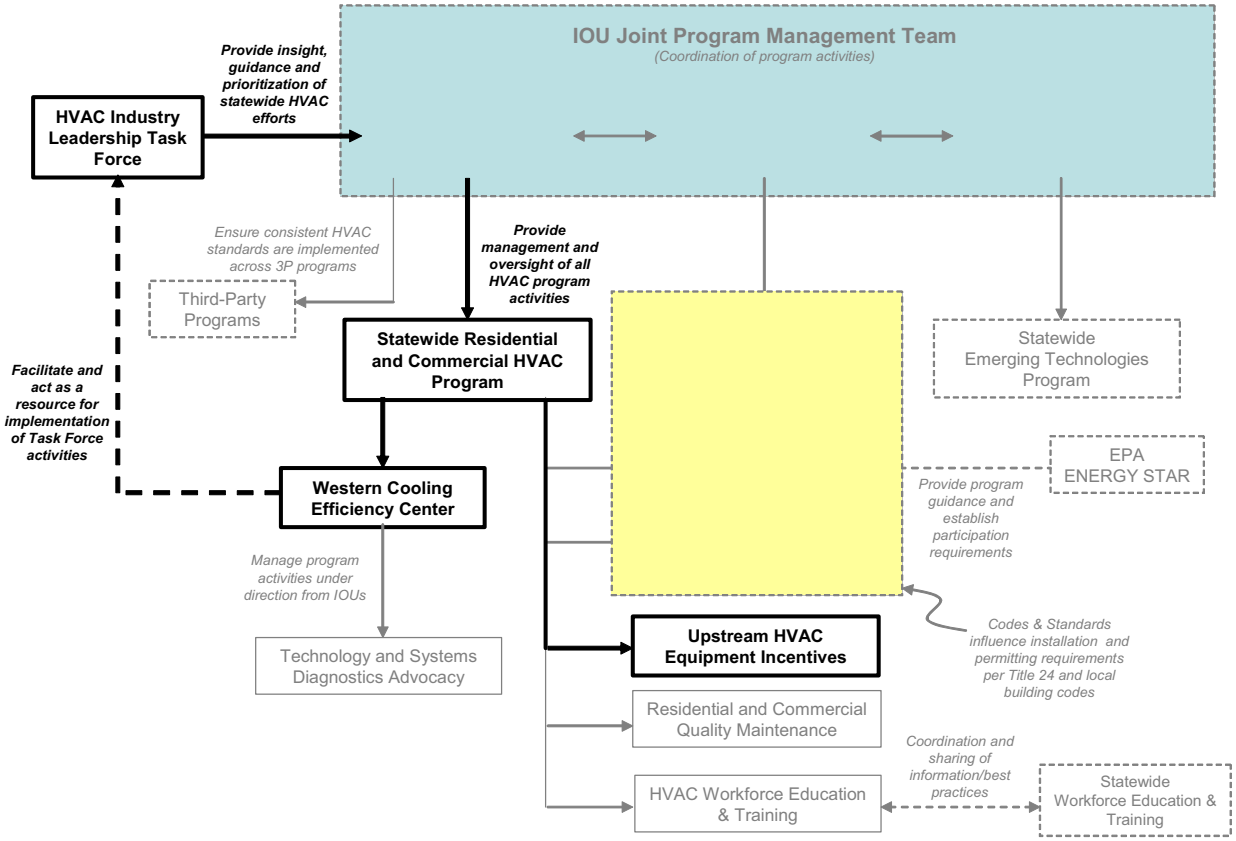
HVAC service-based programs by developing a more comprehensive approach that delivers reliable energy savings. This program will be developed with full industry involvement to ensure that it (1) is accepted by the industry, which will ensure it meets its market transformation objectives (current RCA and Duct Sealing programs are delivered by a small fraction of the more than 16,000 licensed contractors and have not proven sustainable without utility incentives); (2) effectively trains service 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.

