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An *EDISON INTERNATIONAL* Company

(U 338-E)

***SCE's 2009-2011 Energy Efficiency Program Plan  
Implementation Plans***

Before the  
**Public Utilities Commission of the State of California**

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# 1

## Residential Energy Efficiency Program

1. **Program Name:** Residential Energy Efficiency Program  
**Program ID:** SCE-SW-001  
**Program Type:** Core

### 2. Projected Program Budget Table

Table 1<sup>1</sup>

SCE-SW-001	Main Program Name / Sub-Program	Total Administrative Cost (Actual)	Total Marketing & Outreach (Actual)	Total Direct Implementation (Actual)	Integration Budget Allocated to other Programs (If Applicable)	Total Budget By Program (Actual)
RESIDENTIAL	Residential Energy Efficiency Program					
	Home Energy Efficiency Survey Program	\$ 1,578,249	\$ 2,243,048	\$ 8,964,703		\$ 12,786,000
	Residential Lighting Incentive Program for Basic CFLs	\$ 3,745,246	\$ 219,451	\$ 28,694,303		\$ 32,659,000
	Advanced Consumer Lighting Program	\$ 5,071,812	\$ 597,531	\$ 37,440,658		\$ 43,110,000
	Home Energy Efficiency Rebate Program	\$ 3,155,120	\$ 4,490,300	\$ 21,328,581		\$ 28,974,000
	Appliance Recycling Program	\$ 3,739,066	\$ 6,187,821	\$ 30,547,113		\$ 40,474,000
	Business and Consumer Electronics Program	\$ 1,611,070	\$ 3,882,530	\$ 7,148,400		\$ 12,642,000
	Multifamily Energy Efficiency Rebate Program	\$ 4,690,211	\$ 488,800	\$ 51,341,989		\$ 56,521,000
	<b>TOTAL:</b>	<b>\$ 23,590,774</b>	<b>\$ 18,109,481</b>	<b>\$ 185,465,746</b>	<b>\$ -</b>	<b>\$ 227,166,001</b>

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

Table 2

SCE-SW-001	Residential Energy Efficiency Program	2009-11 EE Program Gross kWh Savings	2009-11 EE Program Gross kW Savings	2009-11 EE Program Gross Therm Savings
	Home Energy Efficiency Survey Program	31,265,232	8,697	-
	Residential Lighting Incentive Program for Basic CFLs	935,464,302	125,475	-
	Advanced Consumer Lighting Program	347,851,441	31,397	-
	Home Energy Efficiency Rebate Program	76,844,090	36,368	-
	Appliance Recycling Program	304,114,440	46,865	-
	Business and Consumer Electronics Program	51,622,602	5,334	-
	Multifamily Energy Efficiency Rebate Program	157,672,718	12,313	-
	<b>TOTAL</b>	<b>1,904,834,825</b>	<b>266,449</b>	<b>-</b>

<sup>1</sup> 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

## **Residential Energy Efficiency Program**

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### **4. Program Description**

#### **a) Describe program**

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 significantly scaled 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. During the 2009-2011 program cycle, the IOUs will continue 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<sup>2</sup> (Strategic Plan).

The Residential Energy Efficiency Program (REEP) is designed to offer and promote specific and comprehensive energy solutions within the residential market sector. By encouraging adoption of economically viable energy efficiency technologies, practices, and services, the Residential portfolio employs various strategies and tactics to overcome market barriers and to deliver programs and services aligned to support the Strategic Plan. The program's ultimate focus 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; and
- 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 large segments 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 further described in section 6. These two major program approaches are not inconsistent, but

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<sup>2</sup> Strategic Plan refers to the CPUC's Long Term Energy Efficiency Strategic Plan, as adopted on September 18, 2008, located at [www.CaliforniaEnergyEfficiency.com](http://www.CaliforniaEnergyEfficiency.com).

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rather mutually supportive of achieving the largest total of cost-effective short and long-term energy savings.

To date, the California IOUs have offered a number of residential existing-building sub-programs that are in various stages of maturity and availability across the state, including Home Energy Efficiency Survey, Appliance Recycling, Home Energy 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 sub-programs 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 including: 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.

### **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 through 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. A multi-language approach enhances the program's ability to reach California's diverse culture and provides efficiency recommendations based on a 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.

### **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. The program introduces energy-efficient lighting products to the market and strives to influence future purchasing behaviors of customers. More than 370 retailers at more than 2,700 store locations are expected to participate.



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### **Advanced Consumer Lighting**

The Advanced Consumer Lighting program also provides customers with incentives in the form of discounts that greatly reduce the cost of energy-efficient lighting products. The program 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 opportunities for integration with local government and DSM programs.

HEER meets the need of consumers who need either a single measure or multiple devices by encouraging the adoption of energy-efficient choices when purchasing and installing household appliances and equipment. It does this by offering customers educational materials about energy efficiency options, rebates, and other incentive offerings. In addition to influencing efficient purchases, the program educates customers about correct use of products correctly and guides customers toward exploring 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 portfolios. The BCEP provides midstream incentives to retailers to encourage increased 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 on the market. The program continues to expand the POS rebate delivery method and provides field support services to update

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marketing materials in retail stores and support education of 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.

### **Multifamily Energy Efficiency Rebates**

The 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**

<b>Heating and Cooling</b>	<b>Lighting</b>
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	Ceiling Fans (ENERGY STAR Qualified)
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
Ducted Evaporative Coolers	Specialty and high performance CFLs
Cool Roof	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)
High Performance Dual-Pane Windows	Interior screw-in LEDs for task, accent, and area lighting
Package terminal air conditioners & heat pumps	Interior hardwired LED fixtures
<b>Appliances</b>	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)
Clothes Washer	Floor lamps
<b>Pools and Spas</b>	Torchieres
Pool Pumps and Motors	LED night lights
<b>Electronics</b>	LED holiday lights
>ENERGY STAR® Televisions	Occupancy sensors

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LCD monitors	Photocells
ENERGY STAR 4.0® Qualified Computers	Table/desk lamps
<b>Other incentives</b>	
Shower Heads	Exit Signs
Faucet Aerators	

### c) 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.”<sup>3</sup> 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<sup>4</sup>.

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<sup>5</sup>. Markets are social institutions<sup>6</sup>, and transformation requires the coordinated effort of many stakeholders at the national

<sup>3</sup> California Public Utilities Commission Decision, D.98-04-063, Appendix A.

<sup>4</sup> California Public Utilities Commission (2008) *California Long Term Energy Efficiency Strategic Plan*, p. 5. Available at <http://www.californiaenergyefficiency.com/docs/EEStrategicPlan.pdf>

<sup>5</sup> 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>

<sup>6</sup> 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/](http://www.eceee.org/conference_proceedings/eceee/2001/Panel_2/p2_7/Paper/)

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level, directed to not immediate energy savings but rather to intermediary steps such as changing behavior, attitudes, and market supply chains<sup>7</sup> 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<sup>8</sup>. According to York<sup>9</sup>, “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<sup>10</sup>. 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<sup>11</sup>, 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<sup>12</sup>. 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<sup>13</sup>. The ability to make causal connections between these

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<sup>7</sup> 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](http://www.calmac.org).

<sup>8</sup> 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*.

<sup>9</sup> York, D., (1999). “A Discussion and Critique of Market Transformation”, Energy Center of Wisconsin. Available at <http://www.ecw.org/ecwresults/186-1.pdf>.

<sup>10</sup> 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>

<sup>11</sup> Rogers (1995) *Diffusion of Innovations*, 5<sup>th</sup> Ed.

<sup>12</sup> 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>

<sup>13</sup> Sebold et al (2001) p. 6-5,

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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.)<sup>14</sup>" The Strategic Plan recognizes that regulatory policies are not yet in place to support the success of market transformation efforts<sup>15</sup>, 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<sup>16</sup>. 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<sup>17</sup> 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

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<sup>14</sup> 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>.

<sup>15</sup> CPUC (2008) Strategic Plan, p. 5.

<sup>16</sup> Nadel, Thorne, Saches, Prindle & Elliot (2003).

<sup>17</sup> Pelozo & York, (1999).

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

IOUs are proposing several metrics believed to reliably detect market transformation for energy efficient 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.

Over the past several years a good baseline of market saturation has been established in the California Lighting and Appliance Saturation Study. The original study was completed in 2000 and then updated in 2005. The overarching goal for these studies is to provide efficiency levels of appliances in order to understand future energy savings potential and past accomplishments in the residential sector. The IOUs propose that the values in these studies and the data made available in the “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 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 the CBEE Baseline Study on Public Awareness and Attitudes study may be employed. The CBEE Baseline Study on Public Awareness and Attitudes uses a battery of questions that have subsequently formed the foundation of surveys used in several later program evaluations. The California

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Residential Lighting and Appliances Program (CRLAP) Study, Phases 1, 3, and 4, track changes in the market on several AKA dimensions. These and any nation-wide attitude studies may provide a glimpse as to the state of customer AKA of energy efficiency. The usefulness of past surveys as baselines would have to be discussed by the MT collaborative since these were studies that took place before the CA energy crisis.

The surveys used in the CBEE and CRLAP studies may be modified and updated. Or, another battery of questions might be constructed to probe more contemporary knowledge of EE. Energy Attitude/Knowledge scales could be constructed from these questions and the first year responses on the scale could serve as the baseline for subsequent attitudinal change. Customers could be probed annually and their AKA change measured 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 customers' past behaviors and intentions about energy efficiency. In order to gauge an behavioral based metric for this sector the statewide Home Energy Efficiency Survey (HEES) may be employed. The long-running Home Energy Efficiency Survey has provided recommendations for behavior changes, and program evaluation studies have assessed the adoption rate of these recommendations for both participants and nonparticipants over the past few program cycles. This information may be used to provide both a baseline and rate of change across time.

The surveys used to evaluate the HEES program may be modified and updated. Or, another battery of questions might be constructed to probe adoption of more contemporary behaviors such as unplugging unused electronics. Energy Behavior scales could be constructed from these questions and the first year responses on the scale could serve as the baseline for subsequent attitudinal 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:

## **Residential Energy Efficiency Program**

**Table 3**

	<b>Baseline Metric</b>		
	<b>Metric A</b>	<b>Metric B</b>	<b>Metric C</b>
Measure-based metric	Metric developed as a ratio of a collection of indicator measures over a base case		
Attitudinal-based metric		Ratio of survey participants that consider Energy Efficiency when making purchase decisions	
Behavioral-Adoption based metric			Behaviors of Residential sector based on a scale developed to measure Energy Efficiency behaviors

### **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.



## **Residential Energy Efficiency Program**

**Table 4**

	<b>Internal Market Transformation Planning Estimates</b>		
	<b>2009</b>	<b>2010</b>	<b>2011</b>
Metric developed as a ratio of a collection of indicator measures over a base case.	Improvement over baseline, over time	Improvement over baseline, over time	Improvement over baseline, over time
Ratio of survey participants that consider Energy Efficiency when making purchase decisions.	Establish baseline	Improvement over baseline, over time	Improvement over baseline, over time
Behaviors of Residential sector based on a scale developed to measure Energy Efficiency behaviors.	Establish baseline	Improvement over baseline, over time	Improvement over baseline, over time

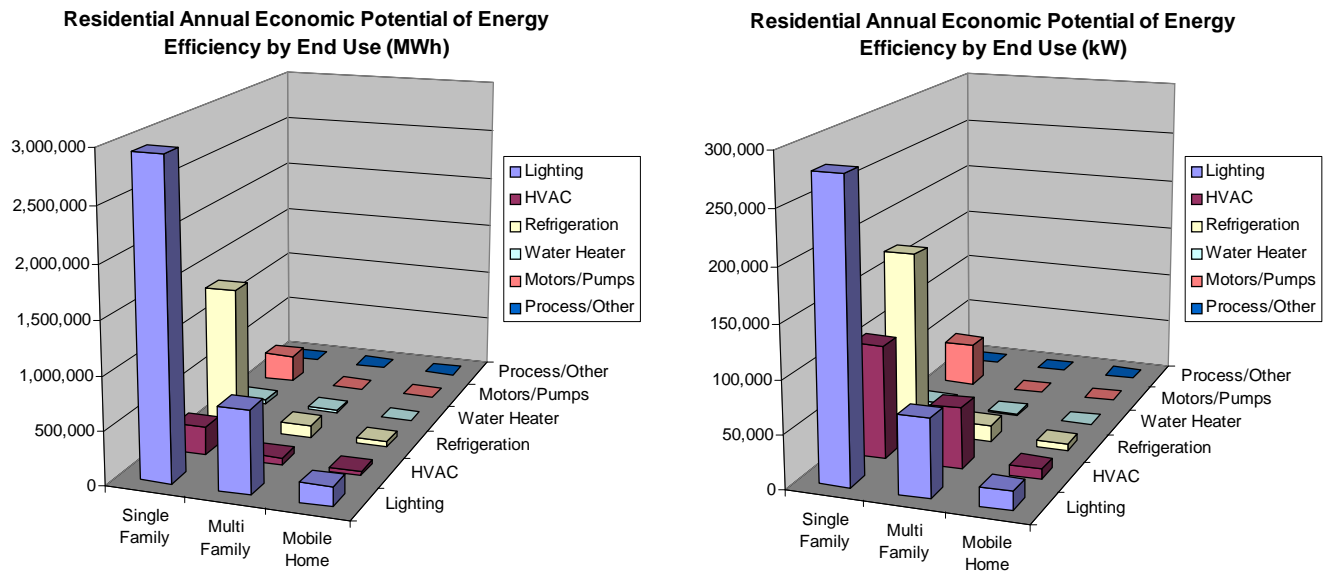
### **c) Program Design to Overcome Barriers**

Due to its diversity, complexity, and size, the residential customer base served by all California IOUs constitutes one of the nation's largest and most challenging groups of electricity, gas, and water users. 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 Energy Efficiency (EE) through education and reinforcement. The following figures are indicative of the accepted annual economic potential of residential electricity consumption.

# Residential Energy Efficiency Program

## Electric Economic Potential by End Use and Residential Segment<sup>18</sup>



SCE attempts to align portfolio planning with estimates of energy efficiency potential in the Residential sector as identified in the Strategic Plan. The 2006 and 2008 Itron studies of energy efficiency potential provide a significant amount of useful information for program planning for the sector.

As evident from 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, 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.

<sup>18</sup> SCE's 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).

## **Residential Energy Efficiency Program**

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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;
- 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;
- Language and socioeconomic factors;
- Lack of enforcement for measures installed; and
- Often, general indifference to energy efficiency.

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 the 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;
- Encourage residential consumers across California to consider “energy efficiency first” in their daily lives;
- Promote support of and compliance with more stringent appliance and building standards;
- Move the residential market towards coordinated demand-side management, including self-generation and a "smart meter" initiative;
- Promote the adoption of comprehensive residential retrofits;
- Encourage, adopt, and integrate promising emerging technologies;
- Develop public awareness and to promote effective decision making to create a widespread demand for high efficient measures; and
- Contribute to the ultimate transformation of energy consumption patterns.

## **Residential Energy Efficiency Program**

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### **d) Quantitative Program Targets**

Refer to Section '5d' within sub-program elements.

### **e) Advancing Strategic Plan goals and objectives**

The REEP will work with businesses and industry to achieve the Strategic Plan's 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 Section 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.

HEES are an important component of broader IOU efforts to raise awareness for steps that 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 HEER, BCEP, lighting programs and 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. Since packaged comprehensive solutions are new, these particular efforts are reflected within individual IOU local or third party program elements.

## **Residential Energy Efficiency Program**

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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 BCEP. 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 increase the availability of 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, the IOUs will offer several additions to the residential lighting portfolio for 2009-2011. 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 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. Although the LMT program strategy is not a part of the IOU Residential portfolio, its efforts will directly influence the implementation of the Basic CFL and Advanced Lighting

## **Residential Energy Efficiency Program**

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programs. Reference the LMT program narrative within Exhibit 3 (Section 7) for specific details.

### **6. Program Implementation**

#### **a) Statewide IOU coordination**

**i. Program name:** Residential Energy Efficiency Program

#### **ii. Program delivery mechanisms**

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. For more information, refer to the program details provided with each sub program's PIP.

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: BBEES, the Strategic Plan, EAP, Low Income Energy Efficiency Programs (LIEE), Integrated Demand Side Management (IDSM), Assembly Bill AB32 (on greenhouse gas reductions), Emerging Technologies, Public Interest Energy Research (PIER), and Codes and Standards (C&S). In addition to state and federal legislative activities, each of these factors, influence the goals, baselines, strategy, and composition of the Residential market sector plan. The discussion that follows briefly describes how the policy influences affect the approach taken by California's IOUs in 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 be designed with careful consideration of the results of statewide potential studies and with evidence to demonstrate the value of the approach. For example, the additional savings claimed for bundling of measures should be demonstrated.

#### **iii. Incentive levels**

Refer to Sections '6 a iii' within the applicable sub-programs.

## **Residential Energy Efficiency Program**

### **iv. Marketing and outreach plans**

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 California's 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 in order 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 (ME&O) to modify consumer behaviors towards EE which not only feeds market demand for efficient products and services, but provides a reinforcing conduit for other DSM programs<sup>19</sup>.

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 EE potential information developed by studies funded by California ratepayers<sup>20</sup>. 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); and
- Use of mass marketing and other outreach campaigns and educational efforts to motivate consumer attitude shifts.

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<sup>19</sup> 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 PIPs for additional details.

<sup>20</sup> Refers to the 2006 and 2008 EE Potential studies by the CPUC and Itron.

## **Residential Energy Efficiency Program**

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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 Sections '6 a iv' in the appropriate PIPs for more details about the marketing and outreach plans of 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 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. Refer to the respective PIPs for complete details.

### **v. IOU program interactions**

In addition to advancing the initiatives of California's BBEES, 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



## **Residential Energy Efficiency Program**

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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<sup>21</sup>. The portfolio also offers several rate assistance programs for income-qualified individuals. The 2009 - 2011 portfolio is more comprehensive than in previous years because it offers several integrated 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.

### **vi. Similar IOU and POU programs**

This program was developed as a collaborative effort among California's IOUs and the CPUC's 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 potential 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<sup>22</sup>. The statewide residential energy efficiency programs 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, SCE'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 Sections '6 a vi' within the appropriate sub-programs and local PIPs.

### **b) Program delivery and coordination**

#### **i. Emerging Technologies (ET) 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

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<sup>21</sup> 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](http://info.sen.ca.gov/pub/07-08/bill/asm/ab_1101-1150/ab_1109_bill_20070717_amended_sen_v94.pdf)]

<sup>22</sup> 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.

## **Residential Energy Efficiency Program**

emerging technologies: Business and Consumer Electronics (including Plug Load efficiency) and Advanced Consumer 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 & 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 WE&T (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**

Refer to the budget table within sub-programs.

### **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 staffs work through statewide IOU emerging technologies efforts to influence the strategies and approaches for research and

## **Residential Energy Efficiency Program**

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development that can improve future program delivery. Reference the joint IOU Emerging Technologies PIP for insight into efforts such as PIER.

### **viii. CEC work on C&S**

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 PIP for insight into these efforts, and sub-program PIPs for specific details, as appropriate.

### **ix. Non-utility market initiatives**

As a partner in the DOE'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 PIP for greater details on these efforts. Refer to the joint Workforce, Education and Outreach PIP 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.

### **c) Best Practices**

California's EAP requires a decrease in per capita electricity use through increased energy conservation and efficiency measures<sup>23</sup>. Policy in California 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-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

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<sup>23</sup> EAP <http://docs.cpuc.ca.gov/published/Report/28715.ht>

## **Residential Energy Efficiency Program**

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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.

### **d) Innovation**

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

Reference individual sub-PIPs for specific details of innovative efforts undertaken.

### **e) 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.

### **f) Integration across resource types**

As available, the IOUs bundle service offerings across resource types including electric, gas and water. When 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.

### **g) Pilots**

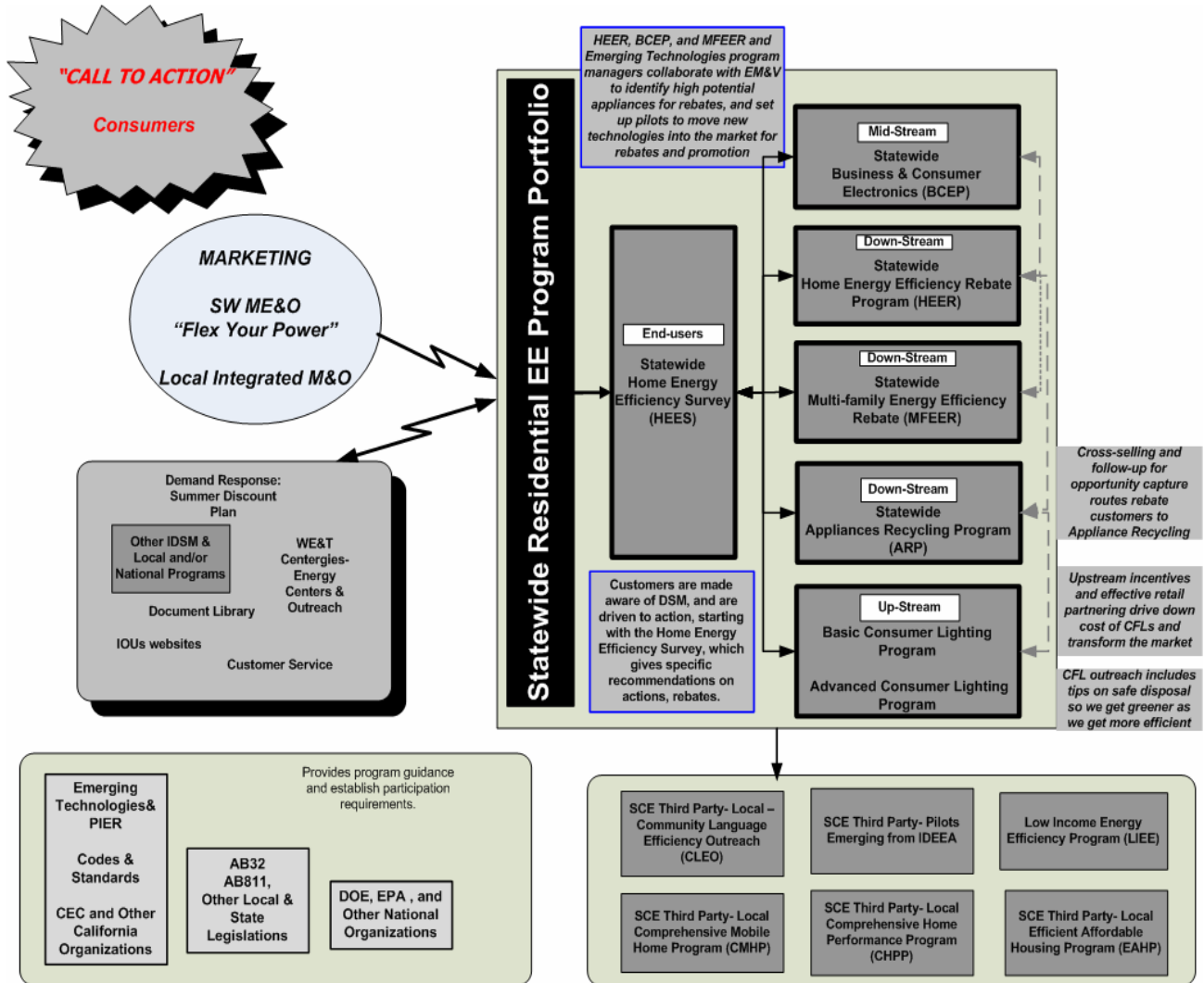
Joint IOU efforts include an Emerging Technologies offering, an element of which includes a pilot program offering named TRIO. For details on innovative approaches external to the residential portfolio offering, refer to the statewide Emerging Technologies PIP.

### **h) EM&V**

Updates to the Residential Appliance Saturation Study and the statewide potential studies will be undertaken during the 2009-2011 cycle. Both of these efforts will provide crucial insight into the residential market, informing stakeholders about the state of the market, as well as the appropriate emphases for future efforts. See the individual PIPs for planned EM&V activities in each of the sub-programs.

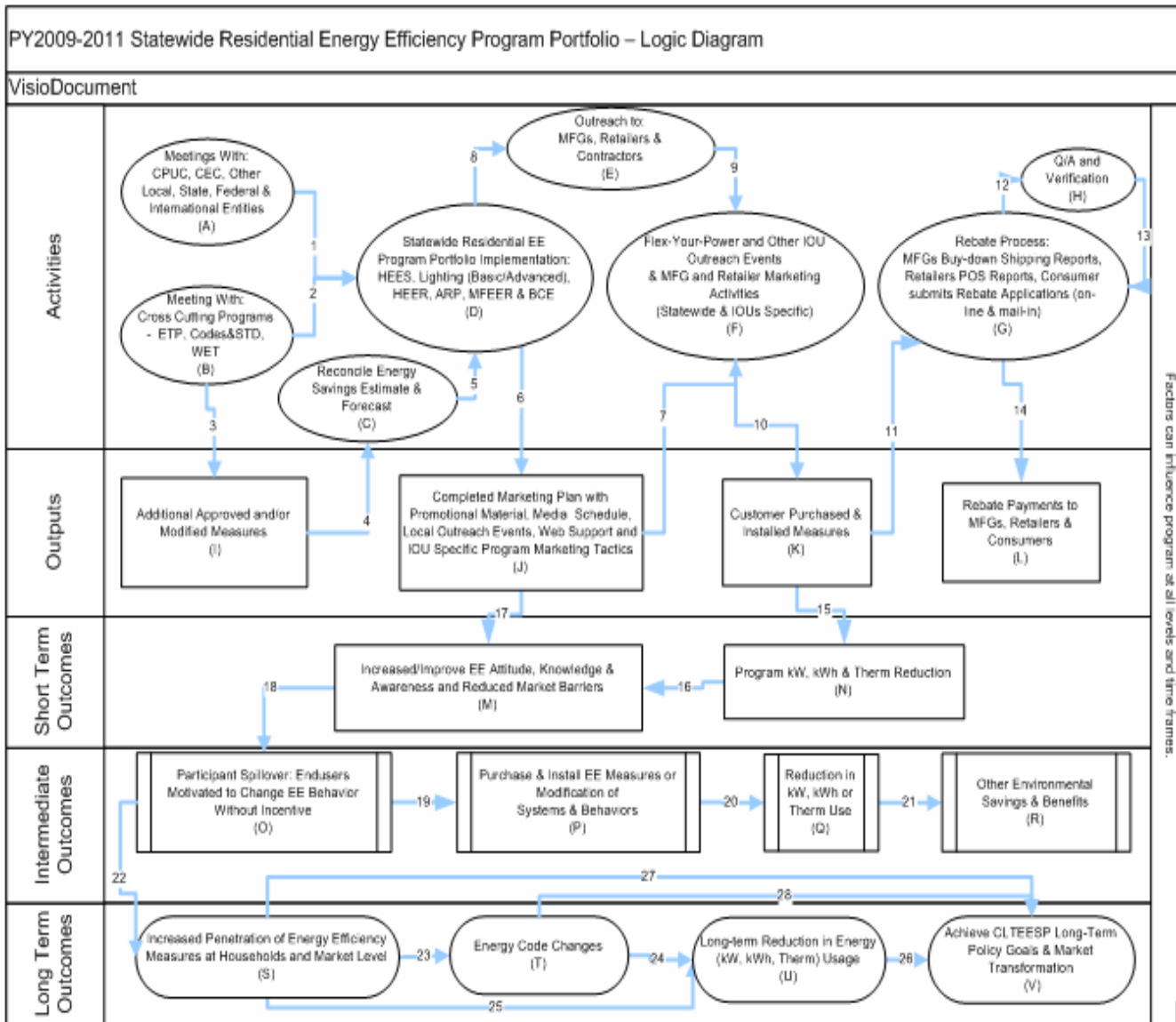
# Residential Energy Efficiency Program

## 7. Diagram of Program



# Residential Energy Efficiency Program

## 8. Program Logic Model



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## **Residential: Home Energy Efficiency Survey Program**

- 1. Program Name:** Home Energy Efficiency Survey Program  
**Program Type:** Core

**2. Projected Program Budget Table**

**Table 1** - reference the REEP for budget details

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

**Table 2** - reference the REEP for projected gross impact details

**4. Program Description**

**a) Describe program**

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

The program provides customers with information to help them become familiar with ways to control and reduce energy and water usage in their homes by offering customers up to four options (mail-in survey, on-line survey, phone survey, and in-home survey) in multiple languages (English, Spanish, Vietnamese, Chinese, and Korean) including an action plan for implementation. The program also 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 Southern California’s diverse culture and provides efficiency recommendations based on a whole-house system approach.

**b) List measures**

Measures or offerings vary by IOU, as outlined below:

<b>Measures</b>	<b>SCE</b>	<b>SCG</b>	<b>PG&amp;E</b>	<b>SDG&amp;E</b>
On-line Survey	X	X	X	X
Mail-in Survey	X	X	X	X
In-home Survey	X	X	X	n/a
Telephone Survey	X	n/a	X	n/a
Multi-family Survey	X	X	n/a	X
CFLs	X	n/a	X	X



## **Residential: Home Energy Efficiency Survey Program**

Faucet Aerators	X	X	tbd	tbd
Showerheads	X	X	tbd	tbd
LED night lights	X	n/a	tbd	tbd
Air-Filter Alarms	X	X	tbd	tbd

### **c) List Non-incentive Customer Services**

The HEES Program offers customers detailed reports on their actual energy usage, including:

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

In addition, the program provides information and literature on:

- Water conservation;
- Energy efficiency and IDSM Programs:
  - Residential Energy Efficiency
  - Summer Discount Plan (SDP)
  - California Solar Initiative (CSI)
  - Peak Demand Initiatives (DR)
  - Low Income Energy Efficiency (LIEE).

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

## **5. Program Rationale and Expected Outcome**

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

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

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

## **Residential: Home Energy Efficiency Survey Program**

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### **b) Market Transformation Information**

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

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

### **c) Program Design to Overcome Barriers**

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

- Lack of 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. The HEES report will provide participants with usage and comparison data among similar households.

## **Residential: Home Energy Efficiency Survey Program**

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 encourage 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 CBOs, and through any other appropriate mechanism.

### **d) Quantitative Program Targets**

The proposed targets may be modified due to funding restrictions, especially for the 2009 bridge funding year.

**Table 5**

<b>SCE</b>	Program Target by 2009	Program Target by 2010	Program Target by 2011
On Line Survey	18,750	21,875	21,875
Mail In Survey	11,250	13,125	13,125
In Home Survey	6,750	7,875	7,875
Telephone Survey	750	875	875

### **e) Advancing Strategic Plan goals and objectives**

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

- Goal 2.2: Residential Sector including Low-Income - Tracking Transform home improvement markets to apply whole-house energy solutions to existing homes - The 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. HEES will provide educational services to participants on plug-load measures such as “smart plug strips”, as appropriate.
- 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.

## **Residential: Home Energy Efficiency Survey Program**

- 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 a contracted (and in some cases utility staff) workforce who will be trained in areas of energy conservation and technologies towards an increased knowledge base 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 WE&T Strategic Plan intended to ensure that minority, low-income and disadvantaged individuals fully participate in training and education programs at all levels of demand-side management and energy efficiency.

### **6. Program Implementation**

#### **a) Statewide IOU coordination**

**i. Program name:** Home Energy Efficiency Survey Program

**ii. Program delivery mechanisms**

The HEES Program is delivered to customers in four ways. Customers can complete the survey On-Line, by mail, by telephone (offered by PG&E and SCE only), or by having a surveyor visit their home (offered by SCE, SCG, and PG&E only).

**iii. Incentive levels**

This program does not offer monetary incentives.

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

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

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

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

**vi. Similar IOU and POU programs**

The HEES program provides a consistent and recognizable presence throughout the state and offers a menu of similar services and processes implemented statewide by PG&E, SDG&E, SCE and SCG. The program will work with

## **Residential: Home Energy Efficiency Survey Program**

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municipalities, such as LADWP, to offer this service. Efforts will be made to provide consistent reporting of survey results across the state.

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

HEES will leverage its survey information to provide information and referrals to other energy efficiency programs such as HEER, ARP and others. During the 2009-2011 program cycle, HEES will be working on a pilot program to test a multi-family energy survey service. Aggregated data from online surveys and other program efforts will be examined to provide direct marketing opportunities with water conservation efforts, demand response programs, and low-income programs, as applicable.

The HEES program collaborates with the Low Income Energy Efficiency (LIEE) Program by making the service available to them and by providing customers with residential program information. HEES will coordinate with local and other outreach efforts, as appropriate.

### **b) Program delivery and coordination**

#### **i. Emerging Technologies (ET) 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 & 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 a contracted (and in some cases utility staff) workforce who will be trained in areas of energy conservation and technologies toward an 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 WE&T Strategic Plan intended to ensure that minority, low-income and disadvantaged individuals fully participate in training and education programs at all levels of demand-side management and energy efficiency.

## **Residential: Home Energy Efficiency Survey Program**

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### **iv. Program-specific marketing and outreach efforts**

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

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

The HEES program is a successful effort to reach consumers through self, and in some cases direct, contact in ways that consumers prefer. The HEES Program will outreach to customers in multiple languages and through different delivery channels, to perform a variety of energy surveys. The delivery outreach and marketing efforts may include: direct mail, e-mail, online banner ads, and news media. Utilities will improve HEES prominence through creative initiatives such as: analyzing websites to insure high visibility of HEES; utilizing telephone representatives to explain and suggest HEES to callers; describing HEES in conservation literature; promoting HEES in conjunction with community outreach efforts, and so on.

### **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 C&S**

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) Best Practices**

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:

## **Residential: Home Energy Efficiency Survey Program**

- 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; and
- Targeted marketing: On a statewide level, the HEES program will continue to focus HEES marketing campaigns toward residential and multifamily households with higher usage. As mentioned, the program may also be utilized as an outreach mechanism in conjunction with CBOs, 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**

- The SCE HEES program will integrate the On-Line aspects of the program with the upcoming On-line Buyers' Guide Program. As overall concepts are developed, integration specifics will be determined as to ensure seamless integration to the customer.

### **SCE/SCG**

- 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 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; and
- 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

## **Residential: Home Energy Efficiency Survey Program**

adjusted to reflect changes in usage patterns and energy savings values. Values used will be validated by the DEER Database, SCE Work Papers, or SCE's Engineering and Design Resources Team.

### **SDG&E**

- The SDG&E HEES program will partner with K-12 stakeholders to ensure that energy education is provided from kindergarten through high school;
- SDG&E will integrate the On-Line HEES with customer historic data to streamline the customer experience, making it more efficient and convenient; and
- SDG&E will manage all collateral and related outreach through the Residential Customer Education Information Program.

### **PG&E**

- PG&E's Universal Energy Audit Tool (currently in development) will centralize both residential and non-residential energy survey recommendations and calculations and customer survey information in a central database. This will provide uniformity of information and presentation, allow integration of energy conservation, energy efficiency, DR and SG, establishment of benchmarks, and use models, and improve data management and reporting; and
- PG&E's on-site Home Energy Efficiency Survey will incorporate a logic protocol that will assist the utility representative in determining whether the customer is a viable candidate for a technical performance analysis. Program design, implementation details and component elements of the logic protocol to be developed.

### **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-effectiveness 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.



## **Residential: Home Energy Efficiency Survey Program**

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### **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 LIEE programs and other programs that will help them lower their energy consumption.

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

### **h) EM&V**

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

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

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

## **Residential: Home Energy Efficiency Survey Program**

The Statewide HEES program has been continued from past program cycles but has a few new program elements. The HEES program has planned a preliminary process evaluation near the end of the first program year to address specifically how well the new program elements are operating, and to obtain recommendations on how to improve program operations. After the beginning of the last program year, a full process evaluation will address researchable issues based on the program theory and logic model. These issues will include the following as appropriate:

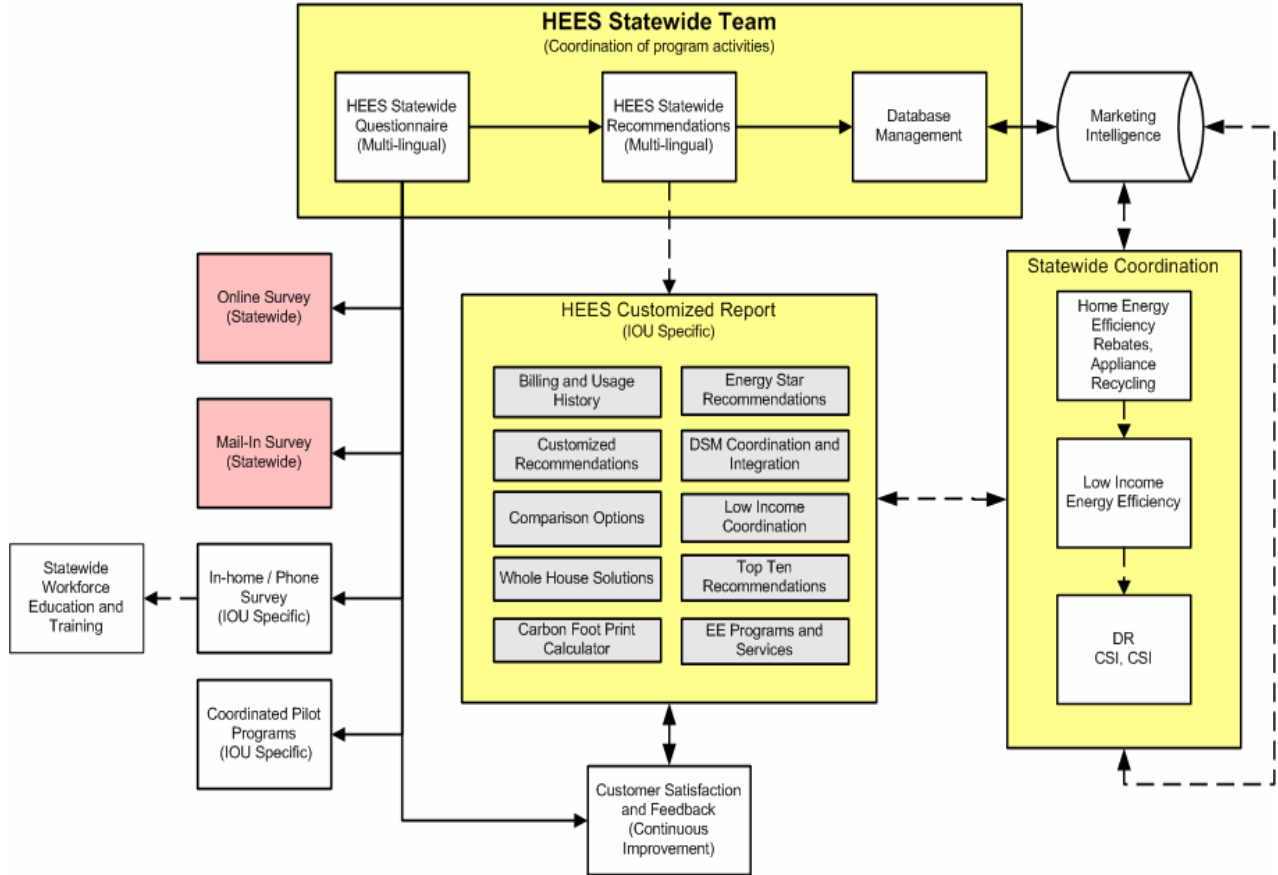
- How well HEES participants learned about advancing whole-house energy solutions;
- How well HEES participants learned behavioral solutions to plug-load energy consumption;
- How effective was the multi-language outreach;
- Whether incentive levels are appropriate to spur actions toward participation;
- Whether integration of water-related measures and information was useful to the customer;
- Whether the pilot programs with the LIEE program were effective; and
- Whether the individual IOU pilot programs were successful.

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

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

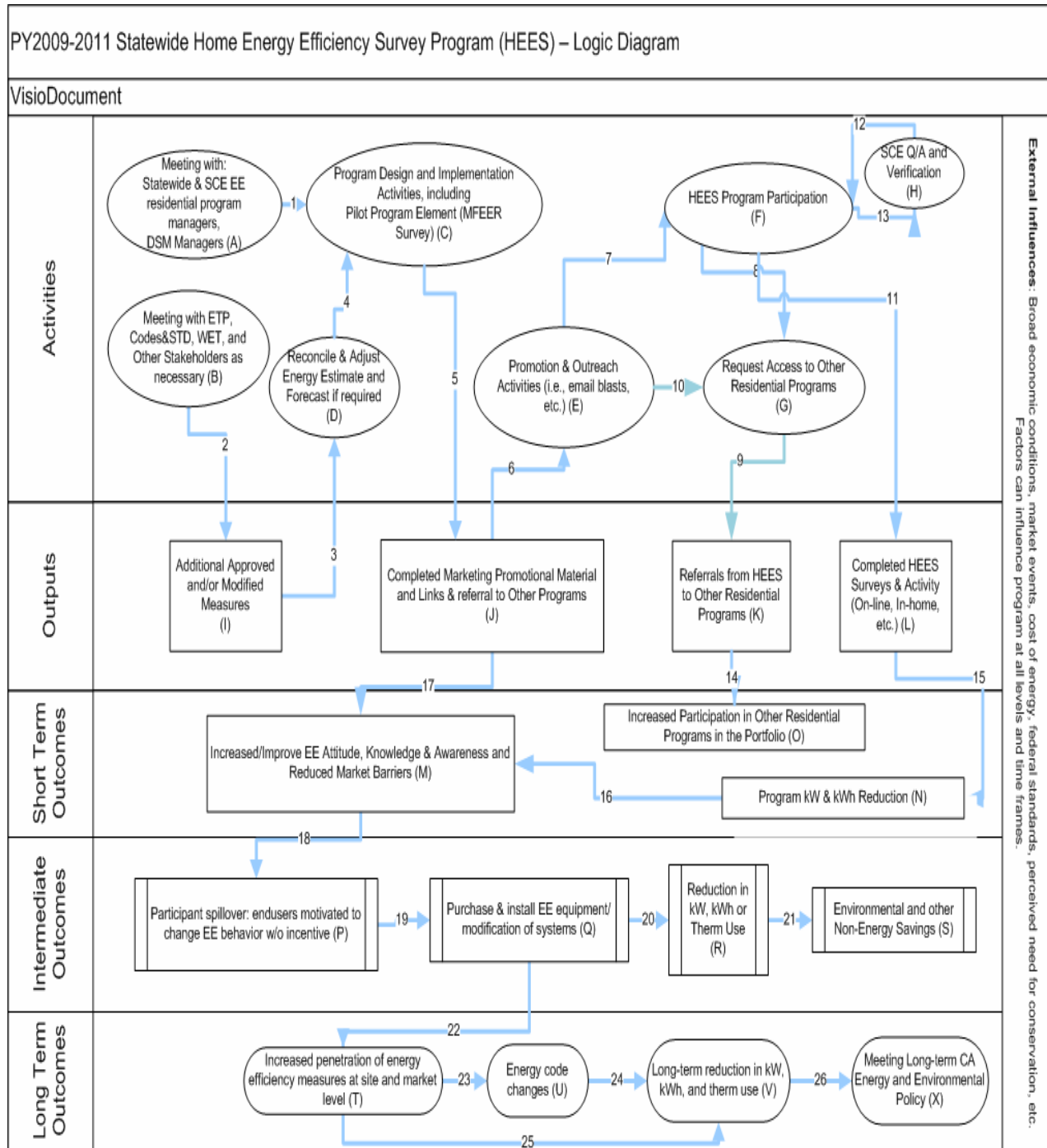
# Residential: Home Energy Efficiency Survey Program

## 7. Diagram of Program



# Residential: Home Energy Efficiency Survey Program

## 8. Program Logic Model



1b

## **Residential: Residential Lighting Incentive Program for Basic CFLs**

**1. Program Name:** Residential Lighting Incentive Program for Basic CFLs  
**Program Type:** Core

**2. Projected Program Budget Table**

**Table 1** - reference the REEP for budget details

**3. Projected Program Gross Impacts Table**

**Table 2** - reference the REEP for projected gross impact details

**4. Program Description**

**a) Describe Program**

The IOUs' residential upstream lighting incentive programs represent a continuance of the existing residential lighting incentive programs within the IOUs' residential energy efficiency portfolios. For 2009-2011, the programs have been split into separate programs: the Residential Lighting Incentive Program for Basic CFLs and the Advanced Consumer Lighting Program. The lighting incentive programs have been an important part of utility EE portfolios for many years and have been successful in making inroads toward the market development of efficient lighting products within California's homes and businesses. Lighting remains a significant opportunity in terms of economic potential for California's electricity consumers<sup>24</sup>. A strategic aspect to IOU lighting programs that is new for the 2009-2011 program cycle is the Lighting Market Transformation strategy. The residential upstream lighting incentive programs will be implemented in coordination with the Lighting Market Transformation strategy.

Much of the participant activity of this program is a result of targeting low income households through demographic-based allocations to stores in disadvantaged communities. This has an integrating effect when these households are given CFLs through low-income programs, which generate customer acceptance and additional sales.

Within California's energy efficiency policy, and outlined in the Strategic Plan, the energy intensity within residences will be addressed. Any activity to do so must include the adoption of efficient lighting technologies, and the IOUs' residential lighting incentive programs are positioned to deliver sustainable energy efficiency benefits for many years to come.

This program, 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 to customers. It introduces energy efficient lighting products to the market and strives to influence future purchasing behaviors of

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<sup>24</sup> CPUC/Itron Potential Study from September 2008.

## **Residential: Residential Lighting Incentive Program for Basic CFLs**

customers. More than 370 retailers at over 2,700 store locations are expected to participate. No sub-programs within this program will be implemented, whereas the Advanced Consumer Lighting program will house new sub-programs and those repeated from previous years.

The program will integrate into its promotional materials messaging to promote other energy efficiency and low-income programs, including numerous pathways to a variety of energy-efficient solutions.

Although this program is designated as residential, it does have characteristics that result in nonresidential installations. By virtue of the fact that retail outlets cannot control whether products are purchased for residential or nonresidential, some installations will inevitably take place in business environments. This is beneficial for the program because of the greater energy savings and demand reduction in those environments. Where possible, the program attempts to drive increased penetration into nonresidential sectors by partnering with retailers that cater to businesses, such as large office supply stores, and club stores with business member discounts.

### **b) List of Measures**

This program will offer ENERGY STAR®-labeled screw-in compact fluorescent bare spiral lamps of up to and including 30 watts. Lamps must be single brightness. They must not be dimmable or 3-way products because those products will be part of the Advanced Consumer Lighting Program. The most common wattage and lumen levels are: 13 to 15 Watt at 800 to 900 lumens, 18 to 20 Watt at 1,100 to 1,200 lumens, and 23 to 26 Watt at 1,600 to 1,800 lumens. All other combinations up to 30 Watts will be acceptable if they are ENERGY STAR®-listed. Although we use the term “bare spiral”, if bare tube CFLs of other shapes are introduced, they will fall into the category of this program.

This program will run concurrently with the Advanced Consumer Lighting program, which will include all dimmable, three way, specialty bulbs, “super” CFLs, fluorescent fixtures, and non-fluorescent products. All upstream measures from the two programs will be combined into one unified program offering to participants. This does not reduce the comprehensiveness of either the lighting portfolio or the bare spiral CFL measures. Reporting for the two programs will be separate.

Basic CFL Lumens	Incentive
0 to 799	\$1
800 to 1,099	\$1.25
1,100 to 1,599	\$1.75
1,600 or greater	\$2

### **c) Non-incentive customer services**

These services include advertising and promotion, as well as activities that leverage other parts of the organization, such as energy efficiency customer phone line access, web access to lighting pages, access to web contact page to send messages to the

## **Residential: Residential Lighting Incentive Program for Basic CFLs**

program staff, education, information, and training. The program will also leverage other energy efficiency programs by mentioning them in its outreach materials, including links to energy survey pages and other pathways to efficiency. The IOUs have no plans to distribute free basic CFLs under this resource program.

### **5. Program Rationale and Expected Outcome**

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

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

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

#### **b) Market Transformation Information**

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

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

#### **c) Program Design to Overcome Barriers**

Despite the huge market potential for non-dimmable bare spiral up to 30 Watts, steep barriers to tapping that potential appear to exist, indicated by the fact that according to the most recent saturation studies 80% of lamps sold in California are still non-CFL (incandescent, halogen and special)<sup>25</sup>. Based on the most recent California Lighting and Appliances Saturation Study data, by RLW, in 2005, only 11.4% of SCE household sockets are occupied by CFLs (11.7% for PG&E and 7.6% for SDG&E). This data suggests that we still have a way to go to meet the proposed 60% market share or saturation goal. Although the Advanced Consumer Lighting Program features a wider variety of solutions to these barriers, this program is designed to continue aggressively in overcoming the most important barriers to non-dimmable, bare spiral purchases and installations. The basic bare spiral will likely always be the least costly, high quality choice of CFLs for consumers. Therefore, it has more growth potential to fill sockets currently containing incandescent lights than any other type of CFL.

The initial price market barrier still exists for these CFLs. This program is designed to mitigate high initial cost with its upstream incentive structure, which is synergistic because it results in price reductions in excess of the incentives. The program

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<sup>25</sup> California Residential Efficiency Market Share Tracking: Lamps 2007 (draft report), prepared by Itron, Inc., April 2007.



## **Residential: Residential Lighting Incentive Program for Basic CFLs**

encourages low retail pricing and educates retailers that high volume sales at low prices generally produce their greatest profitability overall.

CFLs are not adaptable to all sockets due to issues like size and taper constraints. This creates a barrier. The program influences manufacturers to offer products using a T2 or smaller size, with a smaller, more tapered base to fit into more sockets.

A large knowledge gap still exists among many customers who have never used CFLs. The program uses bill inserts, special events, and promotional materials to expose more people to the benefits of CFLs.

### **d) Quantitative Program Targets**

The proposed targets may be modified due to funding restrictions, especially for the 2009 bridge funding year.

**Table 5**

Lighting Program for Basic CFLs	Program Target by 2009	Program Target by 2010	Program Target by 2011
Increase Participating Retail Locations	10% over 2008	10% over 2009	10% over 2010
Increase Retailers Visited and Trained	10% over 2008	10% over 2009	10% over 2010
Increase Retailer Mailings Featuring Program Requirements and Selling Tips	20% over 2008	20% over 2009	20% over 2010
Increase products over 26 Watts	10% over 2008	10% over 2009	10% over 2010

### **e) Advancing Strategic Plan Goals and Objectives**

This program aggressively advances the goals, strategies and objectives of the Strategic Plan by encouraging the development of more energy-efficient lighting. This is accomplished by tapping the economic potential of available lighting technologies. The program does so by encouraging the manufacture of and motivating the adoption of high efficiency solutions. The IOUs' residential lighting incentive programs were designed to be compliant with the Huffman Bill<sup>26</sup>, and this program will be coordinated with the Codes & Standards program to ensure that the impacts of any code changes are incorporated into program design and implementation. This program will support educational efforts to enhance the

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<sup>26</sup> The Huffman Bill (AB 1109) directs the California Energy Commission (CEC) to develop and implement a strategy for reducing California's energy consumption for general purpose indoor lighting by 50 percent by the year 2018. 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](http://info.sen.ca.gov/pub/07-08/bill/asm/ab_1101-1150/ab_1109_bill_20070717_amended_sen_v94.pdf)]

## **Residential: Residential Lighting Incentive Program for Basic CFLs**

public's understanding of AB32<sup>27</sup> by relating carbon reduction effects of participation in energy efficiency programs to program participants. Efforts to educate the public on the contributions of energy efficiency in reducing green house gases take place via brochures, direct mailings, direct marketing campaigns and/or other appropriate means.

The prominent economic opportunity for residential energy efficiency is available in lighting. More potential for energy savings exists with energy efficient lighting than with any other technology at present. Much of that potential can be fulfilled through the market for bare spiral CFLs up to 30 Watts.

Energy efficiency is the least cost, most reliable, and most environmentally sensitive resource, and minimizes our contribution to climate change. Bare spiral CFLs are among the least costly, most reliable, and most environmentally-sensitive energy efficiency measures with the largest technical market potential.

In recognition of the great economic potential remaining for lighting in California's homes, and in alignment with the PUC's BBEES and long-term Strategic Plan, this program continues to drive the transformation of the lighting market in Southern California. The path towards zero-net energy homes requires a broad and comprehensive approach on many fronts including technology, training, codes and standards and innovative practices, plus the continual promotion of more efficient products in the marketplace. This program continues many years of successful activities to advance the market transformation of lighting in California by providing cost-competitive lighting choices to consumers via discounted CFLs to retailers.

In accordance with the Strategic Plan, the Residential Lighting Incentive Program for Basic CFLs contributes to the expanded penetration of more efficient products by supporting state and federal legislation that requires a transition from general service incandescent lighting to more efficient solutions. A new generation of incandescent lamps will take their place. The IOUs' lighting programs will be essential in transitioning the public to this new paradigm, thereby greatly mitigating the inherent difficulties of supporting the legislation at the point of public behavior.

This program can greatly contribute to the aggressive scale-up of the enabling policy framework supporting energy efficiency investment that is central to the Strategic Plan. Key components are adequate financial incentives and funding with robust administration. When applied to this program, the IOUs can actualize the vision of the framework.

According to recent findings, CFL market penetration in California appears to have grown nearly 100% (from roughly 10% to slightly over 20%) in 2007 compared to

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<sup>27</sup> California Assembly Bill 32 (California Global Warming Solutions Act of 2006) (August 31, 2006).  
[<http://www.arb.ca.gov/cc/factsheets/ab32factsheet.pdf>]

## **Residential: Residential Lighting Incentive Program for Basic CFLs**

previous years. This is due primarily to the commensurate expansion of funding for bare spiral CFL incentives in that year. The correlation between increased funding and market penetration is borne out year after year. In 2009 – 2011, market penetration will be increased or reduced on the basis of that criterion. Current funding parameters necessitate a reduction in market penetration for 2009 - 2011 compared to previous years because IOUs are decreasing the total ratio of basic CFLs to overall lighting products in the portfolio. For that reason, increased market penetration milestones are not specifically applicable to this program. Increased market penetration milestones are applicable to the Advanced Consumer Lighting program in light of its relationship to this program. The value of the program to support State efforts, like AB1109, is equally correlative to funding parameters. Primarily, the more CFLs incentivized, the more the program will bolster the effects of new equipment codes. Secondly, promotion to support the regulation includes customer education and awareness about future standards. This can be administered through the promotional activities of the program. The effect of these efforts on a successful transition to future code acceptance can be quantified only after applicable EM&V protocols are established. This would include the selection of milestone metrics.