d. 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 proven questionable in terms of their energy savings. A more comprehensive maintenance effort that delivers well-documented energy savings will set the standard for HVAC efficiency programs. Furthermore, delivering this program through active partnership with the industry will increase the likelihood of its success. Finally, innovation results through a continuous improvement process that will be employed to evaluate the viability of offering additional incentives for installations that exceed established program standards (e.g. TABB, NEBB, NCI, etc.).
e. 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. Finally, contractors will be encouraged to facilitate the customer's participation in DR programs by providing a completed DR program application to the system owner at the completion of the maintenance service. Additional work will take place during the three-year program cycle to evaluate closer linkages between EE and DR.
f. Integration across resource types (energy, water, air quality, etc): The program can be designed to 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 will seek to influence the customer's adoption of newer equipment by explaining the likelihood of increased maintenance costs as existing refrigerants become less available.
g. Pilots: As with any good product/program design, pilots are needed to test the concept prior to full-scale launch. The HVAC QM Program will utilize pilots to test the implementation of program concepts, processes and the integration of ever increasing QM standards.
h. EM&V: The utilities are proposing to work with the Energy Division to develop and submit a comprehensive EM&V Plan for 2009-2011 after the program

implementation plans are filed. This will include process evaluations and other program-specific studies within the context of broader utility and Energy Division studies. More detailed plans for process evaluation and other program-specific evaluation efforts cannot be developed until after the final program design is approved by the CPUC and in many cases after program implementation has begun, since plans need to be based on identified program design and implementation issues.

2009–2011 Energy Efficiency Programs
Statewide HVAC
Program Implementation Plan

7. Diagram of Program:



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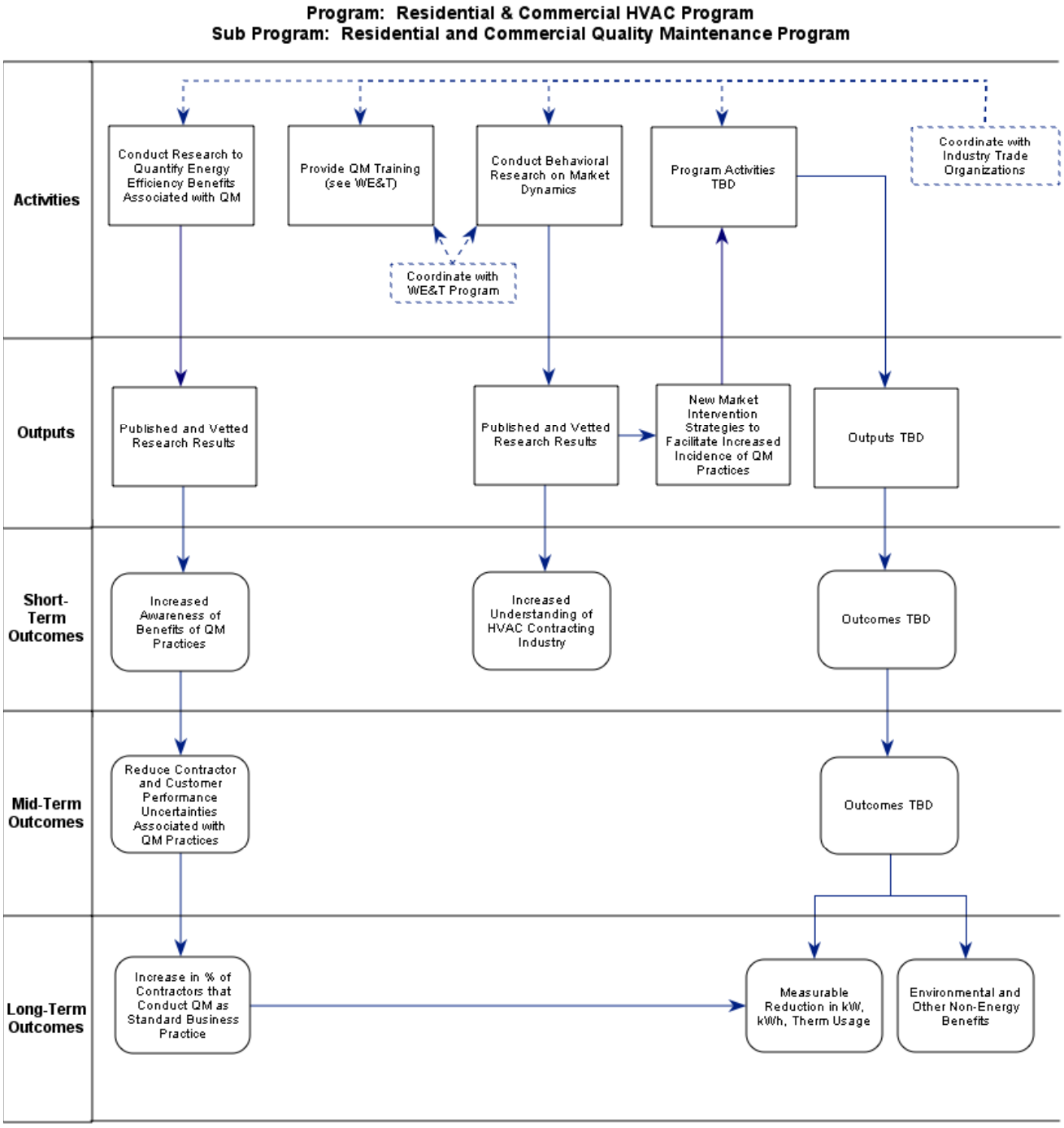
8. Program Logic Model:



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1. Program Name: HVAC Workforce Education & Training
   Program ID#:
   Program Type: Sub-Program

2. Projected Program Budget Table

Table 1[27]

Program #	Main Program Name / Sub-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					
	Etc.					
	TOTAL:					

3. Projected Program Gross Impacts Table

Table 2

Program #	Program Name / Sub-Programs	2009 - 2011 Three-Year EE Program Gross kWh Savings	2009 - 2011 Three-Year EE Program Gross kW Savings	2009 - 2011 Three-Year EE Program Gross Therm Savings
Market Sector Programs				
	Core Program #1			
	Sub-Program #1			
	Sub-Program #2			
	TOTAL:			

4. Program Description

[27] 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.

a) This sub-program will deliver a dedicated industry-specific effort that offers education and training opportunities targeted at all levels of the HVAC value chain. Prior to starting such an activity, and as outlined in the Strategic Plan, the sub-program will conduct a comprehensive-training needs-assessment[28] to determine industry skill gaps, identify opportunities for collaboration with existing HVAC education and training infrastructure, and implement recommendations needed to close gaps at all levels of the industry.

- This sub-program is a non-resource program that does not offer direct customer incentives.

- This sub-program is a non-resource program activity that will deliver a consistent QI/QM-focused training effort designed to introduce the HVAC trade to the Strategic Plan and their role in its implementation and draw attention to the dominance of sub-standard installation and maintenance in California. Further distinction will be made between sub-standard, standard and premium work in order to persuade quality-inclined contractors, installers and technicians to embrace the quality standards as the minimum level of service they will provide to their customers. Over time, the HVAC WE&T effort will seek to influence quality-inclined contractors, installers and technicians to propose and deliver premium levels of service to their customers at every opportunity.

The following industry participants will be targeted through this effort in a manner consistent with the Strategic Plan:

- Contractor/Owner: Address proper QI/QM methods (system sizing, installation, air distribution and owner documentation), as well as the needs of the business owner by clearly communicating the value proposition of managing their operations with a quality and energy efficiency focus and how important their efforts fit into the Strategic Plan. Concentration on promoting quality as a high-margin, value-added service that can benefit the contractor through fewer callbacks and increased customer satisfaction.
- Technician: Address proper QI/QM methods by supporting and collaborating with training opportunities available through industry associations, labor unions, and online educators. This strategy may include state/national certification programs.
- Apprentice/Installer: Offer training for new technicians entering the industry by developing and supporting consistent QI certification programs offered through existing trade associations, trade unions, and national training organizations.
- Salespeople (and those in other positions who are also responsible for business development): Work with existing HVAC industry sales and

[28] SCE has already begun development of such a needs assessment for its own service territory and its effort can be easily expanded into a California effort.

marketing experts to develop/add new modules focused on energy efficient replacements, ENERGY STAR QI, QM (as defined in the appropriate industry standards), fault detection and diagnostics-aided (FDD-aided) system tune-ups, energy efficiency-alert, and "premium" maintenance to their own already credible and trusted training in order to help California contractors better articulate and promote the benefits of higher levels of service to their prospects and existing clients. Because the sales cycles/processes for residential and commercial customers differ significantly, separate sales and marketing curriculum and methodologies will be developed for each segment.

- Student: Partner with HVAC educators and the industry to address technician shortages by promoting a viable career path and with colleges and technical schools to offer the requisite QI/QM and energy efficiency training required to provide the industry with a qualified labor pool.
- Building Officials: The program will actively work with the statewide Codes and Standards team to support and develop meaningful strategies that provide QI and energy efficiency training for code officials and/or third-party inspectors and provide consistent interpretation and implementation of Title 24 during the inspection process (see Section 6 of the Codes and Standards PIP for a specific discussion on activities related to improving HVAC code compliance).