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

4-1: Drive continual advances in lighting technology through research programs and competitions - The Lighting Programs contribute to the expanded penetration of more efficient products by supporting state and federal legislation that require a transition from general service incandescent lighting to more efficient solutions. A new generation of incandescent lamps will take their place. The IOUs' lighting programs will be essential in transitioning the public to this new paradigm, thereby greatly mitigating the inherent difficulties of supporting the legislation at the point of public behavior.

4-2: Create demand for improved lighting products through demonstration projects, marketing efforts, and utility programs - The Residential Lighting programs will support educational efforts to enhance the public's understanding of AB32 by relating carbon reduction effects of energy efficiency programs to program participants.

4-3: Continuously strengthen standards - The IOUs' residential lighting incentive programs were designed to be compliant with the Huffman Bill, and this program will be coordinated with the Codes & Standards program to ensure that the impacts of any code changes are incorporated into program design and implementation.

4-4: Coordinated phase out of Utility promotions for purchase of CFLs - The Residential Lighting Incentive Program for Basic CFLs contributes to the expanded penetration of more efficient products by supporting state and federal legislation that requires a transition from general service incandescent lighting to more efficient solutions. A new generation of incandescent lamps will take their place. The IOUs' lighting programs will be essential in transitioning the public to this new paradigm,

## **Residential: Residential Lighting Incentive Program for Basic CFLs**

thereby greatly mitigating the inherent difficulties of supporting the legislation at the point of public behavior. The Strategic Plan describes goal results as the state of beginning a phase-out of traditional mass market CFL bulb promotions and giveaways. Since the goals are met by beginning, not ending the phase-out of promotional activities for basic CFLs, then it cannot be interpreted that full phase-out, especially of incentives, is suggested during this period. Transition to the environment envisioned by the Huffman Bill, will require that incentives and support for basic CFLs not be phased out between 2009-2011. However, the IOUs will transition from traditional mass market CFL bulb promotions and giveaways to untraditional activities by a shift of focus that aggressively features in promotional outreaches, advanced consumer lighting rather than basic CFLs.

4-5: Ensure environmental safety of CFLs and other emerging lighting solutions -In alignment with AB 1109, the program will support a statewide approach for continued customer education and public awareness for proper CFL disposal.

### **6. Program Implementation**

#### **a) Statewide IOU coordination**

**i. Program name:** Residential Lighting Incentive Program for Basic CFLs

#### **ii. Program delivery mechanisms**

The program primarily uses a manufacturer wholesale buy-down mechanism, but retains flexibility for retailer-direct midstream incentives, where beneficial.

#### **iii. Incentive levels**

Published incentive levels will remain the same as in the 2006-2008 program as illustrated below. Incentive levels will also continue to be downward negotiable by manufacturer and retailer.

Basic CFL Lumens	Incentive
0 to 799	\$1
800 to 1,099	\$1.25
1,100 to 1,599	\$1.75
1,600 or greater	\$2

#### **iv. Marketing and outreach plans**

The most successful marketing involves in-store signage and displays. Such outreaches will see quality upgrades and signage will be graphically consistent among utilities. One or two bill inserts promoting and educating customers on high efficiency residential lighting will be sent per year. Multi-program brochures, web pages, and retailer outreach will also be used. The most effective form of advertising is through in-store displays. Manufacturers are responsible to erect eye-catching displays that include multiple forms of signage with stickers on individual products explaining that the discount is made possible by the utility. Such advertising demonstrates its effectiveness year after year through expansive

## **Residential: Residential Lighting Incentive Program for Basic CFLs**

sales. Many manufacturers work with retailers to coordinate additional outreach such as circulars, newspaper advertisements, and occasionally radio spots.

The IOUs issue bill inserts to provide mass exposure to the program, host promotional web pages (e.g. [www.sce.com](http://www.sce.com)), and have conducted outreach efforts that use various media to solicit consumers to take the ENERGY STAR® pledge, committing to replace standard lighting with energy efficient products. Public awareness of the program will be enhanced through activities including referrals from the 'On-line Buyer's Guide, the statewide IOU marketing campaign, income-qualified programs, and other DSM activities.

### **v. IOU program interactions with government agencies and programs**

The IOUs use the CEC as a resource for complementary programs and data, feeds into CEC initiatives through input such as the AB1109 scoping activities, and sits on joint committees with CEC personnel. The Torchiere and Plug-in Lamp Exchange program element is designed for use primarily among local government partnerships.

Indirectly the program is involved with ARB on occasion, through corporate initiatives based on environmental requirements such as in AB32. According to our calculations, in the last few years, the Residential Lighting Incentive Program has contributed more toward carbon reduction than any other energy efficiency program in our portfolio. Using the CEC's 2008 update of 6.9 lbs per kWh in California, the 2006–2008 carbon saved by SCE's program calculates to more than 4.4 million lifecycle tons of carbon reduction. Due to the language of AB 32, this helps fulfill air quality mandates and objectives. The IOUs have integrated CFLs with water and gas, through energy efficiency kits that promote conservation of water, gas, and electricity, but not in this program. The Livingwise and Lightwise programs are historical examples.

### **vi. Similar IOU and POU programs**

Programs like this are in place within many utilities and energy efficiency program suppliers nationwide. We interact with their program managers during ENERGY STAR® Conferences, CEE meetings, steering committees, the PEARL board, and team workshops.

## **b) Program delivery and coordination**

### **i. Emerging Technologies program**

Each utility lighting program has meetings with its emerging technology program group and considers new technologies presented by them. Program managers contribute jointly with emerging technology engineers on steering committees, boards, and workshops. Emerging technology program data is considered in program planning. Program managers feed into selection of emerging technologies to review.

## **Residential: Residential Lighting Incentive Program for Basic CFLs**

### **ii. Codes and Standards program**

The program staff works with Codes and Standards engineers to monitor codes and standards being designed and adopted. Where the opportunity exists, Program Managers express preferences and input to Codes and Standards Engineers who are contributors to steering committees and workshops.

### **iii. WE&T efforts**

Due to the characteristics of this program as upstream and staff driven, there is no provision for WE&T. However, the technologies of energy-efficient lighting have great potential for inclusion in other WE&T programs. They are particularly suited for those aimed at energy education. The program staff will support such efforts with information about the technologies and products.

### **iv. Program-specific marketing and outreach efforts**

The most effective marketing and outreach entails in-store displays, signage, and stickers. Other effective mechanisms are bill inserts, fact sheets, web site, multi-program brochures, retailer letters, manufacturer announcement emails, and promotional events such as the “Change-A-Light” campaign.

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

Activities that do not contribute directly to energy impacts include marketing, outreach, education, industry involvement, and involvement in non-IOU programs.

In alignment with AB 1109, the program will support a statewide approach for continued customer education and public awareness for proper CFL disposal. The IOUs and several other utilities across the state are working with the California Environmental Protection Agency’s Department of Toxic Substances Control to develop synergies that leverage this program’s activities in order to expand the CFL disposal infrastructure in California and educate consumers about responsible CFL disposal. The desired team objective will be the placement and maintenance of disposal services, involving collection bins, promotional signs, and literature racks in nearly all retail outlets participating in this program. It will involve forming teams with retailers, manufacturers, disposal services, local government partnerships, sanitation districts, third party implementers, and recyclers.

### **vi. Non-IOU programs**

The IOUs work with ENERGY STAR®, the Consortium for Energy Efficiency, the Program for Evaluation and Analysis of Residential Lighting (PEARL), the California Lighting Technology Center (CLTC), and the CEC to further their visions, goals, and priorities in the application of energy efficient lighting. The IOUs serve on the steering committees, review panels, and working groups of such organizations. The IOUs are on the PEARL board. PEARL nominates products for off-the-shelf testing, purchases products for that purpose, and send them in for testing. SCE serves on the DOE’s CALiPER Committee for quality

## **Residential: Residential Lighting Incentive Program for Basic CFLs**

standards and testing of solid state lighting. The IOUs also serve on the DOE Solid State Lighting L-Prize committee. SCE has formed a cooperative branch of the CLTC called the Southern California Lighting Technology Center (SCLTC) in SCE's Lighting Lab facility. Program staff is involved with activities of this organization by providing sample products, attending meetings, using its expertise, and working as a team in industry relations.

### **vii. CEC work on PIER**

Although the IOUs have a strong association with PIER through their Design & Engineering Services Organizations, the residential lighting programs historically have not maintained direct involvement. Efforts will be made to find practical avenues for such involvement in a way that conforms to the program parameters.

### **viii. CEC work on C&S**

The program staff will continue to attend CEC workshops pertaining to equipment and building codes related to residential lighting. The IOUs' Codes and Standards organization will continue to sustain primary involvement in these activities. The Upstream Lighting Programs will increase knowledge sharing and market insight with this group.

### **ix. Non-utility market initiatives**

The program takes part in retailer-originated market initiatives, such as Earth Day and Fall Lighting Season campaigns, parking lot sales, and ENERGY STAR® "Take The Energy Pledge" drives. The program will pursue expansion opportunities as they arise.

### **c) Best Practices**

The program approach constitutes "best practice" as evidenced by its national leadership in forward thinking, new approaches, and cost-effectiveness. It avoids lost opportunities by leveraging mechanisms like encouraging both manufacturers and retailers to include additional discounts of their own while allowing manufacturers to compete based on per-unit utility incentive amounts. It sets incentive levels so the wholesale price can be reduced to zero or near-zero levels. It employs extensive controls to avoid program abuse, overstocking, leakage, and slippage. The payment of the incentive to the manufacturer at the highest point upstream in the distribution channel creates a synergistic reduction when retailers retain the same mark-up percentages as usual.

### **d) Innovation**

The program manages market penetration and transformation from within by shifting allocations away from recently penetrated sectors and locales, and into the areas of lowest penetration and saturation. The program is innovative in its use of independent retailers, deep discount stores, and small chains. These stores are where the highest combined product volume is found and they have the lowest historical rates of free-ridership. They often coincide with low income areas where the people

## **Residential: Residential Lighting Incentive Program for Basic CFLs**

need the economic benefits of energy efficiency the most. We cultivate their participation by encouraging manufacturers to approach more of them.

### **e) Integrated/coordinated Demand Side Management**

Of the demand side management emphases: peak shaving, load shifting, valley filling, and load curtailment, the program contributes to three of them. Due to its high volume, the program substantially reduces peak demand in amounts exceeding many air conditioning programs, and thereby, significantly contributes to system peak shaving. The program contributes on a lesser scale to energy-efficient valley filling where new lighting load is added through exterior lighting and night lights. We look forward to technological advancements that might someday allow the program to contribute toward demand response through remote dimming, possibly leveraging advanced metering initiatives among the IOUs.

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**

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.

### **g) Pilots**

No pilot programs are planned to fall within the Residential Lighting Incentive Program for Basic CFLs. All planned pilots will be part of the Advanced Consumer Lighting plan.

### **h) EM&V**

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

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

- The utilities will continue to conduct the Residential Market Tracking Study to monitor product saturation. Further refinement of this report may be required to better track the lighting metrics proposed by the 2009-2011 program.
- The utility will continue to conduct process evaluation to monitor CFL awareness, purchase and disposal behavior, program participant demographics and key characteristics between program participants and non-participants.



## **Residential: Residential Lighting Incentive Program for Basic CFLs**

- As part of the WET&S program process evaluation, the utility will continue to monitor new curriculum design to meet the needs of the future California workforce.

This program is an important element to fulfill the CPUC's long-term EE strategy plan. As we know, one of the first steps to adopting EE measures is to have awareness. With consistent implementation, the CFL lighting program has achieved 95% awareness in 2008, up from 68% from 2001. Likewise, the CFL purchase rate in California has steadily increased since 2001. As indicated in our interim process evaluation study results<sup>28</sup>, in 2008, 70% of consumers have purchased at least one CFL as compared to 35% in 2001. As reported by the draft "California Residential Efficiency Market Share Tracking: Lamps 2007" report, by Itron, the annual (non-California) US lamp sales consisted of nearly 10% CFLs. In contrast, the annual California lamp sales consisted of nearly 20% CFLs. All these studies confirm the steady progress the program is making toward meeting California long-term EE strategy plan and bold vision. Due to concerns for free-ridership, the Basic Lighting program has taken action to set 2009-2011 program goals to reduce the amount of rebate allocations to big box retailers. This action is consistent with the evaluation findings from the 2004-2005 study.

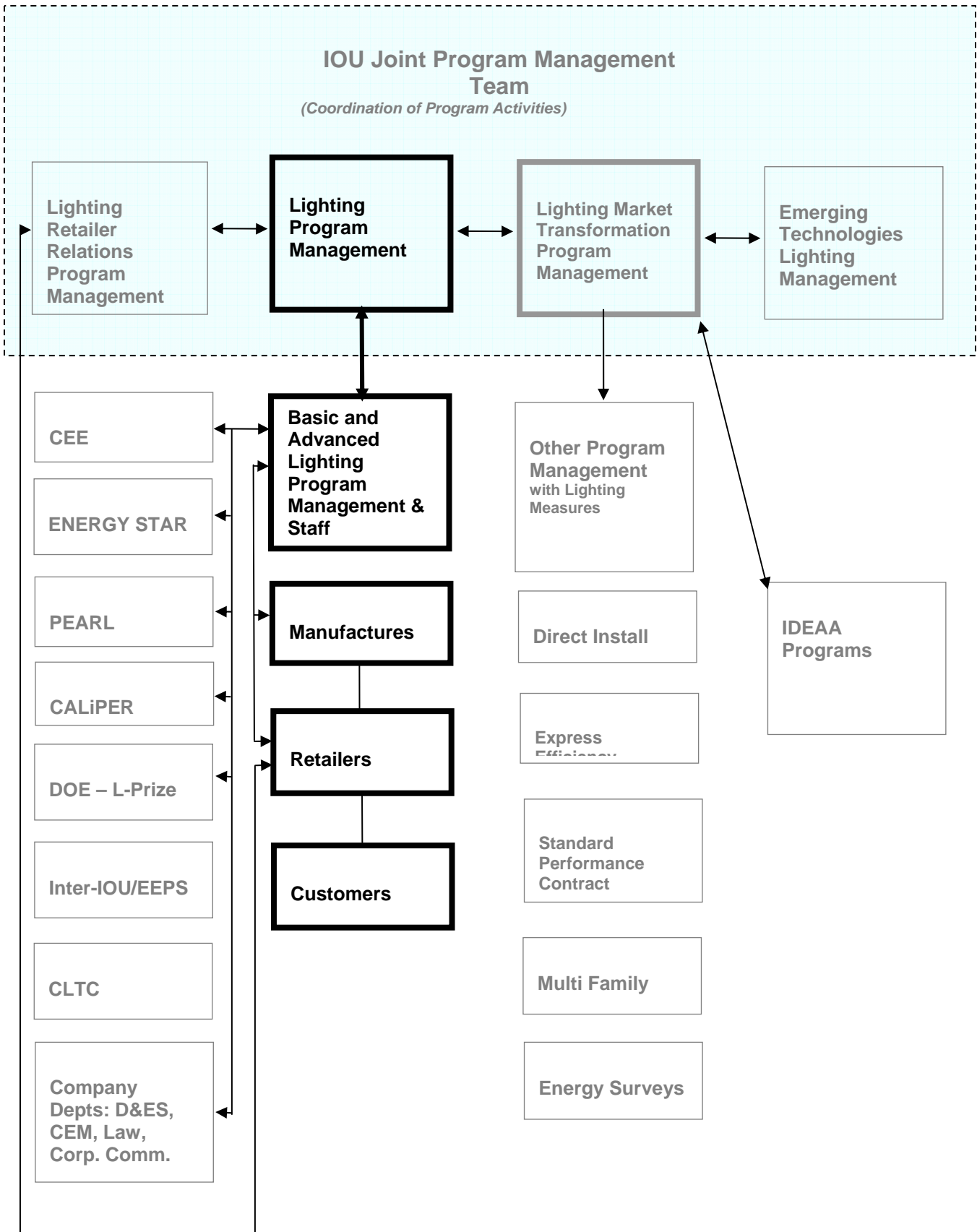
This program has an indirect link to the WE&T needs. Although this program primarily targets CFL manufacturers, retailers and end-users, topics such as lighting design for buildings, lighting standards or efficiency LED lighting are important topics for the workforce of the future. As part of the WE&T Synergy Program (WET&S) effort, sub-programs such as Energy Centers (CTAC/AGTAC) and Building Operator Certification programs currently offer these classes and are committed to design new classes to fill gaps.

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<sup>28</sup> KEMA, 12/2000

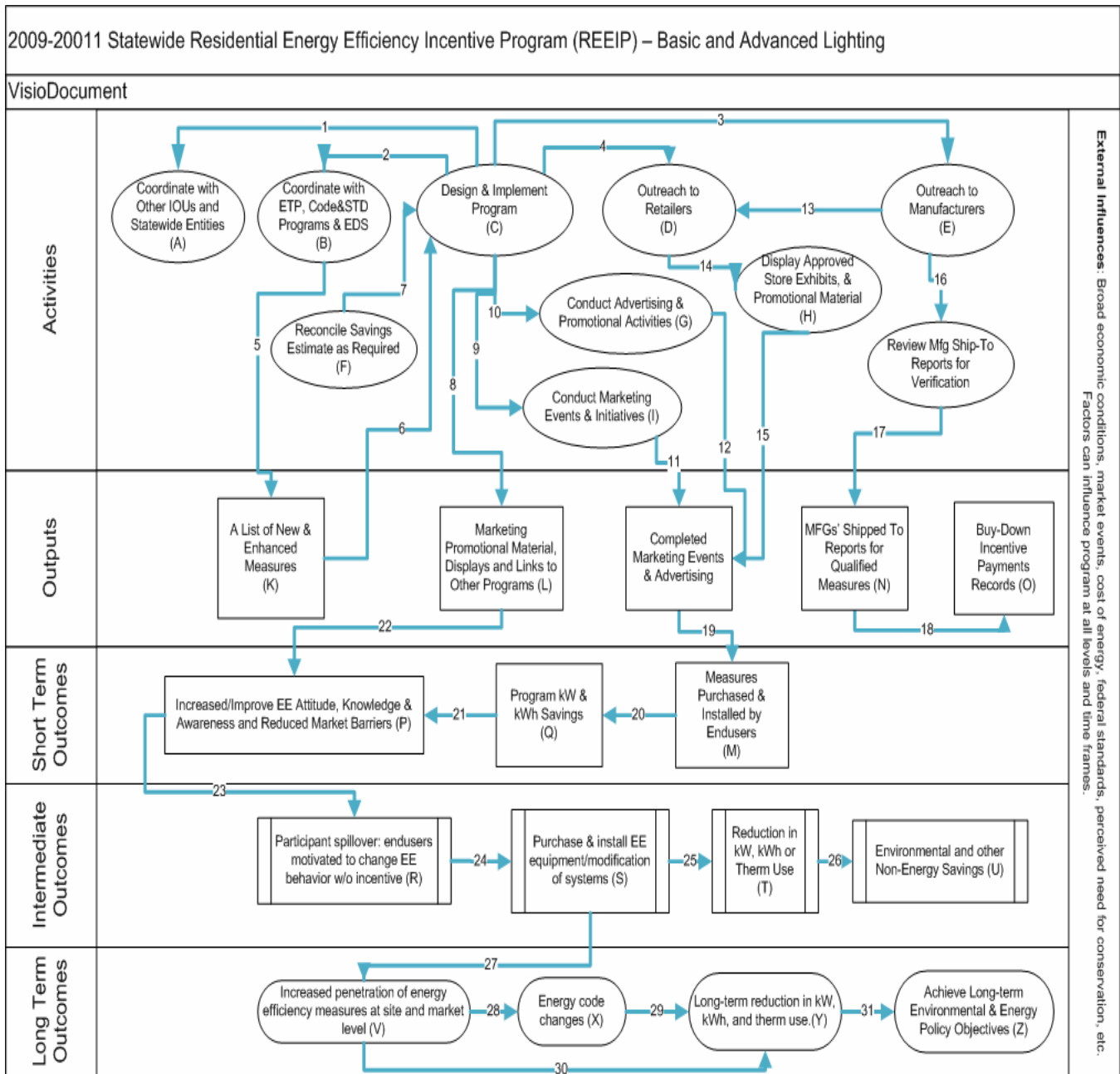
# Residential: Residential Lighting Incentive Program for Basic CFLs

## 7. Diagram of Program



# Residential: Residential Lighting Incentive Program for Basic CFLs

## 8. Program Logic Model





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## **Residential: Advanced Consumer Lighting Program**

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**1. Program Name:** Advanced Consumer Lighting Program  
**Program Type:** Core

**2. Projected Program Budget Table**

**Table 1** - reference the REEP for budget details

**3. Projected Program Gross Impacts Table**

**Table 2** - reference the REEP for projected gross impact details

**4. Program Description**

**a) Describe Program**

SCE's Residential Upstream Lighting Incentive Programs represent a continuance of the existing Residential Lighting Incentive Programs within SCE's residential energy efficiency portfolio. For 2009-2011, the programs have been split into two separate programs; the Residential Lighting Incentive Program for Basic CFLs and the Advanced Consumer Lighting program. Lighting incentive programs have been an important part of utility EE portfolios for many years and have been successful in making inroads toward the market development of efficient lighting products within California's homes and businesses. Lighting remains a significant opportunity in terms of economic potential for California's electricity consumers<sup>29</sup>. To develop strategies to continue to tap economic potential, the Advanced Consumer Lighting program will be implemented in close alignment with the new Lighting Market Transformation strategic lighting initiative offered for the 2009-2011 program cycle.

Within California's energy efficiency policy, and outlined in the Strategic Plan, the energy intensity within residences will be addressed. Any activity to achieve this must include the adoption of efficient lighting technologies, and SCE's residential lighting incentive programs are positioned to deliver sustainable EE benefits for many years to come.

This program, the Advanced Consumer Lighting program provides customers with incentives in the form of discounts that greatly reduce the cost of energy efficient lighting products to customers. This program 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 incentives in the program. Typical technologies include specialty CFLs, LEDs, cold cathode, and high efficiency incandescent lighting.

Hundreds of retailers at over 5,600 store locations throughout the three IOU territories are expected to participate.

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<sup>29</sup> CPUC/Itron Potential Study from September 2008.

## **Residential: Advanced Consumer Lighting Program**

Other sub-programs are planned under the Advanced Consumer Lighting Program. The Advanced LED Ambient Lighting sub-program will apply upstream incentives to drive market emergence and sales of high power LED products. For any recessed can fixtures or products requiring more than simple installation, the proposed end-use delivery mechanism is lighting contractors, using midstream incentives to mark down the prices. LED products that illuminate rooms and large residential areas will qualify for the higher incentives.

Quality assurance of LED ambient lighting in this sub-program will follow the guidance of the DOE and EPA, particularly the CALiPER testing program, and the ENERGY STAR® Solid State Lighting specifications. Promotion of the program will be unique in that a different set of manufacturers is targeted than the main upstream programs. Materials will be customized to fit the LED market.

The IOUs were early proponents of solid state lighting, and have been actively pursuing ways to promote their adoption in the market. The IOUs are very involved in the development of LED products under the auspices of DOE and EPA programs, and in conjunction with our Emerging Technologies Program. This sub-program will provide an outlet to those efforts.

The “California Super CFL” program is aimed at mitigating longstanding market barriers for CFLs among high and upper medium income customers. The IOUs will offer higher incentives to manufacturers for bringing a new generation of dimmable lighting into the program.

The IOUs will also offer lighting event strategies, which will include the Plug-in Lamp Exchange Program (Exchange Program). For that program, SCE will conduct local events at which customers may exchange their incandescent table, desk, and floor lamps, including torchieres, for energy-efficient lamps. An Energy Expo theme will be incorporated into the events to educate participating customers. This helps leverage the program to educate and promote other energy efficiency and low income programs. Seasonally, holiday light exchanges will also be included in which LED light strings are offered. PG&E and SDG&E will offer events similar to the Exchange Program.

Web, catalog, and phone sales activities are also being planned. These will allow customers within the utility service territories to purchase advanced lighting products online through qualifying web sites.

A lighting showroom store outreach sub-program will offer higher incentives for high-end products.

A major thrust of the Advanced Consumer Lighting Program is to attempt an aggressive campaign to shift the buying public’s behavior from purchasing incandescent specialty products to high efficacy products of the same type. At the same time it attempts to increase the ratio of specialty products to total lighting

## **Residential: Advanced Consumer Lighting Program**

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products. The marketing plans include bill inserts, in-store displays, promotional events, and advertising.

Much of the participant activity of this program is a result of targeting low income households through demographic-based allocations to stores in disadvantaged communities. This has an integrating effect when these households are given CFLs through low income programs, which generate customer acceptance and additional sales.

This program covers all lighting products that are not non-dimmable bare tube CFLs up to 30 Watts. One of the program's objectives is to influence advancements in all these lighting technologies, and particularly in the products that consumers can see obvious areas of inferiority to incandescent lighting of the same style.

Although this program is designated as residential, it does have characteristics that result in nonresidential installations. By virtue of the fact that retail outlets cannot control whether products are purchased for residential or nonresidential, some installations will inevitably take place in business environments. This is beneficial for the program because of the greater energy savings and demand reduction in those environments. Where possible, the program attempts to drive increased penetration into nonresidential sectors by partnering with retailers that cater to businesses, such as large office supply stores, and club stores with business member discounts.

### **b) List of Measures**

All forms of ENERGY STAR® labeled screw-in compact fluorescent lamps will be offered in the program with the exception of non-dimmable screw-in bare tube CFLs ≤ 30 Watts (Basic CFLs). Also offered are ENERGY STAR® labeled hardwired and plug-in fixtures. All other energy efficient lighting products such as screw-in, hardwired, or plug-in LED lamps and fixtures will be offered, contingent on SCE approval based on quality, efficacy, suitability for mass retail sales and, when applicable, ENERGY STAR® listing. Additionally, early production of general illumination screw-in halogen lamps that meet the 2012 state and federal equipment standards will be eligible for incentives. This program will run concurrently with the Residential Lighting Incentive Program for Basic CFLs. All upstream measures will be combined into one unified program offering to participants. Reporting for the two programs will be separate.

The program offers incentives on the following measures:

- Bare Spiral CFLs > 30 Watts
- Specialty and high performance CFLs
- CFLs of advanced quality (Super CFLs)
- Exterior and interior fluorescent fixtures
- Fluorescent table lamps, desk lamps, floor lamps and torchieres
- Night lights (including LED)
- Interior screw-in LEDs for task, accent, and area lighting
- Interior hardwired LED fixtures



## **Residential: Advanced Consumer Lighting Program**

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- Exterior LEDs
- LED holiday lights
- Other variations of fluorescent lighting such as cold cathode and induction
- Screw-in halogen lights (early compliance with codes for 2011 and beyond)

The Exchange component of the program will include the following products:

- Table lamps, desk lamps, floor lamps and torchieres
- LED night lights
- LED holiday lights

### **c) Non-incentive Customer Services**

These services include advertising and promotion, as well as activities that leverage other parts of each IOU organization, such as energy efficiency customer phone line access, web access to lighting pages, access to web contact page to send messages to the program staff, education, information, and training. The program will also leverage other energy efficiency programs by mentioning them in the IOU's outreach materials, including links to energy survey pages. Expanded advertising and promotion for products such screw-in specialty CFLs and LED products will be undertaken. This activity will also reference other pathways to efficiency. Any distribution of advanced lighting products for free will be conducted selectively based on high perceived strategic value to influence mass market adoption. Such costs will be considered promotional expenses.

## **5. Program Rationale and Expected Outcome**

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

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

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

### **b) Market Transformation Information**

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

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

### **c) Program Design to Overcome Barriers**

More potential for energy savings exists with energy-efficient lighting than with any other technology at present. Steep market barriers to tapping that potential exist, indicated by the fact that, according to recent saturation studies, 80 percent of lamps

## **Residential: Advanced Consumer Lighting Program**

sold in California are still non-CFL (incandescent, halogen and special)<sup>30</sup>. Based on most recent California Lighting and Appliances Saturation Study data, by RLW, in 2005, only 11.4% of SCE household sockets are occupied by CFLs (11.7% for PG&E and 7.6% for SDG&E). In light of these barriers, specialty screw-in compact fluorescent lamps are the most natural solutions for sockets where bare spiral CFLs are not preferred. Hardwired fluorescent fixtures also provide a very efficient way for residential and small nonresidential customers to save significant amounts of energy. Fluorescent portable lamps, and LED products have seen negligible penetration in the market. The IOUs will be instrumental in the emergence of the “Super CFL”, a newer technology of potentially great significance and applicability during the 2009 - 2011 program cycle.

The sectors where market barriers may be most common include high and upper medium income households, which tend to coincide with ZIP codes of relatively low saturation in previous years. The California Super CFL sub-program will target these sectors using higher per-unit incentives for advanced CFLs meeting stringent standards and specifications for dimmability, color, mercury content, dimensions, longevity, efficacy, and an extremely low defect rate. Prior to this program, no qualified CFLs of this advanced configuration existed in the market place. This sub-program will start as a pilot marketing test to confirm the hypothesis that the advanced CFL will overcome market barriers. Upon confirmation, it will be expanded into a targeted campaign.

The initial price market barrier still exists for advanced consumer lighting such as specialty bulbs, high-end fixtures, and LED area lighting. This program is designed to mitigate high initial cost with its upstream incentive structure, which is synergistic because it results in price reductions in excess of the incentives. The program encourages low retail pricing and educates retailers that high volume sales at low prices generally produce their greatest profitability, overall.

Specialty CFLs are not adaptable to all sockets due to issues like size and taper constraints. This creates a barrier. The program influences manufacturers to offer products of smaller size, with a smaller, more tapered base to fit into more sockets.

These challenges are compounded by the fact that most high-efficacy specialty products do not perform as well as incandescent products of the same type, other than in the areas of energy cost and long life. For example, fluorescent A-line lamps (standard light bulb shaped) are not yet dimmable, they don't have thin stems that can fit into many sockets, and they are of relatively low light output. The program is designed to produce profound effects in the areas of market penetration of specialty product types, and in increasing the ratio of specialty products to total products.

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<sup>30</sup> California Residential Efficiency Market Share Tracking: Lamps 2007 (draft report), prepared by Itron, Inc., April 2007.

## **Residential: Advanced Consumer Lighting Program**

A large knowledge gap still exists among many customers who have never used CFLs. The program uses bill inserts, special events, and promotional materials to expose more people to the benefits of CFLs. Special emphasis will be placed on specialty CFLs, LED products, and fixtures.

### **d) Quantitative Program Targets**

The proposed targets may be modified due to funding restrictions, especially for the 2009 bridge funding year.

**Table 5**

Advanced Consumer Lighting Program	Program Target by 2009	Program Target by 2010	Program Target by 2011
Increase Participating Retail Locations that offer advanced lighting products.	10% over 2008	10% over 2009	10% over 2010
Increase Retailers Visited and Trained	10% over 2008	10% over 2009	10% over 2010
Increase Retailer Mailings Featuring Program Requirements and Selling Tips	20% over 2008	20% over 2009	20% over 2010

### **e) Advancing Strategic Plan Goals and Objectives**

This program aggressively advances the goals, strategies and objectives of the Strategic Plan by encouraging the development of more energy-efficient lighting. This is accomplished by tapping the economic potential of available lighting technologies. The program does so by encouraging the production and adoption of high efficiency solutions. SCE's residential lighting incentive programs were designed to be compliant with the Huffman Bill<sup>31</sup>, and this program will be coordinated with the Codes & Standards program to ensure that the impacts of any code changes are incorporated into program design and implementation. This program will support educational efforts to enhance the public's understanding of AB32<sup>32</sup> by relating carbon reduction effects of energy efficiency programs to program participants. Efforts to educate the public on the contributions of energy efficiency in reducing green house gases take place via brochures, direct mailings, direct marketing campaigns and/or other appropriate means.

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<sup>31</sup> The Huffman Bill (AB 1109) directs the California Energy Commission (CEC) to develop and implement a strategy for reducing California's energy consumption for general purpose indoor lighting by 50 percent by the year 2018. 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](http://info.sen.ca.gov/pub/07-08/bill/asm/ab_1101-1150/ab_1109_bill_20070717_amended_sen_v94.pdf)]

<sup>32</sup> California Assembly Bill 32 (California Global Warming Solutions Act of 2006) (August 31, 2006). [<http://www.arb.ca.gov/cc/factsheets/ab32factsheet.pdf>]

## **Residential: Advanced Consumer Lighting Program**

The following figures represent the accepted annual economic potential of residential electricity consumption.

As evident in the California Energy Efficiency Potential Study, the greatest potential for energy savings exists with energy-efficient lighting than with any other technology at present.

Energy efficiency is the least cost, most reliable, and most environmentally sensitive resource, and minimizes our contribution to climate change. Advanced consumer lighting products are among the least cost, most reliable, and most environmentally sensitive energy efficiency products with the largest technical market potential, as is also true of basic CFLs.

In recognition of the great economic potential remaining for lighting in California's homes, and in alignment with the PUC's BBEES and Strategic Plan, this program continues to drive the transformation of the residential lighting market in California. The path towards zero-net energy homes requires a broad and comprehensive approach on many fronts including technology, training, codes and standards, and innovative practices. Zero-net energy requires energy-efficient lighting as an essential element of implementation.

This program continues many years of successful activities to advance and promote the market transformation of lighting in California by providing cost-competitive lighting choices to consumers via discounted CFLs to retailers. In accordance with the Strategic Plan, the Advanced Consumer Lighting program expands the penetration of more efficient products by supporting state and federal legislation that requires a transition from general service incandescent lighting to more efficient solutions. A new generation of lighting will take their place. SCE's lighting programs will be essential in transitioning the public to this new paradigm, thereby enhancing the public's adoption of energy-efficient light sources. SCE works with ENERGY STAR®, the Consortium for Energy Efficiency, the Program for Evaluation and Analysis of Residential Lighting (PEARL), the California Lighting Technology Center, and the CEC to further their visions, goals, and priorities in the application of energy efficient lighting.

In alignment with AB 1109, the program will support a statewide approach for continued customer education and public awareness for proper CFL disposal. The IOUs and several other utilities across the state are working with the California Environmental Protection Agency's Department of Toxic Substances Control to develop synergies that leverage this program's activities in order to expand the CFL disposal infrastructure in California and educate consumers about responsible CFL disposal. The desired team objective is the placement and maintenance of disposal services, involving collection bins, promotional signs, and literature racks in nearly all retail outlets participating in this program. It will involve forming teams with retailers, manufacturers, disposal services, local government partnerships, sanitation districts, third party implementers, and recyclers.

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This program can greatly contribute to the aggressive scale-up of the enabling policy framework supporting energy efficiency investment that is central to the Strategic Plan. Key components are adequate financial incentives and funding with robust administration. When applied to this program, the IOUs can actualize the vision of the framework.

According to recent findings, market penetration in California appears to have grown approximately 100% (from roughly 10% to slightly over 20%) in 2007, compared to previous years. This is due primarily to the commensurate expansion of funding for bare spiral CFL incentives in that year. The correlation between increased funding and market penetration is borne out year after year. In 2009 - 2011 market penetration will be increased or reduced on the basis of a commensurate change in funding.

The value of the program to support State efforts, like AB1109, is equally correlative to funding parameters. Primarily, the more CFLs incentivized, the more the program will bolster the effects of new equipment codes. Secondly, IOU promotion to support the regulation includes customer education and awareness about future standards. This can be administered through the promotional activities of the program. The effect of these efforts on a successful transition to future code acceptance can be quantified only after applicable EM&V protocols are established. This would include the selection of milestone metrics.

The program will help to achieve the following near-term strategic goals identified in Chapters 2 and 3 of the Strategic Plan:

4-1: Drive continual advances in lighting technology through research programs and competitions. The Lighting Programs contributes to the expanded penetration of more efficient products by supporting state and federal legislation that requires a transition from general service incandescent lighting to more efficient solutions. A new generation of incandescent lamps will take their place. The IOUs' lighting programs will be essential in transitioning the public to this new paradigm, thereby greatly mitigating the inherent difficulties of supporting the legislation at the point of public behavior.

4-2: Create demand for improved lighting products through demonstration projects, marketing efforts, and utility programs. The ACL program has been designed with Strategic Plan strategy 4-2 in mind, through inclusion of demonstration projects and targeted marketing and outreach activities.

4-3: Continuously strengthen standards. The IOUs' residential lighting incentive programs were designed to be compliant with the Huffman Bill, and this program will be coordinated with the Codes & Standards program to ensure that the impacts of any code changes are incorporated into program design and implementation.

## **Residential: Advanced Consumer Lighting Program**

*4-4: Coordinated phase out of Utility promotions for purchase of CFLs.* The Residential Lighting Incentive Program for Basic CFLs contributes to the expanded penetration of more efficient products by supporting state and federal legislation that requires a transition from general service incandescent lighting to more efficient solutions. A new generation of incandescent lamps will take their place. The IOUs' lighting programs will be essential in transitioning the public to this new paradigm, thereby greatly mitigating the inherent difficulties of supporting the legislation at the point of public behavior. The Strategic Plan describes goal results as the state of beginning a phase-out of traditional mass market CFL bulb promotions and giveaways. Since the goals are met by beginning, not ending the phase-out of promotional activities for basic CFLs, then it cannot be interpreted that full phase out, especially of incentives, is suggested during this period. Transition to the environment envisioned by the Huffman Bill, will require that incentives and support for basic CFLs not be phased out between 2009-2011. However, the IOUs will transition from traditional mass market CFL bulb promotions and giveaways to untraditional activities by a shift of focus that aggressively features advanced consumer lighting rather than basic CFL in promotional outreaches.

*4-5: Ensure environmental safety of CFLs and other emerging lighting solutions.* In alignment with AB 1109, the program will support a statewide approach for continued customer education and public awareness for proper CFL disposal.

### **6. Program Implementation**

#### **a) Statewide IOU coordination**

**i. Program name:** Advanced Consumer Lighting

#### **ii. Program delivery mechanisms**

The program primarily uses a manufacturer wholesale buy-down mechanism, but retains flexibility for retailer-direct midstream incentives, where beneficial.

#### **iii. Incentive levels**

Incentive levels will remain the same as in the 2006-2008 program for upstream measures, except the incentive for decorative LED light strings will increase to 5 cents per LED and LED night lights incentives will be reduced to \$0.50, and Electroluminescent, Fluorescent, or Neon Night Lights to \$0.30. Additionally, incentive levels for screw-in LED products from 800 to 1,099 Lumens will be increased to \$5.00, and those 1,100 lumens or greater will be increased to \$10. All products must meet ENERGY STAR® requirements if applicable. Incentive levels will also continue to be downward negotiable by manufacturer and retailer.

## **Residential: Advanced Consumer Lighting Program**

These are the published incentive levels:

<b>Eligible Product:</b>	<b>Incentive Per Unit<sup>1</sup></b>
Specialty CFL Screw-in – 1 to 799 Lumens Pre-Incentive-Adder	\$1
Specialty CFL Screw-in – 800 to 1,099 Lumens Pre-Incentive-Adder	\$1.25
Specialty CFL Screw-in – 1,100 to 1,599 Lumens Pre-Incentive-Adder	\$1.75
Specialty CFL Screw-in – 1,600 Lumens or greater Pre-Incentive-Adder	\$2.00
Specialty CFL with Incentive-Adder – Incentive Above plus:	\$1.50
Interior Hardwired Fluorescent or LED Fixture - < 1,100 Lumens	\$5
Interior Hardwired Fluorescent or LED Fixture-1,100 Lumens or greater	\$10
Exterior Hardwired CFL or LED Fixture - < 1,100 Lumens	\$5
Exterior Hardwired CFL or LED Fixture – 1,100 Lumens or greater	\$10
LED Screw-in 800 to 1,099 Lumens	\$5
LED Screw-in 1,100 Lumens or greater	\$10
Fluorescent Torchiere Floor Lamp	\$10
Fluorescent or LED Table, Desk, or Floor Lamp	\$5
LED Night Light	\$.50
Electroluminescent, Fluorescent, or Neon Night Light	\$.30
LED Holiday Lights Per LED	5¢
LED Task or Accent Light	\$1

The IOUs are still in discussion of how to structure the incentives. Conceptually the proposed incentives for the showroom program currently are as follows:

<b>Lamp Lumen Range</b>	<b>Winner</b>	<b>Just In Book</b>	<b>Per-fixture incentive adder for selling whole fixture family as bundle.</b>
<1,100 Lumens	\$5	\$5	\$1
1,100 to 1,599 Lumens	\$15	\$12	\$1
1,600 to 1,999 Lumens	\$20	\$16	\$1
2,000 to 2,599 Lumens	\$25	\$21	\$1
2,600 to 3,599 Lumens	\$28	\$23	\$1
3,600 to 4,599 Lumens	\$30	\$26	\$2
≥4,600 Lumens	\$35	\$33	\$5

Proposed incentives for the Super CFL program are: \$10 per Screw-in Dimmable CFL that meets the specification.

Proposed incentives for the L-Prize winning products will be covered under the Advanced LED Ambient Lighting sub-program, described below. If that program is not approved, L-Prize winning product incentives will range from \$5 to \$10 per unit:

## **Residential: Advanced Consumer Lighting Program**

Proposed buy-down incentives for the Advanced LED Ambient Lighting sub-program are negotiable with manufacturers, and will be set to cover approximately all manufacturing costs. The IOUs will collectively set the same incentive level for each model proposed.

### **iv. Marketing and outreach plans**

The most successful marketing involves in-store signage and displays. Such outreaches will see quality upgrades and signage will be graphically consistent among utilities. One to two bill inserts promoting and educating customers on high efficiency residential lighting will be sent per year. Multi-program brochures, web pages, and retailer outreach will also be used. The most effective form of advertising is through in-store displays. Manufacturers are responsible to erect eye-catching displays that include multiple forms of signage with stickers on individual products explaining that the discount is made possible by the IOUs. The program will provide display materials and train retail sales staff through retail management representatives. Many manufacturers work with retailers to coordinate additional outreach such as circulars, newspaper advertisements, and occasionally radio spots. The IOUs will use signage designed in concert to deliver cohesive messaging.

The IOUs issue bill inserts to provide mass exposure to the program and host promotional web pages (e.g. [www.sce.com](http://www.sce.com)), and have conducted outreach efforts that use various media to solicit consumers to take the ENERGY STAR® pledge committing to replace standard lighting with energy-efficient products. Public awareness of the program will be enhanced through activities including referrals from the On-line Buyer's Guide, the statewide IOU joint marketing and outreach campaign, income-qualified programs, and other DSM activities.

To explore lost opportunities further, the IOUs will investigate incorporating the lighting program products into the home performance program. This will create a stronger link between this program and the Strategic Plan.

### **v. IOU Program Interactions with Government Agencies and Programs**

The IOUs use the CEC as a resource for complementary programs and data, feeds into CEC initiatives through input such as the AB1109 scoping activities, and sits on joint committees with CEC personnel. Indirectly, the program is involved with ARB on occasion through corporate initiatives based on environmental requirements such as in AB32. By sharing greenhouse gas reduction equivalents through channels such as IOU websites users may be informed of the environmental benefits of energy efficient choices, including lighting. The Torchiere and Plug-in Lamp Exchange program element is designed for use primarily among local government partnerships.

### **vi. Similar IOU and POU programs**

Programs like this are in place within many utilities and energy efficiency program suppliers nationwide. We interact with their program managers during



## **Residential: Advanced Consumer Lighting Program**

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ENERGY STAR® Conferences, CEE meetings, steering committees, the PEARL board, and team workshops. To our knowledge, no other program implementers outside California have spun-off advanced consumer lighting into its own program.

### **b) Program delivery and coordination**

#### **i. Emerging Technologies (ET) program**

Each utility lighting program has meetings with its emerging technology program group and considers new technologies presented by them. Program managers contribute jointly with emerging technology engineers on steering committees, boards, and workshops. Emerging technology program data is considered in program planning. Program managers feed into selection of emerging technologies to review.

#### **ii. Codes & Standards program**

The program staff works with codes and standards engineers to monitor codes and standards being designed and adopted. Where the opportunity exists, program managers express preferences and input to codes and standards engineers who are contributors to steering committees and workshops.

#### **iii. WE&T efforts**

Due to the characteristics of this program as upstream and staff driven, there is no provision for WE&T. However, the technologies of energy-efficient lighting have great potential for inclusion in other WE&T programs. They would be particularly suited for those aimed at energy education. The lighting program staff can support such efforts with information about the technologies and products.

This program has a direct link to the Lighting Market Transformation initiative, which has a component for WE&T activities. The ACL Program also has an indirect link to the WE&T needs. Although this program primarily targets CFL manufacturers, retailers and end-users, topics such as lighting design for buildings, lighting standards or efficiency LED lighting are important topics for the workforce of the future. As part of the WE&T Synergy Program (WET&S) effort, sub-programs such as Energy Centers (CTAC/AGTAC) and Building Operator Certification programs currently offer these classes and are committed to design new classes to fill gaps.

#### **iv. Program-specific marketing and outreach efforts**

The most effective marketing and outreach entails in-store displays, signage, and stickers. Bill inserts, fact sheets, web site, multi-program brochures, retailer letters, manufacturer announcement emails, and Change-A-Light promotional events.

## **Residential: Advanced Consumer Lighting Program**

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

Activities that do not contribute directly to energy impacts include marketing, outreach, education, industry involvement, and involvement in non-IOU programs.

### **vi. Non-IOU programs**

The IOUs work with ENERGY STAR®, the Consortium for Energy Efficiency, the Program for Evaluation and Analysis of Residential Lighting (PEARL), the California Lighting Technology Center (CLTC), and the CEC to further their visions, goals, and priorities in the application of energy-efficient lighting. The IOUs serve on the steering committees, review panels, and working groups of such organizations. For PEARL, the IOUs are on their board, nominate products for off-the-shelf testing, purchase products for that purpose, and send them in for testing. SCE serves on the DOE's CALiPER Committee for quality standards and testing of solid state lighting. The IOUs also serve on the DOE Solid State Lighting L-Prize committee. SCE has formed a cooperative branch of the CLTC called the Southern California Lighting Technology Center (SCLTC) within SCE's Lighting Lab facility. Program staff is involved with activities of this organization by providing sample products, attending meetings, using its expertise, and working as a team in industry relations. The other utilities have similar relationships with CLTC.

### **vii. CEC work on PIER**

Although the IOUs have a strong association with PIER through its Design & Engineering Services Organization the residential lighting programs historically have not maintained direct involvement. Efforts will be made to find practical avenues for such involvement in a way that conforms to the program parameters.

### **viii. CEC work on C&S**

The program staff will continue to attend CEC workshops pertaining to equipment and building codes related to residential lighting. The IOUs' Codes and Standards organizations will continue to sustain primary involvement in these activities. The Upstream Lighting Programs will increase knowledge sharing and market insight with this group.

### **ix. Non-utility market initiatives**

The program takes part in retailer-originated market initiatives, such as Earth Day and Fall Lighting Season campaigns, parking lot sales, and ENERGY STAR® "Take The Energy Pledge" drives. The program will pursue opportunities for expansion as they arise.

### **c) Best Practices**

The program approach constitutes "best practice" as evidenced by its national leadership in forward thinking, new approaches, and cost-effectiveness. It incorporates the best practices of previous years' efforts in basic and advanced lighting solutions. For example, it avoids lost opportunities by leveraging

## **Residential: Advanced Consumer Lighting Program**

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mechanisms like encouraging both manufacturers and retailers to include additional discounts of their own while allowing manufacturers to compete, based on per-unit utility incentive amounts. It sets incentive levels so the wholesale price can be reduced to zero or near-zero levels. It employs extensive controls to avoid program abuse, overstocking, leakage, and slippage. The payment of the incentive to the manufacturer at the highest point upstream in the distribution channel creates a synergistic reduction when retailers retain the same mark-up percentages as usual. Market intelligence such as light color preference among customers, and product dimension concerns will be used in selection of program measures.

### **d) Innovation**

The program manages market penetration and transformation from within by shifting allocations away from recently penetrated sectors and locales, and into the areas of lowest penetration and saturation. The program is innovative in its use of independent retailers, deep discount stores, and small chains. These stores are where the highest combined product volume is found and they have the lowest historical rates of free-ridership. They often coincide with low income areas where the people need the economic benefits of energy efficiency the most. We cultivate their participation by encouraging manufacturers to approach more of them.

### **e) 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.

### **f) Integration Across Resource Types**

According to our calculations, in the last few years the residential lighting incentive program has contributed more toward carbon reduction than any other energy efficiency program in our portfolio. Using the CEC's 2008 update of 6.9 lbs per kWh in California, the 2006–2008 carbon saved by SCE's program calculates to more than 4.4 million lifecycle tons of carbon reduction. The IOUs have integrated CFLs with water and gas, through energy efficiency kits that promote conservation of water, gas, and electricity, but not in this program.

### **g) Pilots**

The plan for most new sub-programs is to start at a pilot level to iron out practical details in a real-world environment before implementing system-wide. For example, the Super CFL component will begin as a pilot program targeting high income areas with tests designed to eliminate subjective bias. The hypotheses behind the Super CFL concept that are verified at significant levels will be pursued in a larger roll-out. Pilot programs are not always planned in advance of the funding cycle. When new ideas and opportunities arise, they are considered at that time.

### **h) EM&V**

The utilities plan to work together and with the Energy Division to develop a complete plan for 2009 - 2011 studies and budgets after the program plans are

## **Residential: Advanced Consumer Lighting Program**

finalized and filed. This plan will be submitted to the CPUC in time for approval along with the PIPs.

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

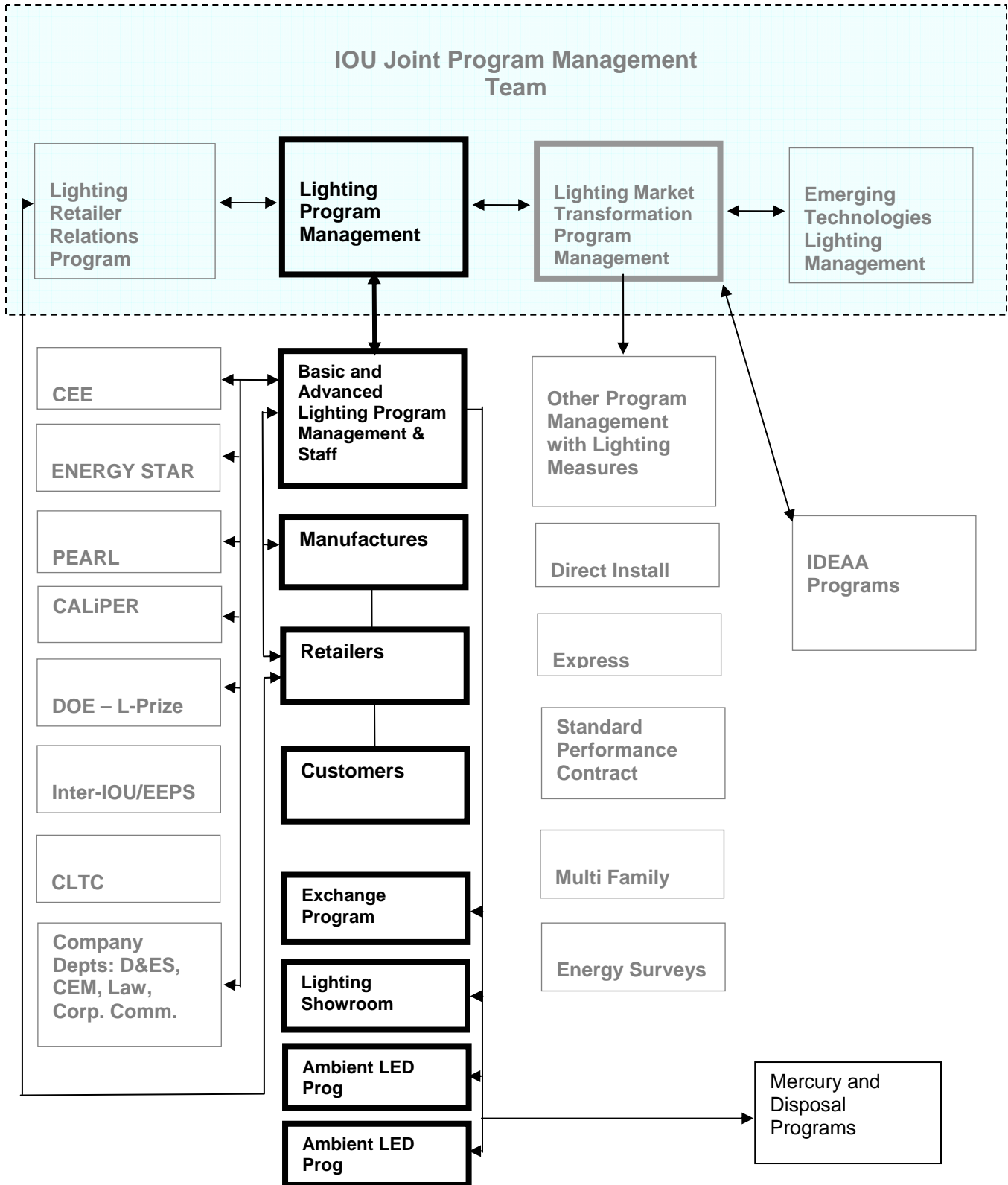
- The utilities will continue to conduct the Residential Market Tracking Study to monitor product saturation. Further refinement of this report may be required to better track the lighting metrics proposed by the 2009-2011 program.
- The utility will continue to conduct process evaluation to monitor CFL awareness, purchase and disposal behavior, program participant demographics and key characteristics between program participants and non-participants. For initiatives such as California Super CFL or the LED Lighting programs, they will be incorporated into the overall process evaluation.
- As part of the WET&S program process evaluation, the utility will continue to monitor new curriculum design to meet the needs of the future California workforce.
- In addition to the focus on the future workforce, the WET&S program will also need to deliver classes to educate residential customers on the value of these more advanced CFL products and applications. The utility will continue the WET&S's curriculum design to meet this gap.