5. Program Rationale and Expected Outcome
   a) Quantitative Baseline and Market Transformation Information:

Table 3

	Internal Market Transformation Planning Estimates		
Market Sector and Segment	2009	2010	2011
Metric A			
Metric B			
Metric C			
Metric D			

Refer to the overarching PIP section.

b) Market Transformation Information:

Table 4

	Internal Market Transformation Planning Estimates		
Market Sector and Segment	2009	2010	2011
Metric A			
Metric B			
Metric C			
Metric D			

Refer to the overarching PIP section.

c) Program Design to Overcome Barriers: The program will address the following barriers:

- Hassle costs/Lack of awareness: By creating a targeted statewide web-based training clearinghouse, HVAC technicians will have a single source for current information that will identify all relevant training resources available to them. (This targeted clearinghouse concept will ultimately need to be merged into the web portal that is being proposed by the statewide WE&T Program. See the Statewide Workforce Education & Training Strategies Program for more information.)
- Performance uncertainties: It is difficult for contractors to quantify the cost/benefit for attending training courses as the market has yet to demonstrate that there is any tangible value in being trained in the use of state-of-the-art tools, new diagnostics protocols, methodologies, and condition-based maintenance, or a willingness of residential and commercial customers to pay the full actual cost of quality installation and quality maintenance (QI/QM). However, linking well-trained contractors with IOU incentive programs will provide the opportunity for contractors to gain market share and/or other financial benefits as a result of their being actively promoted by IOUs (see ENERGY STAR Residential QI Program for more information).
- Asymmetric Information: Developing and delivering effective QI/QM training through and in partnership with existing industry channels (e.g. distributor locations, trade associations, labor unions, online educators, conferences, etc.) will provide a higher level of credibility for QI/QM training.
- Bounded rationality: It is reasonable to assume that the HVAC workforce would enthusiastically embrace training opportunities that would help them excel at their profession; however, market dynamics have not supported such logic as the industry has largely become commoditized. The HVAC WE&T Program will conduct the necessary behavioral research to understand the existing dynamics that will help influence the necessary changes to move the industry beyond its low price-driven mentality and demonstrate the need for technicians to take an active role in their ongoing professional development.

d) Quantitative Program Targets: The program will achieve the following program targets:

Table 5

HVAC WE&T Program (workshop and/or online)	Program Target by 2009	Program Target by 2010	Program Target by 2011
Introduction to the Quality Standards	2	12	12
ACCA Manual J Training*	2	4	6
ACCA Manual D Training	2	4	6
Advanced Manual D Training	0	2	4
ACCA Manual S Training*	2	4	6
ACCA Manual N Training	1	3	3
SMACNA Duct Construction Training	TBD	TBD	TBD
SMACNA Air Duct Leakage Training	TBD	TBD	TBD
Other Industry Training Deserving of Expansion/Amplification	TBD	TBD	TBD
IHACI CA QI/QM Training[29]	3	6	3
IHACI NATE Training Series	2	2	2
Contractor Business Practices/Business Models	0	6	12
QI/QM Sales Manager Training	0	6	12
QI/QM Service Manager Training	0	4	6
Whole Building Curriculum	See Footnote[30]		
Host NATE Technical Committee Meetings (see Section 6.b.iv)	1	3	5
Host HVACR & Plumbing Educators Workshop (See Section 6.b.iv)	0-1	1	2
Launch California State Chapters of the Council of Air Conditioning and Refrigerating Educators (CARE)	0-1	1-2	2-3

**May be combined into one single HVAC load calculation/sizing course.*

e) Advancing Strategic Plan goals and objectives: The program will help to achieve the following near-term strategic goals as identified in Chapter 6 of the Strategic Plan:

[29] IHACI Training will be available only in Southern California and will be offered jointly by Southern California Gas Company, San Diego Gas & Electric and Southern California Edison. The training consists of six different modules developed for the working HVAC technician: gas heating, electrical, air conditioning and heat pump, air distribution, system performance and system diagnostics.

[30] During the 2009-11 Program Cycle, the IOUs will partner with one college/university to develop and offer a comprehensive Whole Building Design certificate program. In early 2010, an MOU will be signed with a college/university and the initial concept program will then be developed in 2010. Finally, in 2011 the certificate program will be piloted to a select group of participants.