This program is an important element to fulfill the CPUC's long-term EE strategy plan. As we know, one of the first steps to adopting EE measures is to have awareness. With consistent implementation, the CFL lighting program has achieved 95% awareness in 2008 up from 68% from 2001. Likewise, the CFL purchase rate in California has steadily increased since 2001. As indicated in our interim process evaluation study results (KEMA, 12/2008), in 2008, 70% of consumers have purchased at least one CFL as compared to 35% in 2001.

The Advanced Lighting Program is aimed to increase the market share of CFLs not covered by the Basic Lighting Program. Just by looking at the market opportunity on an equivalent wattage basis (30+ CFL watts is equivalent to 150 watts of incandescent light), in 2007, there are 14.6% of >30Watts incandescent lamps sold in California (note, the draft Lamp2007 tracking report does not break down the 30+ incandescent watt lights down further). All of these studies confirm the steady progress the program is making toward meeting California long-term EE strategy plan and bold vision.

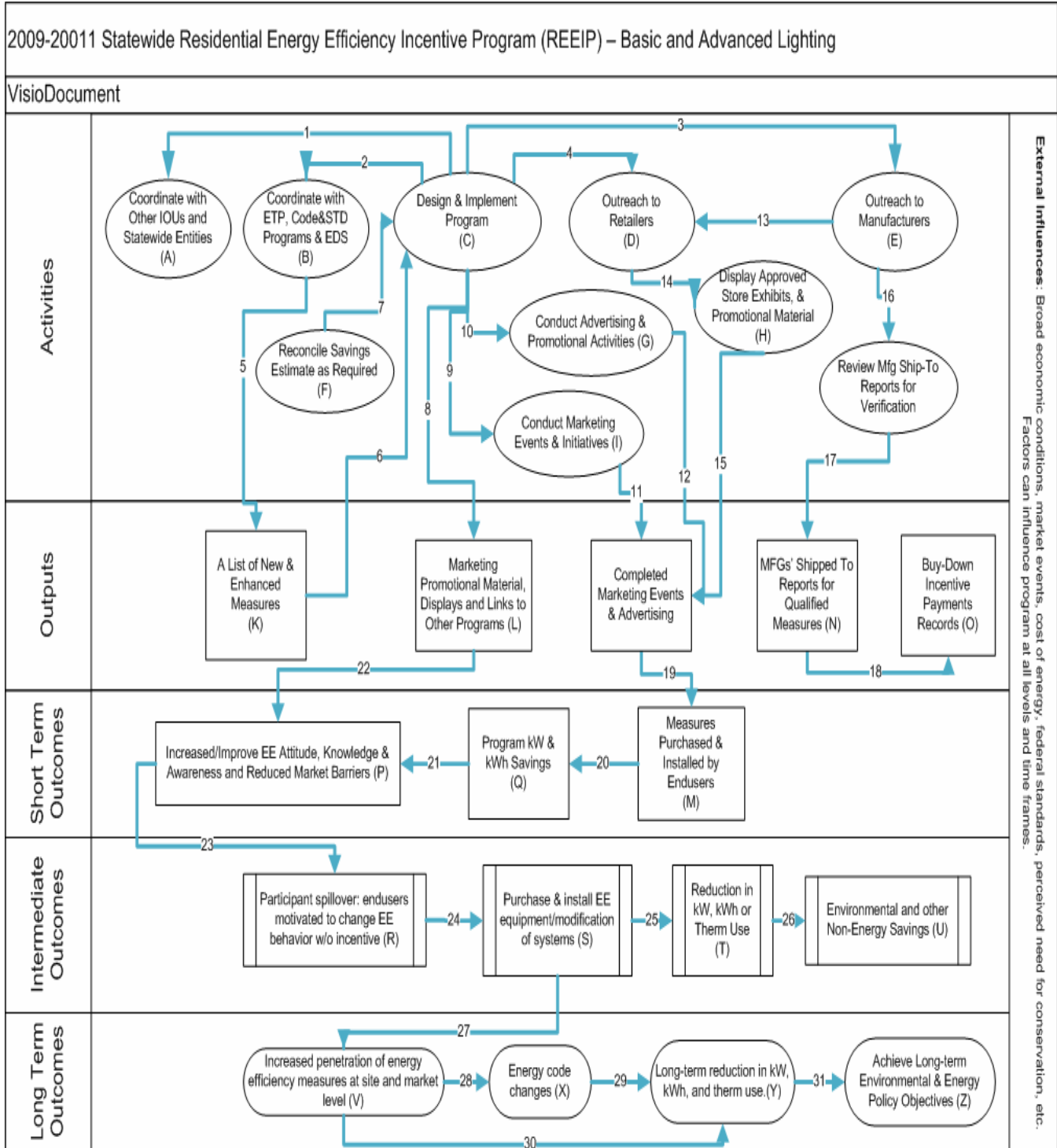
# Residential: Advanced Consumer Lighting Program

## 7. Program Interaction Diagram



# Residential: Advanced Consumer Lighting Program

## 8. Program Logic Model



1d

## **Residential: Home Energy Efficiency Rebate Program**

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

### **2. Projected Program Budget Table**

**Table 1** - reference the REEP for budget details

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

**Table 2** - reference the REEP for projected gross impact details

### **4. Program Description**

#### **a) Describe program**

The Home Energy Efficiency Rebate (HEER) program is a continuation of the existing statewide program within the residential energy efficiency portfolios. Although SCE, PG&E, and SDG&E share similar program theory, design and goals, each IOU may implement its program logistics differently.

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.

High recognition of the ENERGY STAR® brand provides leverage in motivating additional retailers at all levels to actively participate and support energy efficiency through HEER. This also provides customers with easy access to purchase qualified appliances and equipment, and helps them receive timely information to assist in their selection process.



## Residential: Home Energy Efficiency Rebate Program

### **b) List measures**

The following incentives will be available through the program:

	<b>SCE</b>	<b>SDG&amp;E</b>	<b>SoCalGas</b>	<b>PG&amp;E</b>
<b>Water Heater</b>				
gas	n/a	\$ 30	\$ 30	\$ 30
electric	\$ 30	\$ 30	n/a	\$ 30
solar	n/a	n/a	n/a	n/a
tankless ef $\geq$ 0.82	n/a	n/a	\$ 150	n/a
tankless ef $\geq$ 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
<b>Insulation</b>				
attic	\$0.15/sq ft	\$0.15/sq ft	\$0.15/sq ft	\$0.15/sq ft
wall	\$0.15/sq ft	\$0.15/sq ft	\$0.15/sq ft	\$0.15/sq ft
insulated sliding	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
<b>Refrigerator</b>				
ENERGY STAR®	\$ 50	\$ 50	n/a	\$ 50
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
<b>Dishwasher</b>				
ENERGY STAR® (.65 EF)	n/a	\$ 30	\$ 30	No
tier II	n/a	\$ 30	\$ 30	\$ 30
tier III	n/a	\$ 30	\$ 30	\$ 50
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
<b>Clothes Washer</b>				
ENERGY STAR® (1.72 MEF / 8.0 WF)	n/a	n/a	\$ 35	No
tier II	n/a	n/a	\$ 35	\$ 35
tier III	n/a	n/a	\$ 35	\$ 75
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
<b>Furnace</b>				

## Residential: Home Energy Efficiency Rebate Program

90 AFUE	n/a	n/a	n/a	n/a
92 AFUE	n/a	\$ 200	\$ 200	\$ 200
94 AFUE	n/a	\$ 200	\$ 200	\$ 300
Mail-In	n/a	Yes	Yes	Yes
On-Line	n/a	Yes	Yes	Yes
Point of Sale	n/a	n/a	n/a	n/a
<b>Room Air Conditioners</b>				
	\$ 50	\$ 50	n/a	\$ 50
Mail-In	Yes	Yes	n/a	Yes
On-Line	Yes	Yes	n/a	Yes
Point of Sale	Yes	Yes	n/a	No
<b>Pool Pump and Motor</b>				
two speed	\$ 200	\$ 200	n/a	\$ 100
variable speed	\$ 200	\$ 200	n/a	\$ 100
contractor rebate	\$ 100	\$ 100	n/a	\$ 200
Mail-In	Yes	Yes	n/a	Yes
On-Line	Yes	Yes	n/a	Yes
Point of Sale	Yes	Yes	n/a	No
<b>Whole House Fan</b>				
	\$ 50	\$ 50	n/a	\$ 100
Mail-In	Yes	Yes	n/a	yes
On-Line	Yes	Yes	n/a	yes
Point of Sale	Yes	Yes	n/a	No
<b>Ducted Evaporative Coolers</b>				
	\$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
<b>Cool Roof</b>				
	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
<b>Shower Heads</b>				
Thermostatic Low Flow Restrictive Valve	n/a	\$ 15	\$ 15	\$ 15
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
<b>Faucet Aerators</b>				
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	Yes	Yes

## **Residential: Home Energy Efficiency Rebate Program**

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### **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 collateral/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 surveys and online resources, customers will be educated. Specifically, there will be significant education, outreach, and web tool 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. Therefore, for the 2009-2011 HEER, messages will be dovetailed with product seasonality already established by retailers and manufacturers.

HEER will provide information directly to utility customers through 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, CBOs (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. The HEER Program fits within the suite of IOU residential portfolios by providing an array of opportunities for consumers to participate in energy savings and demand reduction measures in ways that are most convenient and customizable to their needs. Participation in HEER a program not only provides energy savings, but generates awareness for a range of opportunities that can be a springboard to more comprehensive solutions. To be comprehensive, a list of varied measures is offered for customers to select. The HEER program collaborates with other residential program in the portfolio such as ARP, HEES, MFEER, and others.

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

By its nature, market transformation occurs as a result of numerous factors and programs, not single sub-programs. Therefore, all metrics are proposed at the

## **Residential: Home Energy Efficiency Rebate Program**

program level. Please refer to the quantitative baseline and market transformation discussion, presented in the overall program PIP.

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

### **b) Market Transformation Information**

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

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

### **c) Program Design to Overcome Barriers**

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 BBEES, the Strategic Plan, and the EAP for the benefit of all customers.

HEER is designed to overcome 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<sup>33</sup>.

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 than would be the case if replaced early with higher efficiency products. The HEER program addresses early retirement issues by attracting participation through its marketing campaigns coupled with attractive incentives and outreach activities.

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

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<sup>33</sup> Based on the 2003 California RASS report

## **Residential: Home Energy Efficiency Rebate Program**

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.

Working with POS retailers offers vast gains in IOUs' ability to effectively reach a high volume cost, 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:

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 in ways that are relevant to consumers, showcase their energy expertise, brand successes, and maintain a high level of customer satisfaction.

### **d) Quantitative Program Targets**

The proposed targets may be modified due to funding restrictions, especially for the 2009 bridge funding year.

**Table 5**

SCE	Program Target by 2009	Program Target by 2010	Program Target by 2011
ENERGY STAR ® qualified refrigerators	46,000	48,300	50,715
ENERGY STAR ® qualified room air conditioners	53,430	56,101	58,922
Whole house fans	4,755	4,995	5,224
Electric storage water heaters	50	55	60
Attic and Wall Insulation	7,000	7,350	8,600
Variable-Speed Pool Pumps	800	840	900
Ducted Evaporative Coolers	1201	1201	1201
Number of POS retailers participating	TBD	TBD	TBD

### **e) Advancing Strategic Plan Goals and Objectives**

HEER specifically addresses the Strategic Plan 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 PUC's initiatives to provide customers with attractive choices to reduce their energy demand and

## **Residential: Home Energy Efficiency Rebate Program**

consumption, improve their safety and comfort, and contribute to overall sustainability, and a reduction in greenhouse gas emissions.

In accordance with the Strategic Plan, the HEER 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 Strategic Plan 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 Chapter 2 of the Strategic Plan:

- 2-2: Promote effective decision-making to create wide-spread demand for energy efficiency measures. California IOUs will aggressively incorporate results from studies that determine homeowner “decision triggers” for improving home energy efficiency; and
- 2-3: Manage research into new/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.

Additionally, the deployment of “Smart Meters” creates an opportunity to more effectively measure and monitor improvements in whole house and major system efficiency. Customer access to this hourly billing data will also help support longer-term behavioral strategies to reduce consumption. Moreover, when combined with passive or automated enabling measures (e.g., In-Home Displays, programmable controllable thermostats, load control devices, etc.), the Smart Meter technology will provide customers with energy management tools that capture increased savings as energy-efficient measures are installed within the home while positioning for unique opportunities to increased participation in demand response and AMI-enabled technologies. Placing these informational technologies in the home provides immediate feedback, enables a more accurate assessment of program impacts, and facilitates the future-development of targeted efficiency strategies for a particular customer base.

### **6. Program Implementation**

#### **a) Statewide IOU coordination**

**i. Program name:** Home Energy Efficiency Rebate Program (HEER)

#### **ii. Program delivery mechanisms**

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; and

## **Residential: Home Energy Efficiency Rebate Program**

- Downstream strategy based on customer education to create demand for higher efficiency appliances and products.

A major implementation strategy for the program is expanding the POS rebate delivery method (sales made at the store location and online), streamlining the rebate application payment process, and integrating appliance incentives with appliance recycling opportunities. A market-based delivery method approach will be expanded to more retailers in each IOUs service area, and provide “instant rebates” at the cash register for refrigerators (if applicable within the specific IOU's service area), room air conditioners, whole house fans, and pool pumps 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 to cultivate 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 high levels 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 distribution channel 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-marketing and brand with retailers ;
- expanded cooperation between utility, retailer and manufacturer to promote and stock high efficiency products; and
- information source for efficiency products.

As noted previously, the national trend by big box retailers toward 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, host events, train staff, and conduct promotional campaigns with retailers to directly influence consumer buying patterns for energy efficiency products.

Key external resource partners include:

- ENERGY STAR® (including co-branding opportunities);
- Flex Your Power;

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- Cities and counties;
- Large employers with employee “green” campaigns;
- Retailers;
- Home Owner Associations, property management companies, and community associations;
- Green-focused organizations and businesses;
- Trade associations and contractors;
- Statewide IOUs;
- Various media channels; and
- Contractors.

ENERGY STAR® provides an important resource for the program. The current national trend among large, medium, and small retailers toward promoting “green products” 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 to the green initiative will be uniquely tailored to specific audiences. Collaborative relationships with consumer channels will help facilitate and enhance consumer acceptance of energy efficiency products and services.

California IOUs require the addresses of customer installations and often face challenges in this delivery channel due to privacy concerns of store customers. IOUs offer additional incentives to customers who 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 verified actual installation before issuing rebate checks;
- For record accuracy verification, SCE performs separate random program record inspection against program guidelines to verify accuracy and completeness; and
- As part of the M&E process evaluation, the satisfaction of program participants and AKA (awareness, knowledge and attitude) is assessed separately.

### **iii. Incentive levels**

See Section 4b for the incentive levels.

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

The 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



## **Residential: Home Energy Efficiency Rebate Program**

attitudes/perceptions related to energy efficiency and the climate change message. IOUs will develop targeted and highly relevant energy efficiency and DSM marketing messages to encourage behavioral change/action. HEER intends to create partnerships with private industry and businesses that will help motivate consumer and business sector action.

Each IOU 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 about income-qualified programs before they expend limited resources for appliances that are available at no cost through LIEE. In turn, IOUs seek to make low-income customers aware of rebates available for appliances that are not offered through LIEE.

To facilitate retail relationships, IOUs will implement website enhancements that will ease of point of entry access for customers, enabling them to readily find information about energy efficient products and services, identify participating retailers in their neighborhoods, and complete on-line sign-ups to receive notification about special efficiency offerings, rebates, or incentives.

The utilities will explore options for providing alternative strategies for marketing the programs in constrained areas. One such approach may be neighborhood-based marketing campaigns that target older, master-planned communities in order to promote energy efficiency. Through this effort, local contractors will independently market and install cost-effective measures such as duct testing and sealing and other measures to help reduce energy loss in the home and increase overall efficiency. By dealing in volume, this effort will offer low-cost measures that are proven energy savers to a large number of program participants. In addition to delivering energy savings, this approach will support the advancement of local community and city goals related to energy efficiency, as well as benefiting many neighborhoods and socio-economic groups.

Customers are often not aware of the true savings potential nor are they familiar with energy savings products not associated with appliances. A "starter kit" will be distributed to customers in order to introduce them to energy savings, by providing information about comprehensive simple methods to reduce water, gas, and electricity use. By supplying the tools necessary to begin saving gas and water, the HEER program will increase participation and include other customer segments that may have been excluded due to high product cost. This will allow HEER to grow as a comprehensive, inclusive residential program and thus maximize potential savings. As applicable, HEER participants will also be educated about additional opportunities for energy efficiency beyond the measures they are adopting.

## **Residential: Home Energy Efficiency Rebate Program**

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 deployment of AMI will provide additional opportunities to educate customers about their energy usage. The IOUs will explore opportunities to maximize energy efficiency and demand side management opportunities as the technology is developed and deployed to residential customers.

After the program is approved, each IOU will develop a detailed marketing implementation plan that will specify tasks and milestones.

The program targets owners and renters of single family residences as well as apartments, townhouses, condominiums, and mobile homes and operates in parallel to the operation of the Multifamily Energy Efficiency Rebate (MFEER). This downstream implementation strategy will also include coordinated statewide elements as well as elements specially targeted to the customers in each utility's service area. The program will also leverage relationships with trade allies, manufacturers, retailers, and distributors to deliver information, measures, and incentives.

Program campaign elements include:

- Statewide rebate promotions;
- Online/mail-in application processing;
- In-store POS instant rebate option;
- A whole house approach offering products that address all types of energy use;
- Home energy surveys;
- Energy efficiency customer education and outreach; and
- 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 products from retailers who are not participating in 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.

## **Residential: Home Energy Efficiency Rebate Program**

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

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.

### **vi. Similar IOU and POU programs**

Each IOU will coordinate with other IOUs and, if needed, applicable POU (e.g., SMUD, LADWP), to maintain statewide consistency of rebate programs while attempting to simplify customer requirements and procedures internally, rebate offerings are consistent and program changes are discussed at the statewide level. In addition, negotiations with retailers regarding incentives are conducted as a team, in order to leverage participation on a statewide level and to benefit all California customers. EE working groups, and new technologies research efforts consist 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 MFEER and BCEP. Please refer to separate residential PIPs for details.

In addition, program design and implementation strategies will integrate HEER with each IOUs demand response programs, such as the Summer Discount Plan, or the SmartAC or SmartRate plan, as well as with the California Solar Initiative. Joint marketing messages will be designed to increase participation in energy efficiency and demand response programs.

IOUs will also coordinate with other programs. For example, they will coordinate with HVAC to ensure that quality installation is met via duct test & seal rebates, and raise awareness of the Refrigerant Charge and Airflow program to ensure that there is integrated delivery of programs. Energy efficiency will be the foundation for customers making changes to existing homes.

*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.

## **Residential: Home Energy Efficiency Rebate Program**

The HEER Program also works with the ARP and HEES to provide a convenient in-home energy survey 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 collaborates with the LIEE Program by providing customers with information and marketing material about low-income programs. IOUs will target moderate-income customers that do not qualify for LIEE program assistance.

### **b) Program delivery and coordination**

The HEER program, as part of overarching residential portfolio, will offer integration with HEES, ARP, MFEER, CHPP 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 through an application (either online or mail-in) or 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:

- Marketing and sales training includes training on program marketing concepts, team building, quality control, job estimation and sales prospecting;
- 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; and
- 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 approach is intended to make the energy efficient choice attractive to the customer and beneficial to all market participants. The success of

## **Residential: Home Energy Efficiency Rebate Program**

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 show how to significantly improve their profitability.

The Strategic Plan calls for increasing energy efficiency standards for housing and residential appliances and to push for adopting more environmentally-friendly household appliances. Consumers may still be less inclined to move up the energy efficiency ladder by purchasing products that, in spite of providing a higher level of energy savings, requiring 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. IOUs, ENERGY STAR®, and other parties will collaborate in workshops that guide the design of future rating systems.

The HEER program 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 (ET) Program**

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

### **ii. Codes & 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 contractors to develop skills and knowledge. In addition, HEER will work with the trainers to identify training necessary to support the workforce of the future.

### **iv. Program-specific marketing and outreach efforts**

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 HEES and ARP (please reference the separate PIPs for more information) to leverage programs across the utility and capitalize on the synergy of these offerings.

## **Residential: Home Energy Efficiency Rebate Program**

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 ARP 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 energy-efficient measures throughout each IOU's service area while creating permanent and verifiable long-term energy savings.

The 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 encourage 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.

The specific marketing and outreach budget is shown in table 1.

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

To support the program, HEER will provide training and marketing activities for participating retailers.

### **vi. Non-IOU programs**

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

### **vii. CEC work on PIER**

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 C&S**

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.

## **Residential: Home Energy Efficiency Rebate Program**

### **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 during the 2009 - 2011 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, 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 POS program element provides maximum ease for customer participation, while offering an immediate rebate at the retailer's register. In an effort to take advantage of on-line appliance and equipment sales, the POS program element definition will be expanded to include retailer and manufacturer online sales made through their websites.

To reduce energy use in existing homes, and in alignment with the Strategic Plan, the HEER program will coordinate with emerging technology, codes and standards, and marketing and outreach. The program will also research new and/or advanced cost-effective innovations, behavioral attributes, and AMI-based monitoring and display tools.

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

- Expanding POS rebate delivery method to include additional measures. 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 retail store locations and websites;
- 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

## **Residential: Home Energy Efficiency Rebate Program**

- permanently retiring the replaced units. Increased retailer interest is expected as a result; and
- 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**

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)**

PG&E is beginning its second year of a Cooperative High-Efficiency Clothes Washer rebate program with a number of water agencies in the Greater San Francisco Bay Area. In 2007, PG&E approached all water agencies within its service territory about participating and 17 agreed to participate. These agencies have sub-agencies, for a total of 33 water agencies (wholesalers and retailers) participating. PG&E processes the rebate applications (submitted via paper application or online), sends customer data to the respective water agencies through a secure swap drive, and then issues one check to the customer that combines PG&E's rebate (either \$35 or \$75, depending on efficiency rating) and the water agency rebate (either \$90 or \$125, depending on efficiency rating) for a check total of either \$125 or \$200. In 2008, PG&E paid rebates on the highest number of clothes washer units in the program's history with more than 80% of the rebates paid on the highest-rated energy-efficient units.

### **g) Pilots**

PG&E is planning to conduct a big-box retailer instant rebate program for dishwashers and water heaters to launch Q1-Q2 of 2009. Successful instant rebate programs exist with an independent appliance retailer that has 10 stores in PG&E's service territory. A third party is collecting data from PG&E and the retailer in order to reconcile customer information with purchase/delivery information to maintain privacy. During the pilot program, California's other IOUs will maintain contact with PG&E to monitor the success of this pilot, for potential deployment across California.

### **h) EM&V**

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

Detailed plans for process evaluations and other evaluation efforts specific to this program will be developed after the final program design is approved by the CPUC and program implementation has begun, since final plans will be based on identified



## **Residential: Home Energy Efficiency Rebate Program**

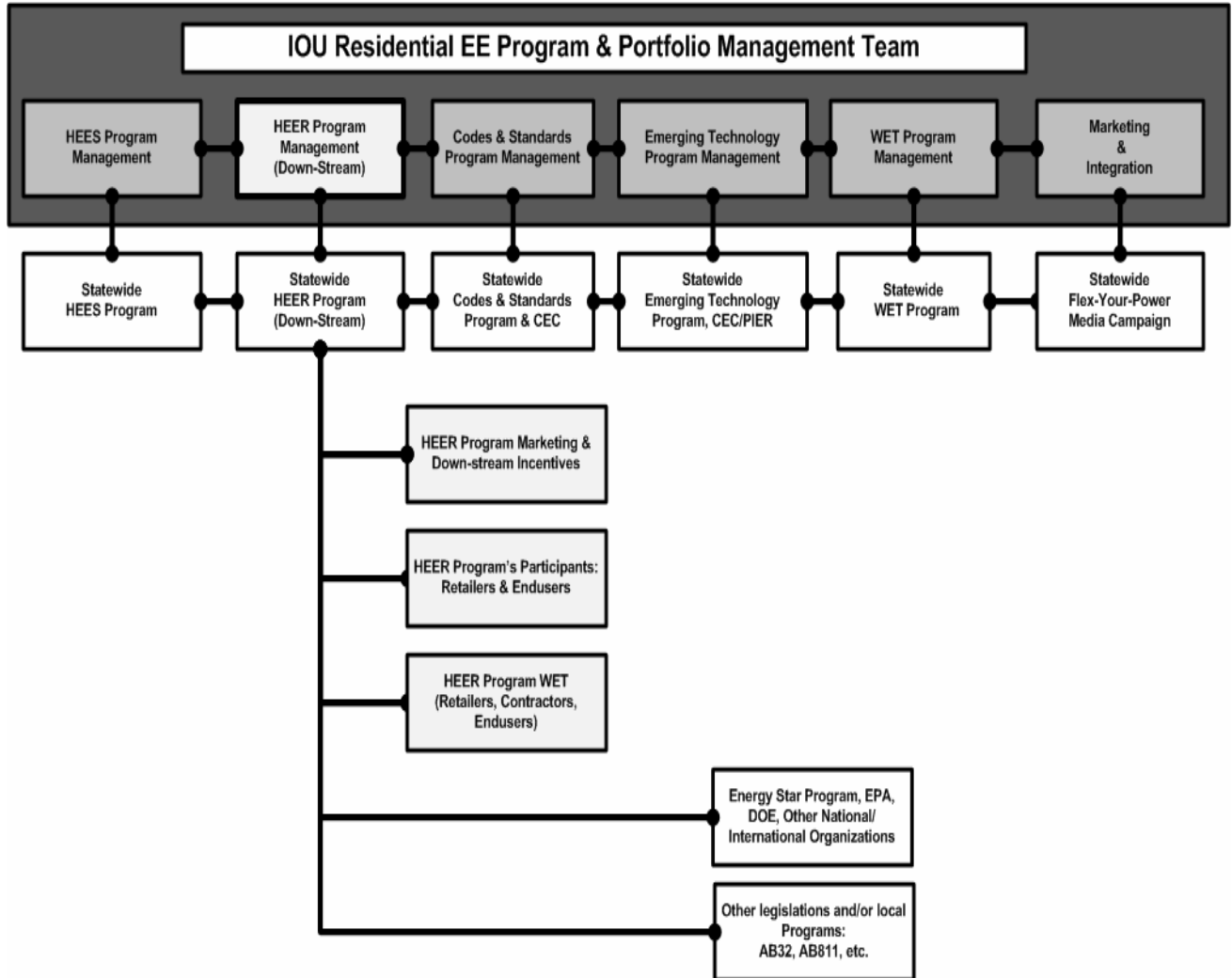
program design and implementation issues and questions. However, a brief description of the current, preliminary plans is provided below:

- Work with the Energy Division to resolve market baseline and transformation issues;
- Update and repeat CLASS and RASS/RMST Appliance Tracking & Saturation studies, as appropriate;
- Conduct statewide process evaluation to track the all proposed key metrics,
- Conduct SCE specific process evaluation to improve program design, implementation, and market effectiveness; and
- Design an M&E study to monitor the pilot program mentioned in above.