- 2-3: Provide expanded QI/QM training – A significant statewide effort will be used to increase the availability of QI/QM training resources by working in a collaborative effort with the entire HVAC industry, including manufacturers, distributors, contractors, labor unions, associations, educators and influential end-users. Specific tasks that will be accomplished include but are not limited to:
    - Work with sheet metal and pipefitter union training centers to update/upgrade refrigeration cycle fault detection & diagnostics, economizer controls, and duct system/air balance courses so that they more closely align with QM and premium maintenance being promoted by the statewide HVAC program;
    - Work with the unions to promote member participation in upgraded classes;
    - Work with California-based HVAC educators from community colleges, private schools, and online education providers to bring the AHRI-hosted HVACR & Plumbing Educators Workshop to California and use it to jump start California chapter of the Council of Air Conditioning and Refrigerating Educators (CARE);
    - Work with RSES to add QI/QM and efficiency-focused modules to its online training offering;
    - Assist RSES to promote participation in online training among California-based contractors and technicians;
    - Work with online training and education providers such as LearnHVAC.org (CEC and IOU-funded), HVACREducation.net, RSES eLearning, UA Interactive Online, Cengage Learning, Gatlin Education and others to update/upgrade courses as above, to add introduction to QI/QM standards to their curriculum, and to increase usage of these resources among California-based contractors and technicians; and
    - Work with the HVAC industry sales and marketing consultants to develop/deliver QI/QM and premium maintenance sales training and coaching to closely align with the statewide HVAC program.
- 2-4: Implement contractor accreditation program – Additional benefits will be made available through the Program to support the HVAC WE&T efforts of increasing the level of technician certification. Such efforts may include additional IOU promotion of contractors (e.g. “Gold Star Contractors”) who maintain a minimum of percentage of NATE certified technicians (e.g. 70%), reimbursement of testing costs and/or CEU credits for participating contractors, tying contractors to a statewide brand for quality and efficiency, etc. Also, providing financial support to start a California-based NATE office for the purpose of significantly expanding NATE’s penetration throughout the state is an efficient and effective ways California’s IOUs can collaborate to increase the percentage of certified technicians.
- 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. Such forward-thinking universities such as Chapman University (located in Orange, California) will be engaged in the process.

6. Program Implementation
   a. Statewide IOU Coordination: All California IOUs will offer The HVAC WE&T Program in a consistent manner. Specific areas of coordination include:
      i. Program name – HVAC WE&T Program
      ii. Program delivery mechanisms – The IOUs will manage the program through a combination of third-party programs and internal administrative staff and will follow the adaptive management process discussed in the core Residential and Commercial HVAC Program. The program will be targeted to entry level and journeyman technicians, contractor sales and service managers, business owners and building officials and will leverage existing industry delivery channels such as manufacturers, distributors, contractors, labor unions, associations and educators rather than creating new ones in order to provide training in a cost effective manner.
      iii. Incentive levels – N/A (no incentives will be offered through this sub program).
      iv. Marketing and outreach plans – The training offerings available through this program will be promoted using existing industry channels such as the trade press (more than 30 with distribution in the state, e.g., Indoor Comfort News, The ACHR News, Contracting Business, Contractor, HVACRBusiness, etc.), trade associations (approximately 15 with membership in CA, e.g., ACCA, IHACI, HARDI, SMACNA, RSES, MCAA, ACTA etc.), HVAC schools (approximately 60 statewide including Brownson Technical School, Mt. San Antonio College, El Camino College, Laney College etc.), distributor locations (approximately 700 individual locations in California), maintenance/facility management brokers (approximately 15 companies dedicated to servicing HVAC systems for multi-site commercial customers in California including Engineering Excellence, Nest International, CB Richard Ellis, Xencom Facility Management, etc.), contractor alliances, networks and franchises (at least 12 operating in California, including National Comfort Institute, Service Roundtable, Unified Group, LINC Service, etc,) .
      v. IOU program interactions – In order to support the need for increased code compliance, the program will cooperate with the CEC's 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.
      vi. Similar IOU and POU programs – Delivering IOU sponsored HVAC training through existing industry channels represents a break from the norm for IOU training activities. The California IOUs are unaware of such an approach being used elsewhere and 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 throughout California that advance the strategic goals of the CLTEESP.

b. Program delivery and coordination: The program will be coordinated with the following activities:

i. Emerging Technologies program – This program is planned to be responsive to new and emerging technologies by developing training modules specific to these technologies (e.g. designing and specifying hot/dry equipment). New technologies will be integrated into the HVAC WE&T Program as they become available to the market. Coordination of such training activities will be realized through the Joint Program Management Team as described in the core Residential and Commercial HVAC Program.

ii. Codes and Standards program – Efforts will be coordinated to ensure that a consistent message is delivered regarding code compliance and QI/QM. The Codes and Standards Program will take the lead on all code-based training and compliance items. Additionally, coordination activities will be realized through the Joint Program Management Team as described in the core Residential and Commercial HVAC Program. (For additional information about the Codes and Standards HVAC activities, refer to Section 6 of the Codes and Standards PIP.)

iii. WE&T efforts – The HVAC WE&T Program will take the lead on all workforce training needs for the HVAC industry. This will ensure the dedicated approach needed to achieve the strategic goals outlined by the CLTEESP. All activities will be coordinated with the statewide WE&T program to ensure that there is no duplication of efforts and that the efforts are integrated into the WE&T web portal that is being spearheaded by the Statewide IOU WE&T Program. (See the Statewide Workforce Education & Training Strategies Program for more information).

iv. Program-specific marketing and outreach efforts – Financial support will be provided to jumpstart a California-based NATE office for the purpose of significantly expanding NATE's penetration throughout the state. A direct investment in NATE is one of the most efficient and effective ways California's IOUs can collaborate on the quality-focused sectors of the HVAC industry as envisioned by the CLTEESP. Financial support will also be provided to AHRI to host the HVACR and Plumbing Educators workshop in California in order to increase the relative importance of HVAC education in California. (Specific IOU budget information for this marketing activity is provided in Table 1.)

v. Non-energy activities of program – N/A (this program is a non-resource effort and all activities described herein are non-energy activities).

vi. Non-IOU Programs – The IOUs will work closely with the efforts of the California chapter of SkillsUSA, which is a partnership of students, teachers and industry representatives, working together to ensure America has a skilled work force. A national nonprofit organization, it serves teachers and high school and college students who are preparing for careers in trade, technical, and skilled service occupations.

vii. CEC work on PIER – See Section 6.b.i.

viii. CEC work on codes and standards – Similar to the coordination with the Codes and Standards Program, the HVAC WE&T Program will work in cooperation with the CEC's training and compliance efforts targeted at local building departments. The Codes and Standards Program will take the lead on this

effort. Additionally, coordination activities will be realized through the Joint Program Management Team as described in the core Residential and Commercial HVAC Program. (For additional information about the Codes and Standards HVAC activities, refer to Section 6 of the Codes and Standards PIP.)

ix. Non-utility market initiatives – The IOUs will continue to persuade industry leaders to mobilize their various constituencies to actively and enthusiastically support the CLTEESP and the statewide HVAC program. Collaborating with HVAC industry leaders and innovators to formulate, pilot and ultimately prove new profitable and persistent business models focused on QI, QM and energy efficiency will be essential to ensure the success of the CLTEESP.

c. Best Practices: Tapping existing HVAC industry infrastructure for education, training, marketing and sales expertise will ensure that the industry's collective best practices are integrated into California's HVAC training effort. Best practices learned through the many years that the IOUs have operated their Energy Centers will be disseminated more widely through the HVAC training community. If this approach proves successful, it can serve as the model for utility programs in other states.

d. Innovation: The innovation of this program exists by building upon the success of the IOU Energy Centers in delivering energy-related education and leveraging additional HVAC industry training channels to significantly increase the throughput of the HVAC workforce. Traditionally, IOUs have delivered training courses exclusively through their respective energy centers. The need for this training outlet will still be needed and utilized, but using industry channels such as manufacturers, distributors, contractors, labor unions, associations and educators (both classroom and online) will increase the penetration of a consistent QI/QM message in a cost effective manner.

e. Integrated/coordinated Demand Side Management: As with most HVAC oriented programs, the primary source of integration exists between energy efficiency and demand response activities. Including a discussion of DR in all appropriate training materials will increase the HVAC industry's knowledge and awareness of DR technologies and ultimately increase their adoption as contractors/technicians see the value of promoting DR as a normal course of business. Additional work will take place during the three-year program cycle to evaluate closer linkages between EE and DR.

f. Integration across resource types (energy, water, air quality, etc): Training materials will be augmented to include the appropriate level of discussion that links HVAC with mandated GHG reductions. Additionally, water quality issues will be addressed in all training materials related to QI/QM of evaporative technologies.

g. Pilots: No pilot programs are planned as part of this effort.

h. EM&V: The utilities are proposing to work with the Energy Division to develop and submit a comprehensive EM&V Plan for 2009-2011 after the program implementation plans are filed. This will include process evaluations and other program-specific studies within the context of broader utility and Energy Division studies. More detailed plans for process evaluation and other program-specific evaluation efforts cannot be developed until after the final program design is

approved by the CPUC and in many cases after program implementation has begun, since plans need to be based on identified program design and implementation issues.