As indicated by the Itron Final Report: Scenario Analysis to Support Updates to the CPUC Savings Goals, 3/2007, in nearly all scenarios, the residential sector will be counted on to deliver a significant portion of the energy savings goal for California. The statewide HEER program delivers a portion of the required savings and is part of the total energy efficiency strategy.

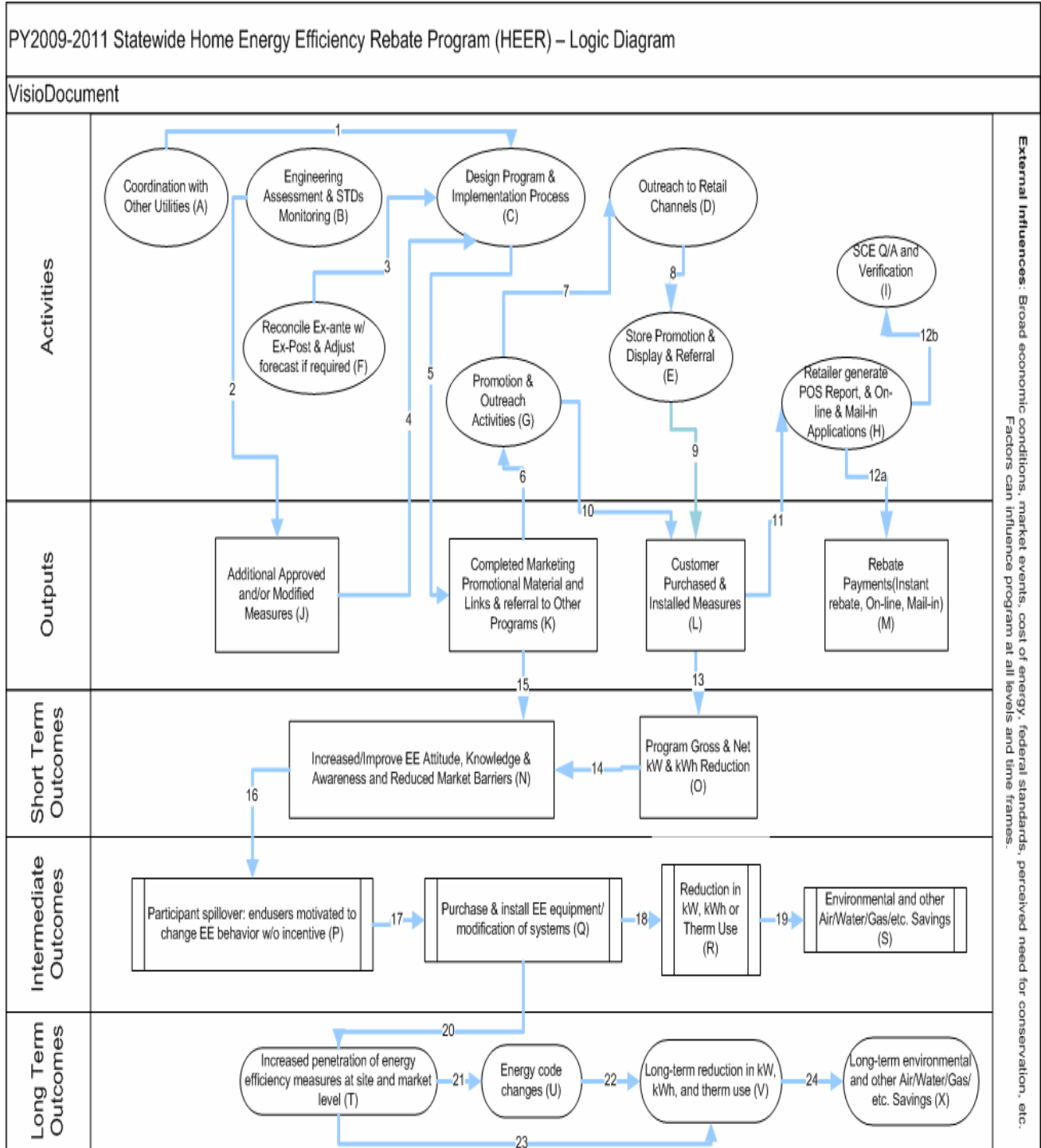
# Residential: Home Energy Efficiency Rebate Program

## 7. Diagram of Program



# Residential: Home Energy Efficiency Rebate Program

## 8. Program Logic Model





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## **Residential: Appliance Recycling Program**

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- 1. Program Name:** Appliance Recycling Program  
**Program Type:** SCE/PG&E (Core Program)  
SDG&E (Third-Party Program)

- 2. Projected Program Budget Table**

**Table 1** - reference the REEP for budget details

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

**Table 2** - reference the REEP for projected gross impact details

- 4. Program Description**

- a) Describe Program**

The Appliance Recycling Program (ARP) is a continuation of the existing statewide ARP within the residential energy efficiency portfolio.

This program prevents continued use of inefficient operable but appliances in residences and businesses, whether by current owners or transfer recipients, by picking up such units and recycling them in an environmentally-safe manner. The ARP produces cost-effective energy savings and peak reduction in residential and non-residential market sectors.

ARP offers a monetary incentive and a free pickup of each eligible appliance turned in by customers for recycling. Customers may schedule pickups by calling a toll-free number or by visiting the IOU web site, and receive their incentive check by mail after the appliance is picked. As it has since 2006, the ARP will continue to service both residential and nonresidential customers. ARP will increase the qualified maximum unit size for refrigerators and freezers from 27 to 32 cu. ft. to target larger manufactured units that are working inefficiently. Also, ARP will continue to explore “non-core” opportunities, such as innovative limited-time offerings to increase program volume and cover relatively untapped segments of the secondary market, by involving new access channels such as the low-income refrigerator program, the MFEERP, and retailer delivery services.

From its inception and until 2005, ARP’s measures included only the recycling of refrigerators and freezers. For 2006-2008, a room air conditioner (RAC) recycling measure was introduced on a limited basis and with limited success. SCE offered participants a \$25 incentive for operable, inefficient RACs if turned in and replaced by a qualifying new ENERGY STAR® RAC at events held in conjunction with local appliance retailers. PG&E and SDG&E offered a \$25 incentive for operable, inefficient RACs but did not require the purchase of a qualifying unit at turn-in events held in conjunction with local appliance retailers. PG&E and SDG&E continue to include RACs in their programs, but only when the old RAC unit is picked up in conjunction with the pick up of a refrigerator or freezer. In all cases, the level of RAC participation has been very low and, in the case of the early replacement (turn-

## **Residential: Appliance Recycling Program**

in events) concept, has been costly to administer. In addition, SCE's Residential Room Air-Conditioner Recycling Scoping Study<sup>34</sup> recommended limiting RAC recycling to an adjunct status of "early replacement" for the following reasons:

- Given the small retail resale market for RACs, a round-up program is subject to high levels of free-ridership; and
- A program that requires the customer to both purchase a new energy efficient unit and turn in an old one to qualify for an incentive may succeed in reducing free-ridership levels, but at the cost of limited potential participation, possibly impacting both replacement and recycling.

The program will undergo further review of "best practice" RAC recycling/early replacement programs to either modify or discontinue the RAC offering in the 2009-2011 program. For now, SCE has decided to remove the RAC recycling measure, but PG&E and SDG&E have elected to keep the RAC recycling measure in the ARP implementation plan for 2009-2011.

Consistent with the current environmental concerns, during 2009-2011, the statewide ARP program team will look into non-core, non-claimable savings opportunities to avoid lost opportunities and work towards comprehensiveness by possibly expanding the program to include recycling of other types of household/small business appliances and devices, beyond refrigerators, freezers, and RACs. Recycling consumer devices may require special care such as handling of the mercury in television tubes. More generally, in considering inclusion of any additional equipment for recycling within the program, IOUs must learn how to best dismantle the equipment's components and recycle the subsystems in an environmentally sensible and cost-effective manner before including the equipment it in the program.

### **b) List measures**

The following incentives will be available through the program:

	<b>Incentive</b>		
IOU	Refrigerator	Freezer	Room A/C
PG&E	\$35	\$35	\$25 <sup>1</sup>
SCE	\$50	\$50	TBD <sup>2</sup>
SDG&E	\$50	\$50	\$25 <sup>1</sup>

<sup>1</sup>Offered in conjunction with the pickup of a refrigerator or freezer only.

<sup>2</sup>Offer to be determined following "best practice" review.

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<sup>34</sup> *SCE Residential Room Air-Conditioner Recycling Scoping Study, by RLW. This study included a RAC retailer survey, a review of RASS saturation data, and a review of similar programs offered by other utilities*

## **Residential: Appliance Recycling Program**

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### **c) List non-incentive customer services**

As a part of the sign-up and pickup process, ARP will offer households and businesses information about other energy efficiency and demand response programs. This information will be provided at the time a household or business schedules a pickup appointment, during the appointment confirmation process, and at the time of pickup. Various means will be used to disseminate this information (i.e., e-mail, in-store displays, phone, etc).

The LIEE program currently offers qualifying low income households a free refrigerator, and then recycles the old refrigerator, along the lines of “direct install/pickup” of such units. A recycling incentive is unnecessary under this design. However, ARP is ready and willing to coordinate efforts with LIEE to better meet the needs of both qualifying and non-qualifying households that LIEE may encounter in its outreach efforts, while maintaining the integrity of the existing designs of the two markedly different programs.

## **5. Program Rationale and Expected Outcome**

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

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

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

### **b) Market Transformation Information**

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

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

### **c) Program Design to Overcome Barriers**

There are two types of barriers that inhibit successful participation in the ARP: (1) program design-related barriers and (2) market-related barriers. In 2007, the SCE program team addressed an ARP design barrier in response to an evaluation study of the 2004-2005 program. The study reported that many potential removals did not occur because customers did not follow through with their scheduled pickup appointments and ultimately cancelled their appointments. One reason cited was that it took so long for the program to pick up the units that appliance owners needed to find other ways to dispose of their units. As a result, the SCE program team looked at solutions to overcome this program design-barrier and invested in state-of-art technologies to speed-up the pickup cycle-time. In cooperation with the ARP recycling service contractors (ARCA and JACO), SCE contracted with a software developer (Enerpath) to design an end-to-end real-time ARP software application



## **Residential: Appliance Recycling Program**

system in 2007. The new system has enabled the contractors to significantly reduce the pickup cycle-time by using the new software with Portable Digital Assistant (PDAs) and GPS technology to more efficiently schedule appointments and establish pickup routes. This increase in productivity and efficiency has allowed SCE's ARP to reach new highs in both customer satisfaction levels and program unit goals in 2008. SCE reached 94% service delivery satisfaction in 2008 compared to 87% in 2007. SCE collected 88,630 units in 2008 which was an all-time high since program inception.

As indicated by the 2004-05 statewide evaluation study, lack of customer awareness of the ARP is essentially a market barrier to the program's successful operation. As reported by the 2004-05 statewide study, 48% of IOU service customers who disposed of a refrigerator or freezer in prior years were not aware of the program. The percentage of unaware customers was greater among PG&E and SDG&E customers than in the SCE territory, where the recycling program has operated longer and at considerably higher volume.

An important challenge to ARP is that 11% of the disposers prefer to sell their old appliances into the secondary market or used appliance channels. In addition, there is some ad hoc data that suggests that old appliances picked up by the retailers (25%) are often reconditioned and then put back into the used appliance market. PG&E has developed a pilot that has integrated its ARP directly with appliance dealers. In this pilot, PG&E's ARP will pick up old refrigerators directly and offer the ARP rebate in conjunction with the HEER rebate for new appliances. The concern about this approach is whether the level of free-ridership specific to the recycling contribution may be higher than in the ordinary recruitment/call-in/scheduling procedure within the ARP. More data is required to enable IOUs to gain better understanding of the appliance resale market so that new program elements can be designed to address it.

For customers, there are three basic motivations for getting their units turned-in with the program: convenience and timing of pickup, attractive incentive offers, and environmental benefits.

The 2009-2011 program is designed to ensure that there are no programmatic barriers working counter to these motivations. In addition to the proposed incentive and goal of continued reduction of pickup time, the program will strive to enhance its marketing messaging to promote environmental benefits of getting rid of old, inefficient appliances and reducing the number of stock sold and given away. As part of SCE's 2006 - 2008 process evaluation study currently underway, SCE is investigating additional marketing initiatives to overcome the participation and market barriers that reduce the above-stated customer motivations to participate in the program. SCE will take the lead and invite other IOUs for a joint study. The findings from this study will be incorporated into the overall 2009-2011 statewide program design.

## **Residential: Appliance Recycling Program**

It bears emphasizing that there is a significant residential segment consisting of renters who do not own their appliances, but generally, if not always (e.g., mobile home parks that are sub-metered), are responsible for their electric bills, yielding a split incentive with respect to replacement (which creates recycling opportunities). Building upon past SCE approaches to this market barrier, the program will continue to outreach to landlords, emphasizing the (a) landlord's economic benefit when either the tenant or landlord faces a smaller bill, and (b) the environmental benefits of the program. Finally, in the case of sub-metered (typically mobile home park) situations, joint outreach to both landlords and tenants may be feasible, along lines similar to the approach developed by SCE's recent CARE outreach work.

### **d) Quantitative Program Targets**

The proposed targets may be modified due to funding restrictions, especially for the 2009 bridge funding year.

**Table 5**

SCE	Program Target for 2009	Program Target for 2010	Program Target for 2011
Refrigerators	57,200	66,000	61,600
Freezers	7,800	9,000	8,400
Room A/Cs	N/A	N/A	N/A

### **e) Advancing Strategic Plan goals and objectives**

The program supports the Strategic Plan (Section 2) residential existing homes (Goal 2) and plug load (Goal 3) general objectives, as described below:

- 2-2: Promote effective decision-making to create widespread demand for energy efficiency measures – This program advances the Strategic Plan by priming the existing appliance retrofit market to get rid of inefficient appliances to support the comprehensive, whole house energy efficiency measures, including whole house solutions, plug load efficiency, and appliance performance standards; and
- 3-2: In coordination with Strategy 2-2 above, develop public awareness of and demand for highly efficient products – As indicated by the Itron market potential study, a significant portion of the EE savings from the residential sector is needed to achieve the Strategic Plan's vision. ARP will continue to promote public awareness of and demand for highly efficient products through its active participation with local government partnerships and leadership organizations such as the EPA. For example, EPA formed the Responsible Appliance Disposal Group (RAD) in 2006, which is a volunteer partnership program including utilities, municipalities, retailers, manufacturers, universities and others. As part of the program, EPA serves as a technical clearing house on responsible appliances disposal program development and implementations.

## **Residential: Appliance Recycling Program**

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### **6. Program Implementation**

#### **a) Statewide IOU coordination**

**i. Program name:** Appliance Recycling Program (ARP)

**ii. Program delivery mechanisms**

The program is designed to work with recyclers to schedule and pick up appliances for recycling. The participants receive a cash incentive for their participation.

**iii. Incentive level**

See section 4b for the incentive levels.

**iv. Marketing and outreach plans**

ARP will partner with retailers to inform customers about the program via print collateral placed in the stores. In addition, ARP will continue its collaborative efforts with appliance retailers to establish a working model (i.e., logistics, verification) that would allow ARP to effectively coordinate the pickup of old units at the time a new unit is delivered to a customer's home. Typically, old inefficient working and non-working units are collected by delivery service vendors contracted by the retailer at the time they deliver new units, often becoming a leading supply source to the secondary (used) appliance market. The challenge will be to coordinate the collection of working units from all units collected by the delivery service vendors. SCE will explore the expanded use of the ARP PDA/real-time software to meet these challenges.

ARP will coordinate marketing tactics with manufacturers, distributors, retailers, home improvement centers, contractors, and other energy efficiency and demand response programs (as appropriate) to achieve the desired levels of customer awareness and program participation. Marketing activities may include, but are not limited to:

- POS collateral materials (e.g. clings, shelf talkers, counter stands, etc.) at participating retail locations;
- Advertisements in retail circulars;
- Bill inserts;
- Community outreach (e.g. Community-based organization outreach, promotions at home shows, etc.);
- EE partnership activities (e.g., "Pick Up Day Events");
- Direct mail (e.g. targeted program promotions to customers who may be most eligible or interested in recycling services.). This may include cross-promotional direct mail with other demand response programs (e.g. Summer Discount Plan);
- E-mail blasts to customers participating in home energy survey programs or other SCE service offerings;
- Shared mail;
- HEES analysis and recommendation packages; and
- Statewide advertising campaigns.

## **Residential: Appliance Recycling Program**

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ARP will coordinate with other IOUs, and if needed, applicable MUNI districts, to maintain statewide consistency of rebate programs while attempting to simplify customer requirements and procedures internally.

SCE currently conducts three different types of customer satisfaction surveys, which serve needs ranging from routine process quality improvement or maintenance, to regulatory reporting, to longer term evaluation/assessment: (1) satisfaction survey conducted by the program team, (2) service delivery satisfaction survey conducted by SCE market research, and (3) independent customer satisfaction evaluation as part of the process evaluation. To track program customer satisfaction levels and specific process issues, SCE is proposing to increase the internal program satisfaction survey from the current pickup sampling rate of 5%, pending further analysis of the gains in precision obtainable with respect to overall satisfaction as well as the ability (statistical power) to detect specific problems that arise. The results of SCE's customer satisfaction surveys will be shared with other IOU program teams as part of continued efforts to refine and improve the program's delivery and impact.

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

ARP interfaces with national organization such as the EPA and others routinely. ARP is part of the Responsible Appliances Disposal group formed by the EPA. The RAD, formed in 2006, is a volunteer partnership program that includes utilities, municipalities, retailers, manufacturers, universities and others. As part of the program, EPA serves as a technical clearing house on responsible appliances disposal program development and implementations.

### **vi. Similar IOU and POU programs**

The ARP is replicated by utilities such as SMUD and others.

## **b) Program delivery and coordination**

### **i. Emerging Technologies (ET) Program**

The statewide ARP will work with the Emerging Technology Program to support new measures for inclusion in ARP that are cost-effective and environmentally sensible.

### **ii. Codes & Standards Program**

The statewide ARP will work with the Codes and Standards team to revise and update all necessary standards and savings estimate as appropriate and ensure that the impacts of any code changes are incorporated into program design and implementation.

### **iii. WE&T efforts**

The ARP will collaborate with the various WE&T teams so that all relevant programs' training curricula incorporate ARP-related information appropriately.

## **Residential: Appliance Recycling Program**

*Support for LIEE and Non-LIEE qualifying low-income families:* The ARP will work with local agencies and municipalities to support AB811 and offer training where appropriate so that the needs of non-LIEE qualifying families' can be best served, within the ARP program design.

### **iv. Program-specific marketing and outreach efforts**

Marketing and outreach efforts include online ads, ARCA/JACO truck wrap, seasonal campaigns, collateral and other marketing support, as needed.

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

All IOUs actively work to improve the convenience to customers and overall cost effectiveness of ARP. For 2009 - 2011, customers will continue to be able to schedule their pickups of refrigerators and freezers through a toll free number or via IOU web sites. Customers will be encouraged to use the online option since it offers both convenience (24/7 scheduling) and program administration cost efficiencies. For 2009-2011 program implementations, SCE will encourage and support PG&E 's and SDG&E's efforts to transition over to a PDA/real-time software technology platform, introduced in 2007 by SCE, to optimize program performance as it relates to both customer service and a reduction in operational costs<sup>35</sup>.

### **vi. Non-IOU programs**

The ARP is part of EPA's RAD program. We will participate in all necessary statewide and national recycling efforts. Best Buy recently announced offering an appliance recycling program, the success of which may offer additional information on the relative importance of convenience and rebates in particular customer and appliance vintage segments.

### **vii. CEC work on PIER**

Along with working with the Emerging Technology Program, the ARP program will work with CEC/PIER to integrate all new recycling applications with its recyclers in a cost-effective manner.

### **viii. CEC work on C&S**

The ARP will explore opportunities to work with CEC and the Codes and Standards team to integrate all new recycling applications with its recyclers in a cost-effective manner.

### **ix. Non-utility market initiatives**

ARP will continue to pursue non-utility marketing initiatives with other non-profit/governmental agencies; retailers, manufacturers, etc. As an example, in

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<sup>35</sup>PDA/real-time software enable impromptu scheduling by recycling services contractors and increased coordination for pickup and deliveries

## **Residential: Appliance Recycling Program**

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2008, ARP collaborated with the Department of Energy's (DOE) ENERGY STAR® "Recycle My Old Fridge Campaign." to promote the environmentally safe recycling of old refrigerators. This integration activity was aligned with SCE's ARP summer marketing campaign.

### **c) Best Practices**

The implementation of the real-time software/PDA system introduced by SCE in the 2006-2008 program is considered "best practice" technology for ARP in California and elsewhere. This technology has enabled the ARP to shorten the lead time for both scheduling and pickups. By incorporating the GPS capabilities and providing truck drivers with the handheld PDAs, SCE's ARP has literally eliminated paper work and streamlined the entire pickup process. SCE will encourage and support efforts to introduce this technology to other ARPs within California and elsewhere. In addition, SCE will explore the opportunities to expand and integrate this technology to other SCE EE and DR programs.

### **d) Innovation**

As indicated under "Best Practices" above, the implementation of Enerpath and real time GPS system is one of the most innovative approaches for the program nationwide. ARP will share relevant program data or recycling contacts to help other utilities and cities to adopt these new applications.

### **e) 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.

ARP has developed applications to further align its activities with other DSM offerings. Through the new, real-time software technology employed by SCE in 2007, ARP supported SCE's Summer Discount Plan demand response program, particularly in generating residential and non-residential leads for SDP. The leads provided by ARP were used by SDP for direct mailings. These coordinated efforts will continue and be expanded, where applicable.

To maximize the program's success, ARP will continue to expand its efforts with both internal and external market players through an assortment of approaches. Internally, ARP will increase its collaborative efforts with local EE partnerships and governments to offer "Refrigerator and Freezer Pickup Events." These events, typically held on Saturdays for the convenience of the customers, are scheduled in advance and sweep specific geographic areas for old, inefficient working refrigerators and freezers.

The program has strengthened its coordination with other EE programs such as the HEER, and HEES through the following efforts: cross promoting programs through POS materials at appliance retail stores; combining direct mailers; and offering specific recommendations to participate in ARP through the survey reports. In

## **Residential: Appliance Recycling Program**

addition, the HEES website will also offer a direct link to the ARP website for easy information access. While PG&E does not currently offer refrigerator rebates, it does work with retailers on promoting ARP.

Another strategy will be to increase integration efforts with other EE and Demand Response (DR) programs. We will continue to collaborate with the Multifamily Energy Efficiency Rebate Program (MFEER) to promote ARP by encouraging property owners/managers to retire or replace older, inefficient appliances by offering bundled incentives and rebate package for the turn-in of less efficient units and the purchase of new ENERGY STAR® appliances. In addition, SCE will collaborate with other EE and DR programs by using the new “lead generation” tools available with the real-time software employed in the ARP 2006–2008 program and will work with other utilities to do the same.

ARP will explore opportunities to collaborate with LIEE’s refrigerator replacement program to complement both programs and to leverage the expertise and resources available through a combination of the two programs. As part of the planning efforts, we will investigate several possible methods of collaboration, including region specific collaboration, or outreach to LIEE contractors. Prior to final implementation, we will test the proposed collaboration to make sure that it is effective.

Another deployment strategy will be to explore opportunities to integrate ARP with the future AMI systems and associated technologies. This includes looking into ways to “alert” customers (e.g., communication tools) of their energy usage associated with older, inefficient refrigerators and freezers.

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

As a part of the EPA’s RAD (Responsible Appliance Disposal) partnership program, ARP will continue to support the EPA’s efforts to expand the development and implementation of environmentally-safe recycling programs offered by other energy utilities, municipalities and governmental agencies.

### **g) Pilots**

One of the current program challenges is to coordinate the collection of working units from all units collected by the new appliance delivery service vendors. To meet this challenge, the program will consider pilot programs with retailers to test various program designs and implications of integrating appliance rebate and recycling rebate (mixing a program that addresses savings specific to replacement by a specific customer with the recycling program that realizes its savings from prevented transfers to hypothetical second owners). SCE will coordinate this pilot with other IOUs and limit the collaboration to at least one major California retailer. A specific M&E project will be designed to support data collection and analysis. The second possible pilot is to test the new collaboration methods with the LIEE program.

## **Residential: Appliance Recycling Program**

PG&E launched a pilot program for retailer pickups on October 2008 that has met with success. This pilot will be shared with other IOUs as a model to consider as program managers look to expand program participation.

### **h) EM&V**

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

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

A statewide process evaluation will be conducted. This evaluation will build on previous process evaluation work (as well as some market assessment/description work) that was a significant part of the 2004-2005 evaluation by ADM et al<sup>36</sup>. Included in this effort will be a number of issue areas, addressed by a combination of survey data collection/analysis, analysis of utility records, small area geographic analysis, and qualitative, in depth interviews. Specific EM&V issues include:

- Updating information from CLASS and RASS studies with respect to appliance saturations by age, primary/secondary status, size, and rates/types of disposal. As currently available, neither CLASS nor RASS are sufficient as a basis for population estimation and planning work. Efficient survey sampling and use of utility recycling data will assist in cost-effective, forward adjustment and increased detail/precision, using RASS and CLASS data as a base;
- Addressing the need for market transformation baseline data. As noted, the “ARP share” of disposals as well as population awareness of the existence and value of ARP, are key estimates that must be developed on an ongoing basis; a somewhat broadened mission for the process evaluation, building on procedures developed in the 2004-2005 evaluation, will answer this need;
- Tracking the proposed metrics. Going forward, repetition of the survey/tracking data collection and analysis will provide key high level feedback on the “ARP share” and customer awareness of recycling options;
- Describing the secondary appliance market in relation to ARP. Building upon the 2004-2005 evaluation, detail the current state as well as changes in the market, including the existence of secondary appliance dealers and how that has changed since 2005, the extent to which “flows” of secondary appliances through retail and bilateral transfer channels appear to have shifted in terms of volume and quality of appliances, the extent to which recycling programs may have affected the availability of used appliances in lower income communities, and whether

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<sup>36</sup> Evaluation Study of the 2004-2005 Statewide RARP, by ADM, Athens, Hiner, Innovologie (April, 2008)



## **Residential: Appliance Recycling Program**

- there are changes in the “saleability” or simply the pricing of available secondary appliances;
- Perform an analysis of the appliances collected by recycling vendors, to assess the age and size of these units. This is an important contribution, in that the estimation of savings (ex ante or ex post) entails accurate information on the population distribution of appliances by size, configuration, and age. The reliability of the tracking data as a source for this information is a reasonable cause for concern, so that the development of estimates connecting tracking and “verified” size and age values will be an important part of the toolkit for assessing and planning ARP;
  - Monitor the fraction of discarded/transferred appliances, by appliance type and age, which are penetrated by the program within IOU territories. Understanding the “disposal share” going forward relates not only to a key transformation-related metric, but also can be useful if disaggregated, so that program management and planning is based on knowledge of the extent to which the program is adequately focused on aged and inefficient appliances;
  - Assessment of the effectiveness of customer satisfaction with particular steps in the program, as implemented. Following on the 2004-2005 evaluation, survey work detailing successes and improvable processes will be conducted – specific to enrollment by enrollment type, pickup and time to pickup, receipt of incentive, etc;
  - Assess program awareness in customer segments, including segmentation by customer tenure and payer arrangement. This survey work will be critical in identifying customer segments (residential/non-residential, income grouping, renter/owner, electric payer/submetered tenant, etc.) in which significant recycling opportunity or potential may be expected; and
  - Evaluate the effectiveness of integration between other key programs in the portfolio- including both (a) the extent to which coordination leads to increased co-participation, and (b) the extent to which organizational variables, including enhanced linkage between tracking databases, lead to greater participation.

Additionally, an SCE-specific process evaluation is planned, in order to improve program design, implementation, and effectiveness. The follow topics and issues will be addressed:

- As part of this study, SCE will follow up on the 2006-2008 process evaluation, as well as leads provided by the 2004-2005 ADM study, in order to relate customer segmentation to untapped recycling potential and cost-effective opportunities;
- Segmentation analysis will be extended to include testing of a few marketing messages tailored to the segmentation results; and
- Short term, possibly quasi-experimental studies will be implemented with respect to:
  - (a) payments specific to larger, higher-consumption appliances;
  - (b) the pilot program associating appliance retailer rebate/new appliance delivery with recycling; and possibly
  - (c) appropriate linking with SCE’s LIEE program.

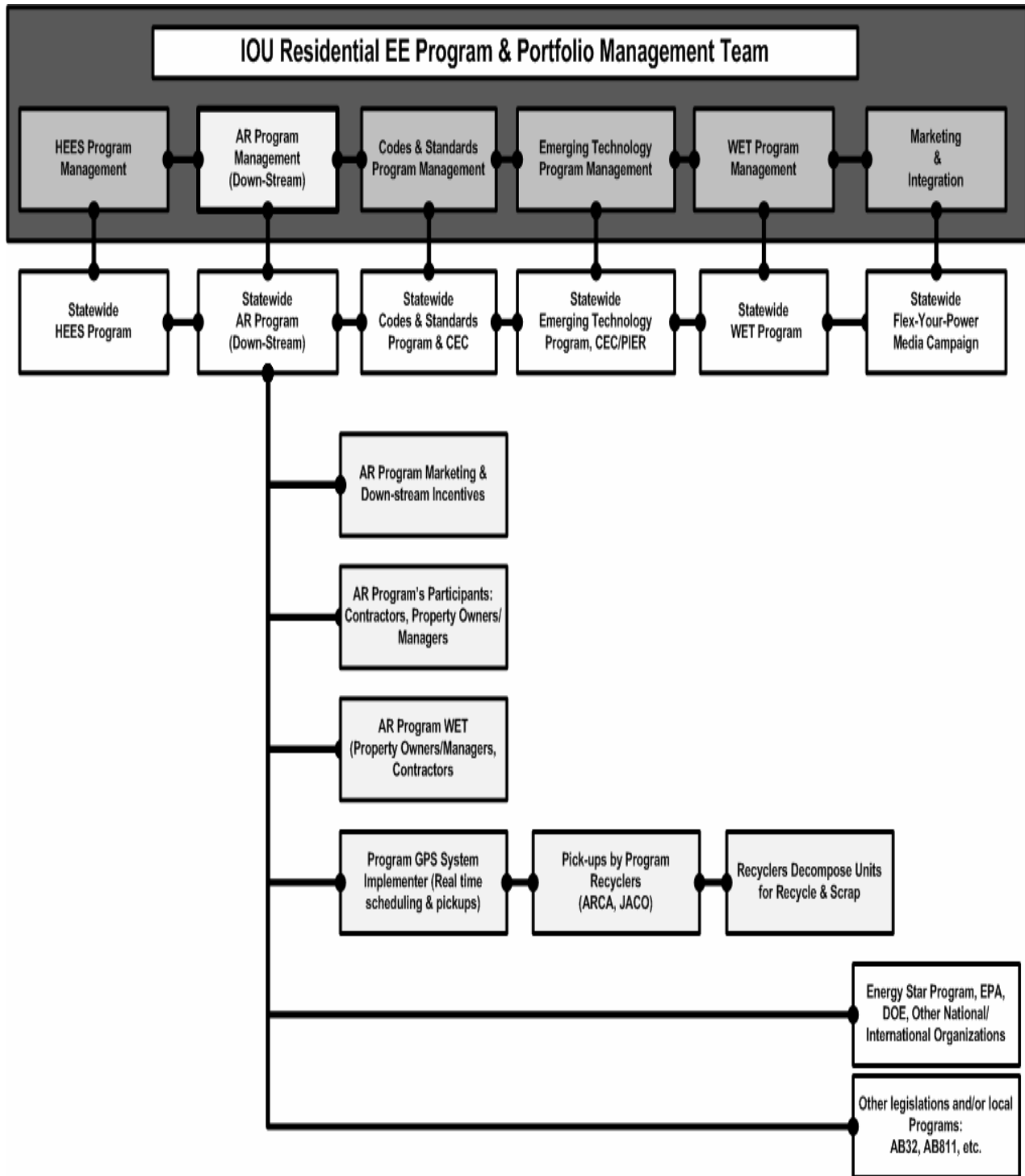
## **Residential: Appliance Recycling Program**

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Note that in each of these cases, there may be opportunities to increase volume (gross savings), but at the possible expense of the net-to-gross ratio, such that cost-effectiveness may depend upon eliminating or reducing incentives for a particular program design alternative.

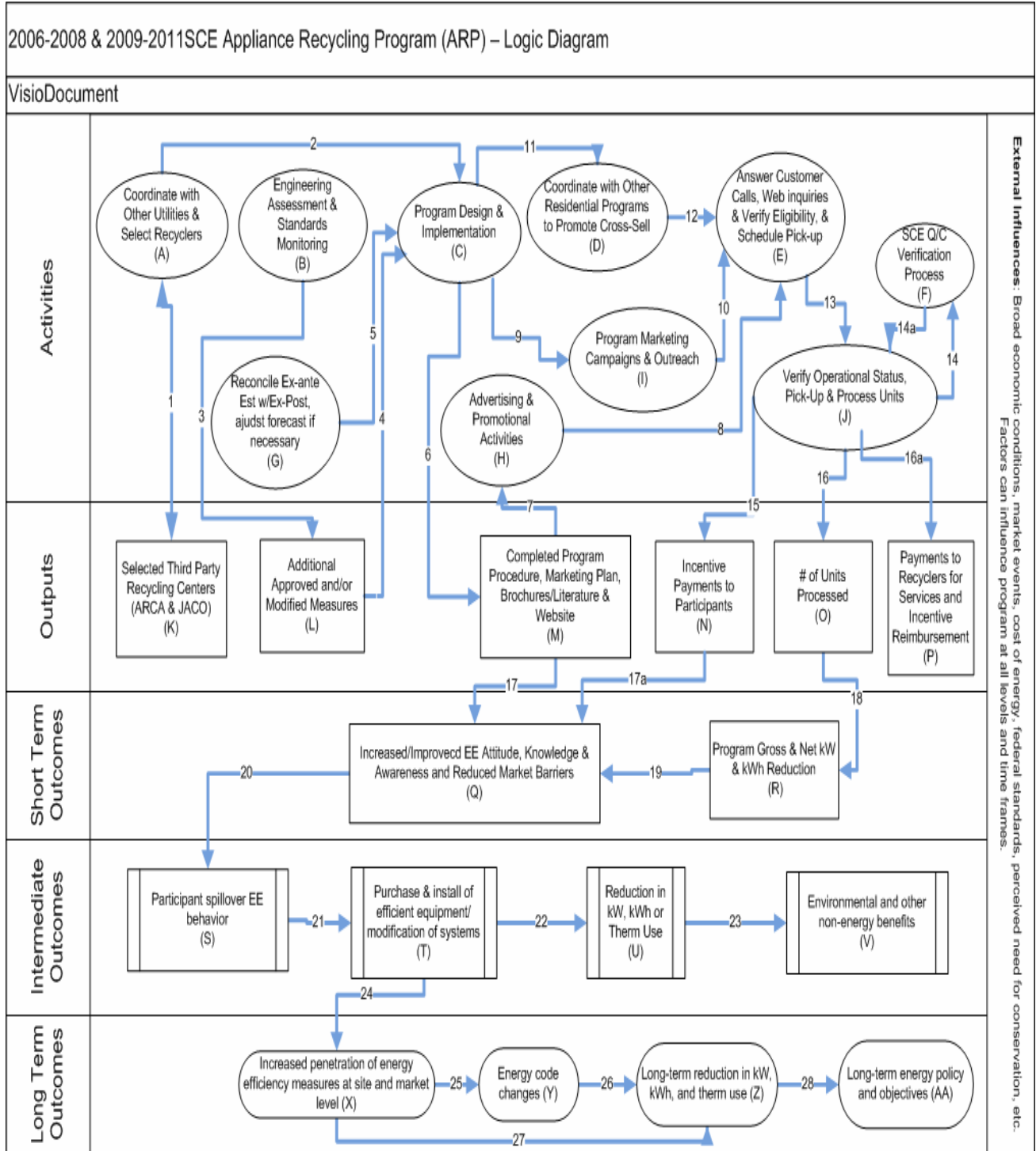
# Residential: Appliance Recycling Program

## 7. Program Interaction Diagram ARP



# Residential: Appliance Recycling Program

## 8. Program Logic Diagram



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## **Residential: Business and Consumer Electronics Program**

1. **Program Name:** Business and Consumer Electronics Program (BCEP)  
**Program Type:** Core

2. **Projected Program Budget Table**

**Table 1** - reference the REEP for budget details

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

**Table 2** - reference the REEP for projected gross impact details

4. **Program Description**

a) **Describe program**

The BCEP is a new addition to the residential energy efficiency portfolio for 2009-2011. The BCEP provides midstream incentives to retailers to increase the stocking level and promotion activities of high-efficiency (i.e., ENERGY STAR®) electronic products including computers, computer monitors, cable and satellite set-top boxes, televisions, and additional business and consumer electronics as they become available in the market. Smart power strips are now being evaluated for inclusion in the program. The BCEP will also provide incentives to manufacturers that sell directly to consumers or key accounts. Although SCE, PG&E and SDG&E share similar program theory, design, and goals, each IOU may implement its program logistics differently.

The program plans to expand and leverage the point-of-sales (POS) rebate delivery method, provide field support services to update marketing materials in retail stores, and support education of 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.

b) **List measures**

The following incentives will be available through the program:

<b>Measures</b>	<b>Incentive</b>
>ENERGY STAR® qualified Televisions	\$20.00
LCD monitors	\$7.50
ENERGY STAR 4.0® qualified Computers	\$8.35

c) **List non-incentive customer services**

The non-incentive services include a web-link to an on-line information system mentioned above, to help California residents identify the most efficient and environmental friendly consumer electronic products available in the market. The non-incentive services also include outreach and educational activities for manufacturers, retailers, and consumers. These outreach and educational activities will be further detailed in the implementation plan below.

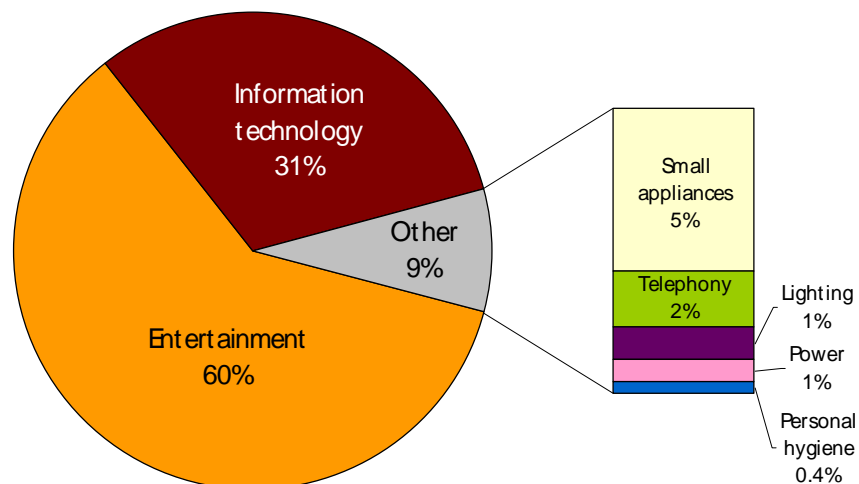
## **Residential: Business and Consumer Electronics Program**

### **5. Program Rationale and Expected Outcome**

The BCEP is designed to respond to the growing plug-load energy usage in the households. Today, the California IOUs all have a portfolio of residential programs designed in two different approaches: (1) a measure-specific appliances approach (i.e., HEER program) or (2) a comprehensive household performance and building envelop approach (i.e., SCE's local Comprehensive Home Performance Program). The BCEP is designed to address the full range of growth of household plug-loads. This program is a logical sub-component of the IOUs residential portfolio.

A review of residential plug-loads conducted by Foster Porter et al. (2006) shows that home entertainment and information technology products dominate the electric energy use for plug-loads, making up 60% and 31%, respectively of plug-load energy use, and together represent more than 90% of total residential plug-load energy use as shown in Figure 1, below.

**Figure 1: Share of Plug Load Energy Use by Product Category (Foster Porter et. al., 2006)**



Source: Foster Porter, S., Moorefield, L., & May-Ostendorp, P. (2006). Final Field Research Report. Retrieved November 11, 2008, from <http://www.efficientproducts.org>

The Foster Porter study included telephone surveys of 300 California homes to ascertain the number and type of plug-load devices, field visits to 75 of these homes where power consumption of an average of 17 plug load devices was measured, and extended field visits to 50 of the homes where detailed, time-series measurements of energy consumption were taken over a one-week period.

The tables below, also from the Foster Porter study, show the estimated average annual energy use (kWh) by device type for the home entertainment and information technology categories. Some of these measures are already selected for the initial BCEP implementation.

## **Residential: Business and Consumer Electronics Program**

The BCEP is starting with three basic measures, but the program could quickly evolve to include additional measures, including in-home energy monitoring systems, to address plug-load growth in a comprehensive manner.

### **Home Entertainment Product Types and Energy Use**

<b>PRODUCT</b>	<b>AVERAGE ANNUAL ENERGY USE (KWH)</b>
Plasma TV (<40")	441
Personal Video Recorder (PVR)	363
Digital Cable Set-Top Box (STB)	239
Digital Cable STB with PVR	376
Satellite Cable STB with PVR	236
Receiver	143
Satellite Cable STB	124
CRT TV (<40")	123
LCD TV (<40")	77
Speaker	66
Sub-woofer	60
Audio Mini-System	58
DVR	52
VCR	34
Portable Stereo	18
Radio	18
Video Game Console	16
DVD	13
Amplifier	13
CD Player	12

Source: Foster Porter, see citation above

### **Information Technology Types and Energy Use**

<b>PRODUCT</b>	<b>AVERAGE ANNUAL ENERGY USE (KWH)</b>
Desktop Computer	255
Laptop Computer	83
CRT Monitor	82
LCD Monitor	70
Multi-Function Printer/Scanner/Copier	55
Modem	50
Wireless Router	48
Fax	26
Computer Speakers	20
USB Hub	18
Printer	15

Source: Foster Porter, see citation above.

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

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

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



## **Residential: Business and Consumer Electronics Program**

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### **b) Market Transformation Information**

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

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

### **c) Program Design to Overcome Barriers**

BCEP's innovative program design, although exciting, has several built-in program barriers. The program is designed to provide incentives to the mid-stream retailers. The total distribution channel for the consumer electronic devices is complex and worldwide. Below, we have outlined a few possible program barriers:

- Given the amount of incentive provided (between \$7.50 and \$20.00 per measure), retailers may be reluctant to commit time and resources to promote the BCEP;
- Given the complexity of the products, the development cycle needed to include products that exceed ENERGY STAR® specifications may take years to achieve. In some cases, the manufacturers may be more motivated to develop features to gain market share (i.e., reduce total product cost versus adding ENERGY STAR+ features) rather than devoting the resources needed to develop the necessary ENERGY STAR® features; and
- It is possible, despite the program promotional efforts and the appeal for consumers to take environmentally responsible actions, an end user level rebate might still be required to motivate actual purchase. The CFL lighting program sought to reduce overall product cost at the consumer level through manufacturing buy-downs, the BCEP's approach to the consumer is more indirect.

Based on our discussions with the retailers and manufacturers, we believe the BCEP's program design is sound. Initial discussions with the retailers indicate that they are very excited about the program design and the level of program incentive is significant, given their business model. As part of the ongoing process evaluation, the IOUs will continue to monitor the other potential barriers.

BCEP will work with regulators to evaluate, develop and implement non-energy programs, such as recycling and other non-energy benefit activities during the program cycle, as appropriate.

### **d) Quantitative Program Targets**

The proposed targets may be modified due to funding restrictions, especially for the 2009 bridge funding year.

## Residential: Business and Consumer Electronics Program

**Table 5 - Program Activity Targets**

SCE	Program Target by 2009	Program Target by 2010	Program Target by 2011
<p>Target #1</p> <p>Sign up # manufacturers to participate in the program</p>	<p>Grow the list of participating manufacturers to a minimum of 5 for 2009-2011 program cycle</p>	<p>Same as 2009</p>	<p>Same as 2009</p>
<p>Target #2</p> <p>Sign up # of retailers and retailer stores to participate in the program</p>	<p>Grow the list of participating retailers to a minimum of 5 for 2009-2011 program cycle</p>	<p>Same as 2009</p>	<p>Same as 2009</p>
<p>Target #3</p> <p>Collect % of POS data so the consumers can be identified</p>	<p>Collect a minimum of 1% POS consumer contact information for 2009-2011 program cycle</p>	<p>Same as 2009</p>	<p>Same as 2009</p>
<p>Target #4</p> <p>Complete # of marketing, educational and outreach events</p>	<p>Part-1: Visit or contact each participating manufacturers and retailers once per year to deliver program information and education</p> <p>Part-2: Develop on- line interactive training to allow remote access by program participants, to be</p>	<p>Same as 2009</p>	<p>Same as 2009</p>

## **Residential: Business and Consumer Electronics Program**

	completed by 2010		
Target #5 Meet 100% of program kW and kWh goals.	Meet 100% kW or kWh goals for 2009-2011 program cycle	Same as 2009	Same as 2009

### **e) Advancing Strategic Plan goals and objectives**

The BCEP 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.

Residential plug-load has been identified as an area of increasing significance within the Strategic Plan, due to increases in the number and volume of consumer electronics devices in the market<sup>37</sup>. BCEP will help stem the dramatic load growth attributed to the rapid proliferation of increasingly energy-intensive consumer electronics, in both business and residential customer categories. The program provides a consistent and recognizable program presence throughout the state and offers similar measures, incentives and processes.

Residential 3-1: Drive continual advances in residential energy usage, including plug-loads, home energy management systems, and appliances - This program is part of the solution to reduce energy consumption in California households. The current design does not specifically address the Energy Division's request to transform the market to meet the Strategic Plan's goal of 30% or 70% deep energy consumption by 2020.

Residential 3-3: Create demand for such products through market transformation activities – 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.

Residential 3-4: Continuously strengthen standards, including the expansion of both Title 24 and Title 20 to codify advances in plug load management - BCEP will continue to interact with the California Energy Commission (CEC). The program supports CEC efforts to draft modifications to California's Title 20 Appliance Code for new or updated efficiency standards. The BCEP Program will base advanced

<sup>37</sup> The California Energy Efficiency Strategic Plan, Strategy 3; page 2 – 1.

## **Residential: Business and Consumer Electronics Program**

specifications, beyond ENERGY STAR®, on Consortium for Energy Efficiency (CEE) standards.

### **6. Program Implementation**

#### **a) Statewide IOU coordination**

**i. Program name:** Business and Consumer Electronics Program

#### **ii. Program delivery mechanisms**

The program will be delivered through a midstream strategy aimed at encouraging manufacturers and retailers to increase the stocking, promotion, and sales of energy-efficient electronic equipment. Retailer relationships established through the HEER Program will be leveraged to establish a more robust relationship.

Midstream rebates will be paid to retailers on a per unit basis. Sales from each approved retailer location will be summarized by store location and product type, and then submitted to the program by the retailer on a monthly invoice. An outside vendor will provide field support services to place marketing materials in retail stores, ensure qualified product identification on retail store floors, remove outdated materials and provide education to the retailer's sales force on delivering the most effective energy-efficient decision message to the customer.

The rationale for a statewide program is twofold: (1) gain leverage with the retailers and outreach, education and marketing entities to increase their participation in this program and (2) gain economic leverage for each utility. Combined, these factors will contribute to reduce the cost of electricity to California's consumers by capturing the savings available from electronics.

Because it is statewide, the program will enjoy measure development efficiencies, resulting from not duplicating the research and development cost for work papers, etc. This is significant in that there are multiple product categories that need to be managed on an ongoing basis. Additionally, the program provides a model for utilities across the nation to follow, thereby increasing the overall leverage that utilities can have to increase the share of highly efficient electronics in the US market.

The program is designed to work with Original Equipment Manufacturers (OEMs) and retailers. The consumer electronic market is served by a two-tier distribution channel. OEMs can sell products directly to key accounts and on-line stores, primarily a B2B model. OEMs will also use the two-tier distribution channel to reach end users through mid-channel players such as retailers and Value-added resellers (VARs), this is typically referred to as a B2C model. OEMs that sell directly to end-users and key accounts will be motivated to market high efficiency electronics to the consumer market. Retailers will be incented to market high efficiency electronics to both consumers and business customers.

## **Residential: Business and Consumer Electronics Program**

This midstream program design is based on several factors: the small size of the potential incentives, their limited impact on consumer behavior, the large number of rapidly changing product lines (i.e., often with 12 or fewer months of product life), and the huge volume of electronics devices sold. In order to keep the program cost effective, the average incentive offered is less than \$20 per unit.

Combined annual sales of the consumer electronic products exceed \$7 million. This, combined with the fact that there are almost 7,400 retail electronics outlets in California, necessitates a program that is top-down and driven by corporate decision makers rather than store-level decision makers. This ensures an economically efficient and effective program. If this was a downstream program, it would require processing 1.4 million rebates to meet the proposed market share goal of 20%. The associated costs of a downstream approach would make the BCEP too expensive to implement.

Below is an initial list of targeted retail participants, on-line channels, and OEMs for the BCEP:

<b>Retailers</b>	<b>Internet Retailers</b>	<b>OEMs</b>
Best Buy Co Inc	Newegg.com	<b>Computer</b>
Wal-Mart Stores Inc	Amazon.com	HP
Target	TigerDirect	Dell
Costco	PC Mail	Lenovo
Sears/Kmart	Buy.com	Apple
Sam's Club	Overstock.com	Gateway
Apple Retail Stores	Alienware	Sony
Office Depot, Inc.	CDW	<b>TV</b>
Fry's Electronics Inc		LG
Staples, Inc.		Phillips
Office Max		Sony
Buying Groups-Nationwide		Samsung
		Toshiba
		Sharp
		Panasonic

### **iii. Incentive levels**

See Section 4b for the incentive levels.

### **iv. Marketing and outreach plans**

The program will target the consumer electronics market, primarily with midstream incentives, to increase the market share for ENERGY STAR® qualified and/or higher efficiency electronics measures. Although measures qualify for participation in BCEP based upon an ENERGY STAR qualification, the program will monitor efforts such as the Topten USA project for potential consideration.

## **Residential: Business and Consumer Electronics Program**

The Topten USA project is a coordinated effort by several utilities across the nation that provides an internet-based information system modeled after a product currently available in Europe, to help customers identify the "top ten" most energy-efficient and environmentally friendly products available. The Topten USA website will be a collaborative effort of the World Wildlife Fund, Northeast Energy Efficiency Partnerships (NEEP), the CEE, the California utilities, and others. Eventually, Topten USA may expand to include other states, regions, or the entire United States. The implementation of the Topten USA, as part of BCEP marketing implementation, will be outlined in detail once the program is approved. Topten USA and other consumer outreach activities such as SCE's Online Buyers Guide will be explored and cross-promoted during the program cycle, as appropriate.

The educational marketing outreach will be comprehensive and integrated to reach both B2B and B2C markets. Integration will also take place in cooperation between all IOUs and other utilities within California. Four levels of marketing outreach are planned:

- Outreach directly to corporate-level decision makers in retailers and OEM;
- Outreach to store/field-level personnel and operations through professional detailing groups. These actions ultimately reach the residential customer ;
- Outreach to associations and industry groups to garner program support and participation; and
- Outreach to raise internal awareness for employees, and to service and sales teams.

Marketing outreach to retailer channels and OEMs will be implemented by a single entity at the program participants' headquarters level. The program coordination has to take place with program decision makers to agree on products and promotional support activities. Coordination also has to take place with program developers to implement the details of each marketing campaign across multiple store geographies and multiple utilities. Finally, coordination has to take place with data managers and data reporting functions.

Marketing outreach at the retailers' field level will be conducted through detailing firms who will provide in store/field level support for each channel program in several ways:

- Place point of purchase materials in stores and on selected products;
- Train store personnel about the program;
- Track promotional and placement activity; and
- Provide electronic reporting of activities.

Some customization of marketing promotional policy (i.e., possible restriction for quantity limitations) may differ at the field level by region. However, point of purchase signage requirements will be standardized, based on retailer

## **Residential: Business and Consumer Electronics Program**

requirements and program participation agreements for a standard look and feel across stores.

Additional media recommendations for consideration include: broadcast media (TV, cable, radio), print media (newspaper, journals and publications, advertorials), and a possible micro-site. The program will assess the promotional needs for in-home, outdoor, and other end-user outreach venues, based on cost-effectiveness.

Outreach will be implemented with trade associations and trade groups to promote the program and to increase the speed and efficiency of market penetration. Some of the tactics under considerations include:

- Consumer Electronic Show (CES) – national/international format to bring together manufacturers and resellers of all consumer electronics product lines, and
- Retail Vision – national venue to bring together web retailers who control the internet electronics retails space.

To fully understand the requirements for the different levels of marketing and implementation effectiveness, various market research and measurement and evaluation studies will be required. Below is a short list of possible studies:

- General consumer purchase behavior study, market trend monitoring, competitive dynamic analysis within the BCEP market;
- Pre-program launch data requirements (baseline data);
- Program cycle data collection and Q/C process (satisfaction and AKA data);
- Marketing program effective evaluation; and
- Program participant satisfaction.

To address these market research and M&E requirements, please refer to the M&E section of the PIP.

### **v. IOU program interactions with other entities**

Extensive coordination will occur in 2009 between BCEP and the EPA ENERGY STAR® Program. All program product specifications will be based on ENERGY STAR® standards and reporting, and the ENERGY STAR® brand and marketing efforts will be leveraged wherever possible.