2009–2011 Energy Efficiency Programs
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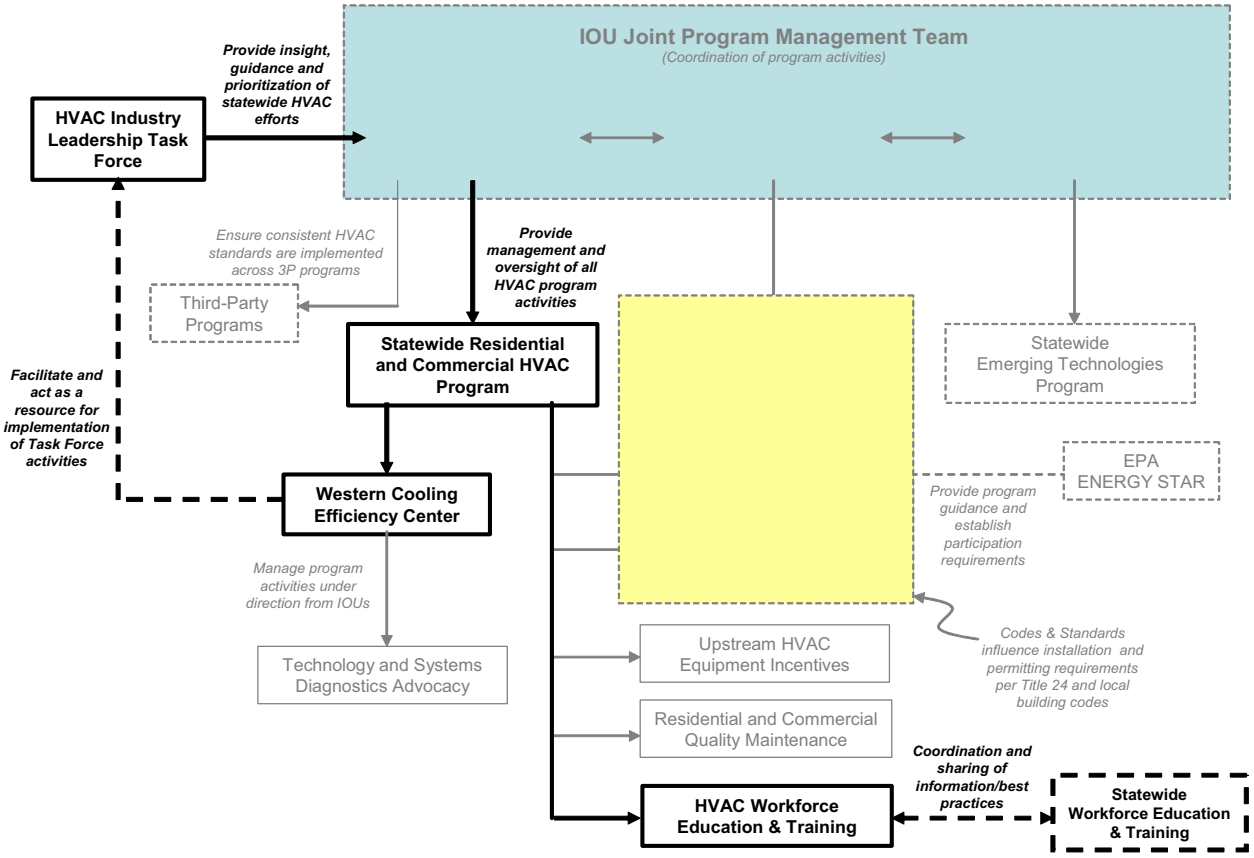
7. Diagram of Program:



2009–2011 Energy Efficiency Programs
Statewide HVAC
Program Implementation Plan

8. Program Logic Model:

Program: Residential and Commercial HVAC Program
Sub Program: Workforce Education & Training (WE&T)