BCEP will continue to interact with the CEC. The program works closely with the CEC to draft modifications to California's Title 20 Appliance Code for new or updated efficiency standards.

The BCEP Program will base advanced specifications, beyond ENERGY STAR®, on CEE standards.

More comprehensively, the BCEP will look to set up a national forum in collaboration with DOE, EPA, CEE manufacturers, California IOUs, and other

## **Residential: Business and Consumer Electronics Program**

state and local energy efficiency programs. This forum will specifically address the top level Strategic Plan strategy of raising plug-load efficiency and providing behavioral solutions. The purpose of this forum is to increase awareness and to encourage efficient use of BCEP-qualifying products.

### **vi. Similar IOU and POU programs**

The most similar electronics program was the 80+ program, which provided incentives to manufacturers to adopt a high-efficiency power supply as an OEM component to computers. This program focused on creating market awareness of the 80+ brand and worked with power supply manufacturers and computer OEMs to gain adoption. Despite the good program concept, the 80+ program was terminated early due to little market acceptance.

Consistent with the Strategic Plan strategy, the BCEP advances comprehensive energy efficiency measures to specifically address the growth of plug-loads, and plug-load efficiency. Over time, the BCEP could evolve to include smart-house energy monitoring systems. The BCEP team will coordinate activities with IDSM activities to ensure consistent implementation.

*Program Integration:* The BCEP is part of the overall residential program portfolio to address and curb the various energy growths within the California households. It will leverage and integrate marketing activities with programs such as HEES, HEER, MFEER, ARP and others.

This 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, solar initiative, smart meters and other IDSM efforts.

*Support for LIEE and Non-LIEE qualifying low income families:* The BCEP will coordinate activities with LIEE to make sure all qualifying LIEE participants are aware of the BCEP.

### **b) Program delivery and coordination**

#### **i. Emerging Technologies (ET) program**

The BCEP has the potential to grow and add many other relevant measures identified above. The BCEP has to aggressively monitor each of these product categories to gauge the readiness of the measures. Some of these products have very long product development cycles and others have short development cycles. This means the BCEP must stay flexible to keep up with this dynamic market.

This emphasizes the importance of close coordination with Emerging Technologies and Technology Transfer. A long-term strategic roadmap is needed to guide the program in setting appropriate levels for product specifications within the program. Below is an outline of a few key elements of this roadmap:



## **Residential: Business and Consumer Electronics Program**

- Understand and integrate electronics industry manufacturing and retail product development and business cycles into BCEP planning;
- Integrate coordination with ENERGY STAR® standards development timeline and availability;
- Keep the BCEP measures with their life cycle requirements (i.e., some of these products may have a very short commercial product life cycle and newer more advanced model may emerge quickly);
- Conduct technology assessments such as baseline energy use and energy saving potential for new technologies to support new work papers; and
- Coordinate technology transfer activities with the statewide BCEP team.

### **ii. Codes & Standards program**

The BCEP will work with the Codes & Standards program to ensure that the impacts of any code changes are incorporated into program design and implementation, especially any ENERGY STAR® standards.

The BCEP program team plans to work closely with the Codes & Standards teams to focus on a long-term market transformation, using a combination of appliance standards, customer incentives, and education. An overarching goal for this coordination is to develop incentive and standard levels so that the incentive program will support and encourage energy-efficient product innovation, while paving the way for Title 20 performance standards.

### **iii. WE&T efforts**

WE&T needs to take place at multiple levels: (1) the retail store, (2) the retailer corporate/headquarters decision makers, and (3) Original Equipment Manufacturers (OEMs).

For retail stores:

- BCEP representatives will provide training to store-level personnel at participating retailers. These training activities will be supported by regular surveys to determine the effectiveness of the training.

For retailer headquarters decision makers:

- The IOU account managers will work with buyers and merchandisers at the headquarters of participating retailers to educate them about the availability, desirability, and benefits of BCEP qualifying electronics.

For OEMs:

- The IOUs will work with OEM manufacturers to educate their product managers and marketing groups about the importance of designing ENERGY STAR® qualified and beyond features into their products.

Finally, the IOUs will work with all of the above to develop marketing programs to educate consumers and increase awareness about the benefits of BCEP qualifying products. Various efforts to educate sales associates of user and

## **Residential: Business and Consumer Electronics Program**

environmental benefits of BCEP-included products will take place during the program cycle. BCEP initiatives include, but are not limited to, activities such as site visits by program representatives, program participation agreements, and / or literature, as appropriate.

### **iv. Program-specific marketing and outreach efforts**

The BCEP is currently considering a full range of marketing tactics. Below, is a short list of these activities:

- Specific outreach and training efforts to encourage manufacturers, retailers and VARs to participate in the program. (i.e., individual meetings, trade shows, and trade organizations);
- Media advertising as part of Flex-Your-Power ads (TV, cable, radio, newspapers, internet, etc.);
- Displays and signage such as billboards, out-of-home locations;
- Displayers at participating retailer locations;
- Other more innovative venue such as mobile communication, cell phone text, and others;
- IOU-specific micro site; and
- Co-ops and co-branding with various manufacturers, retailers and VARs.

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

The program does not have any non-energy activities planned. All program activities are directed to engage program participants at the multiple levels to promote and purchase ENERGY STAR® qualified BCEP measures.

### **vi. Non-IOU programs**

The Los Angeles Department of Water & Power is in active discussions to start a program similar to BCEP. There is also an active pilot program designed by the Sacramento Municipality Utility District (SMUD) and PG&E. PG&E and SMUD have been actively participating since mid 2008.

### **vii. CEC work on PIER**

Similar to the discussion on the importance of working with the statewide Emerging Technology Program, the BCEP will work closely with CEC and PIER to maximize all outputs.

### **viii. CEC work on C&S**

Similar to the discussion on the statewide Codes and Standards Program, the BCEP program understands the importance of all standards-related work and will implement all appropriate requirements.

### **ix. Non-utility market initiatives**

The BCEP will work closely with the participating manufacturers, retailers and VARs to design specific marketing initiatives. It is possible for the manufacturers and retailers to conduct their own special promotions. However, the timing of such activities is not known to the BCEP at this time.

## **Residential: Business and Consumer Electronics Program**

### **c) Best Practices**

BCEP builds on the program designed for the 2008 Flat Panel Monitor and 80+ Rebate third-party programs. These programs, which offered upstream and midstream rebates to major consumer electronic retailers and manufacturers, focused on promoting high-efficiency computers and computer monitors.

We have learned two key challenges to the energy efficiency intervention: (1) the small per unit savings can spread across millions of units; and (2) rapidly changing baseline efficiencies due to quickly evolving products and markets. Past experience with the HEER, upstream HVAC and Motors Program and others show that these challenges are best addressed at the midstream level.

Past experience has also shown that major retailers have enough market power to determine what product features the manufacturers bring to market. Increased demand for high-efficiency consumer electronics from a retailer with strong purchasing power can transform the supply chain. A midstream incentive to retailers will create willingness for the retailer to report on the large number of individual sales transactions and actively identify and display the new ENERGY STAR® qualifying products that come to market.

The BCEP incorporated many “best practices” in its program design. Below are examples of such program design lessons learned:

- Program timing – Each product category in the market has its own cycle (for example, the television market life cycle, manufacturers work on an 18 month design cycle – in terms of its impact on retail televisions. Thus, they need to know 18 months in advance what televisions to promote in their sales cycle each fall. For example, this means that by March 2009 they need to know the program efficiency targets of the televisions they will sell in September 2011. Likewise, retailers will make buying decisions in the late fall of 2010 through early 2011 for the products they will sell throughout 2011 and into 2012 when the new 2012 models will be available. Such design and marketing cycles must be managed and coordinated with all the stakeholders for each product category on an ongoing basis. The BCEP roadmap planning and coordination activities will help facilitate this level of planning.
- Dedicated/Experienced Account Relationship Management – This program is based on changing the behavior of manufacturers and retailers. It requires access and relationships with these people. It does little good to run this program through environmental affairs groups unless those groups can and will influence the buyers/decision makers. It is much more effective to develop direct relationships with these personnel. Key lessons to keep in mind when trying to influence the buyers/decision makers are:
  - The target personnel are extremely busy, particularly at key seasons during the year;

## **Residential: Business and Consumer Electronics Program**

- They focus their energy to attending only core activities relevant to their business. It is critical that BCEP activities become more closely aligned to their core activities;
- Assigning the right program people to fully dedicate to developing and maintaining these multi-level relationships is critical to program success; and
- Developing relationships with all the channel players is critical to reaching the shared goals with these key players.

The BCEP's planned outreach and marketing activities are designed with the above items in mind, and the need for quality data availability. Quality data is required in order to develop accurate work papers and engage OEMs and retailers in the program. There are several lessons learned from the PG&E television pilot:

- Data and product availability can be a serious problem. For example, there isn't a readily available list for qualifying televisions;
- Retailer's purchasing decisions can seriously impact work papers and expected sales volume; and
- Any delays in ENERGY STAR® standards development can impact channel participation.

By working closely with retailers, PG&E was able overcome the issues identified above and to gain access to retailer's sales data, hence deriving the market penetration estimate for ENERGY STAR®-qualified televisions.

### **d) Innovation**

Innovative program implementation strategy is an excellent example of managing complexity. The program has multiple moving parts and requires many levels of participation among:

- OEM manufactures;
- Retailers at store front and executive offices;
- Many national and statewide stakeholders and trade association;
- Consumer groups; and
- Standards groups.

The BCEP consists of many design elements that can be a model for other statewide implementation.

### **e) 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.

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

Initially, the BCEPs will focus on electrical plug-load applications. Over time, as the program evolves, water and air-quality monitoring in a smart house scenario is entirely within the program scope and range.

## **Residential: Business and Consumer Electronics Program**

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### **g) Pilots**

In 2006-2008, The 80+ program was a SCE/PG&E pilot where we tested the efficiency of ENERGY STAR computers. We have also tested ENERGY STAR LCD monitors as part of the Monitor Program. As indicated earlier, the 2009-2011 BCEP program is building upon lessons learned from both of these pilots. Collectively, we learned the importance of having a statewide program and the need for cohesiveness support of ENERGY STAR standards.

PG&E and SMUD entered a pilot program in 2008 to develop the experience necessary to ramp up a program in 2009 and to capture sales of televisions during the transition to digital television. The PG&E pilot program team meets weekly to identify status of program elements, identify future issues and develop actions to meet future requirements. This team structure and operational procedures are part of a program framework that can be expanded to a larger number of utility participants. PG&E agrees to share all key pilot findings with other California IOUs and the Energy Division in order to speed up the statewide BCEP implementation for 2009-2011 program years. The BCEP IOUs will leverage lessons learned by PG&E/SMUD pilot programs. Additional pilots may be explored as we add more measures and components to this program.

### **h) EM&V**

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

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

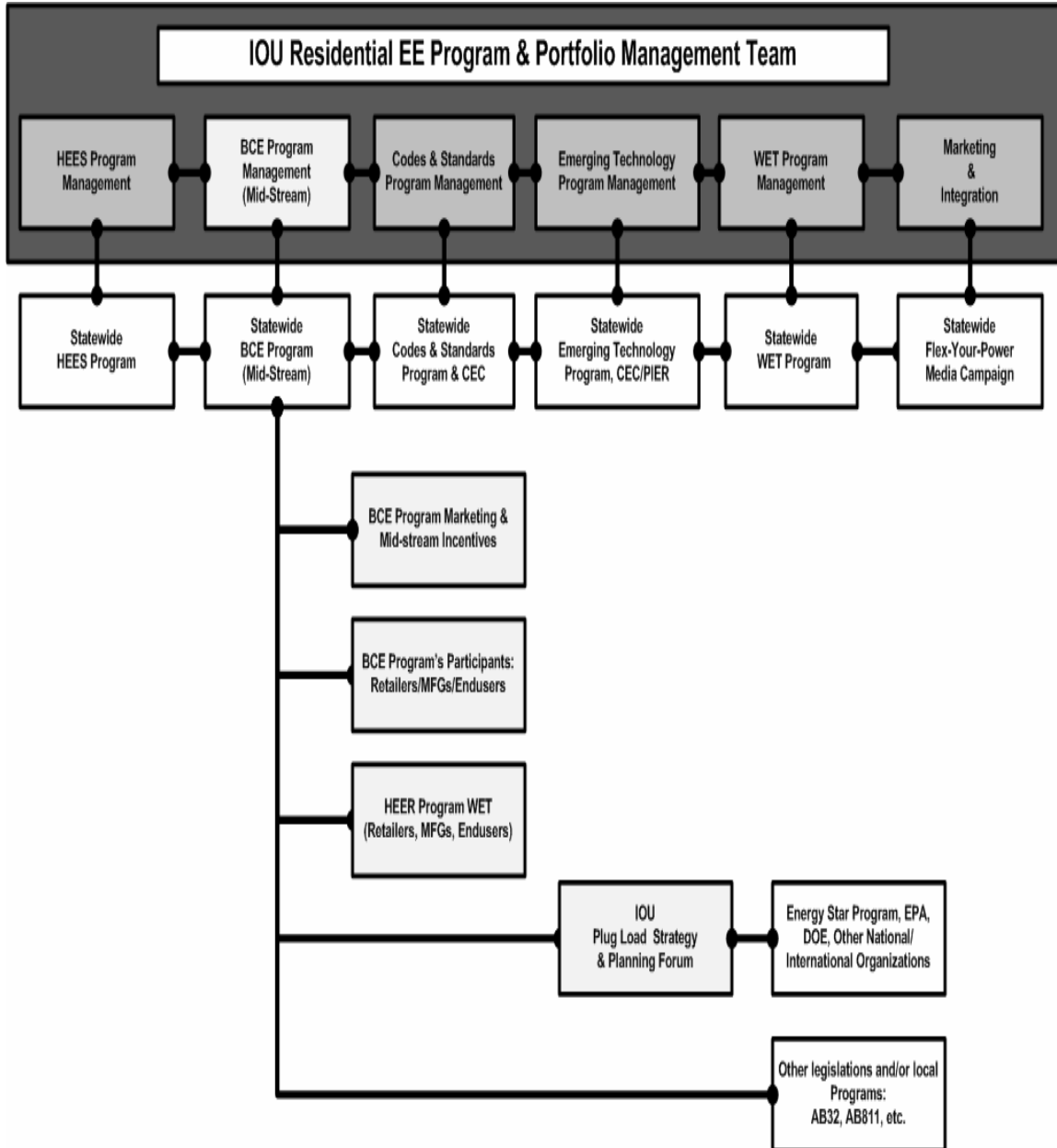
- To validate and verify BCEP measure savings estimate with metering and monitoring;
- Conduct statewide market evaluation to assess the following:
  - Collect market baseline data – ODC is currently working on a statewide study to provide market baseline data for manufacturers, retailers and VARs,
  - Profile the customer behavior and attitude towards ENERGY STAR® consumer electronic device purchases with or without incentive,
  - Collect data for proposed metrics, and
  - Monitor consumer electronic market trends; and
- Conduct IOU specific process evaluation to improve program design, implementation and marketing effectiveness.

Program participants will provide information such as ENERGY STAR® vs. non-ENERGY STAR® product sales through the program cycle plus sales totals by store

## Residential: Business and Consumer Electronics Program

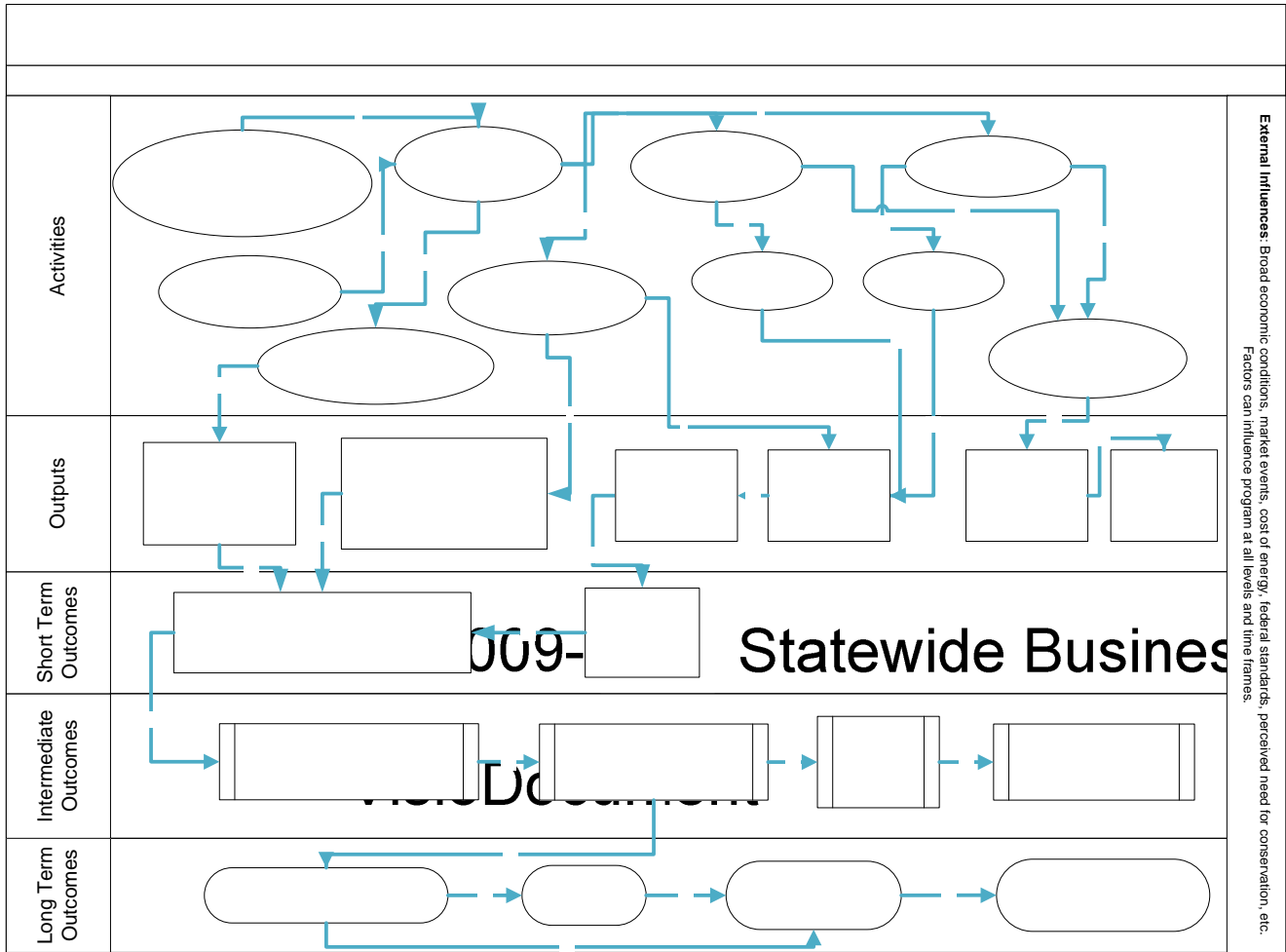
location. This information will provide valuable insight into program successes and can feed subsequent program strategies and deployment tactics.

### 7. Program Interaction Diagram



# Residential: Business and Consumer Electronics Program

## 8. Program Logic Model



Participate in BCE Governing Council to Coordinate Statewide Program Activities & Collect Inputs from ETP & Codes&STD & Others (A)

Reconcile Savings Estimate & Adjust forecast as required (E)

Coordinate v  
Other Program  
Implement App  
for Ret





1g

## **Residential: Multifamily Energy Efficiency Rebate Program**

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

- 2. Projected Program Budget Table**

**Table 1** - reference the REEP for budget details

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

**Table 2** - reference the REEP for projected gross impact details

- 4. Program Description**

- a) Describe program**

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

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

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

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

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

## **Residential: Multifamily Energy Efficiency Rebate Program**

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

### **b) List measures**

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

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
- Natural gas water heater and/or boiler controllers
- Natural gas storage water heater
- Central natural gas furnace

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

### **c) List Non-incentive Customer Services**

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

## **Residential: Multifamily Energy Efficiency Rebate Program**

### **5. Program Rationale and Expected Outcome**

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

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

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

#### **b) Market Transformation Information**

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

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

#### **c) Program Design to Overcome Barriers**

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

#### **Ongoing Concern with Split Incentives**

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

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

MFEER design has been overcoming the split incentive barrier since the program's inception in 2002, as had its predecessor; the Residential Contractor Program did since 1999. Program design has been effective to such an extent that the majority of MFEER rebates paid were for products installed in tenant dwelling units.

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

Further planning difficulties are generated by the fact that property owners/managers, in large part, are not a cohesive group. This leads to disparities and gaps in industry knowledge and poses a barrier to knowledge sharing. In addition, since on-site

## **Residential: Multifamily Energy Efficiency Rebate Program**

property managers tend to be somewhat transient, maintaining consistent contact is difficult.

The multifamily property sector consists of commercial enterprises that provide residential living spaces. In this quasi-commercial role, the property owner straddles the residential and commercial energy efficiency programs' definitions. The MFEER specifically addresses their often overlooked needs.

The desired outcome of MFEER implementation is to realize long-term energy savings through the installation of energy-efficient products in both the common areas and dwelling units of multifamily complexes and the common areas of condominium complexes and mobile home parks. Another objective is the inclusion of rented mobile homes when those park owners/managers are making replacements in common areas.

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

### **Issue of Affordability**

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

### **Selected Measures Account for Majority of Program Savings**

Although the MFEER offers a comprehensive list of measures for multifamily dwellings, most of the program results are provided 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**

To address the trend toward comprehensive solutions and to reduce the potential for lost opportunities, MFEER will integrate opportunities with other energy efficiency programs and services, such as the ARP, HEES and income-qualified programs. This collaboration should increase participation levels for each respective program.

- The MFEER will continue to work with the ARP to promote the turn-in of inefficient (but functional) property owner-owned refrigerators. To generate interest and gain higher participation levels through joint marketing efforts, MFEER will also consider opportunities to cooperate with other energy efficiency programs or services.
- MFEER will promote the LIEE program and the California Alternate Rates for Energy (CARE) program within the application by making the property

## Residential: Multifamily Energy Efficiency Rebate Program

owner/manager aware of the available income-qualified services for the tenants. Additional marketing efforts may include reaching tenants through direct-mail to promote services not offered under MFEER, such as the CARE electricity bill discount of 20% or more and the income-qualified refrigerator replacement.

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

### **d) Quantitative Program Targets**

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

**Table 5: Proposed Program Activity Targets**

SCE Program Name	Program Target by 2009	Program Target by 2010	Program Target by 2011
<p>Target #1</p> <p>Direct mailing to reach 20,000 multifamily sites</p> <p>Advertising in trade journal (depended on approved marketing budget)</p> <p>Support outreach events such as trade shows</p>	<p>Complete 20,000 pieces of direct mailing,</p> <p>place monthly trade journal advertising,</p> <p>attend 3 trade shows per year</p>	<p>Same as 2009</p>	<p>Same as 2009</p>
<p>Target #2</p> <p>Require 100% of program participating electrical contractors to meet licensing requirements</p>	<p>100% for 2009-2011 program cycle</p>	<p>Same as 2009</p>	<p>Same as 2009</p>
<p>Target #3</p> <p>Deliver program specific communications to participating contractors</p>	<p>2 communications per year</p>	<p>Same as 2009</p>	<p>Same as 2009</p>

## Residential: Multifamily Energy Efficiency Rebate Program

Target #4			
Continue to solicit participation from mega property management Company	3 per year	Same as 2009	Same as 2009

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

The MFEER will support the following Strategic Plan as described below:

- 2.1.3.2. Home buyers, owners, and renovators will implement a whole-house approach to energy consumption that will guide their purchase and use of existing and new homes, home equipment, household appliances, lighting and “plug load” amenities;
- 2.1.3.3. Plug loads will be managed by developing consumer electronics and appliances that use less energy and provide tools to enable customers to understand and manage their demand; and
- 2.1.3.4. The residential lighting industry will undergo substantial transformation through the deployment of high-efficiency and high-performance lighting technologies, supported by state and national codes and standards.

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

## **Residential: Multifamily Energy Efficiency Rebate Program**

### **6. Program Implementation**

#### **a) Statewide IOU coordination**

**i. Program name:** Multifamily Energy Efficiency Rebate Program

#### **ii. Program delivery mechanisms**

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

#### **iii. Incentive levels**

<b>MEASURE</b>	<b>PG&amp;E</b>	<b>SCE</b>	<b>SCG</b>	<b>SDG&amp;E</b>
Attic Insulation	\$0.15/Square Foot	\$0.15/Square Foot	\$0.15/Square Foot	\$0.15/Square Foot
Wall Insulation	\$0.15/Square Foot	\$0.15/Square Foot	\$0.15/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



## Residential: Multifamily Energy Efficiency Rebate Program

MEASURE	PG&E	SCE	SCG	SDG&E
Natural Gas Storage Water Heater	\$30.00/unit	n/a	\$30.00/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

## Residential: Multifamily Energy Efficiency Rebate Program

MEASURE	PG&E	SCE	SCG	SDG&E
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

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

The MFEER statewide marketing plans include print collateral material, direct mail campaigns, print media advertisements, trade show exhibitions and presentations, and leveraging with other IOU energy efficiency efforts and programs where feasible (see targets above, Table 5).

## **Residential: Multifamily Energy Efficiency Rebate Program**

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

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

**vi. Similar IOU and POU programs**

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

**b) Program delivery and coordination**

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

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

For marketing and outreach activities, the MFEER not only reaches out to the end users, but will also make special outreach and training sessions available to the MFEER affiliated contractors on a regular basis.

**i. Emerging Technologies (ET) Program**

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

**ii. Codes & Standards Program**

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

**iii. WE&T efforts**

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

## **Residential: Multifamily Energy Efficiency Rebate Program**

training classes for contractors and property owners, to assist in advancing the objectives of the Strategic Plan.

### **iv. Program-specific marketing and outreach efforts**

The MFEER marketing plans consist of print collateral material, direct mail campaigns, print advertisement, trade show exhibitions and presentations, statewide advertising, and leveraging 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 cross promotion of other applicable programs, such as those of water agencies that offer rebates for clothes washers and dishwashers. Program staff will work with other utilities and groups, as appropriate, to increase program participation and savings levels.

### **vii. CEC work on PIER**

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

### **viii. CEC work on C&S**

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

### **ix. Non-utility market initiatives**

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

### **c) Best Practices**

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

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

## **Residential: Multifamily Energy Efficiency Rebate Program**

### **d) Innovation**

A key program innovation is the customer referral process, which was developed to assist property owners who own apartment buildings served by different IOUs. In this process, a property owner who is working with an IOU and owns properties served by other IOUs is automatically referred to the appropriate program managers at those IOUs. Confusion and barriers that can result when working with multiple entities is reduced since the IOUs operate identical rebate programs and use similar rebate applications.

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

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

### **e) Integrated/coordinated Demand Side Management (ISDM)**

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

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

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

The program allows for cross-promotion of other available programs, such as water companies that offer rebates for clothes washers and dishwashers. SCE agrees to investigate and implement a similar market program to make multiple resource offerings in MFEER consistent statewide.

SCE and SCG will collaborate to create a pilot program specifically for the Multifamily market segment. The pilot will be created by adding a multifamily component to the current (joint) HEES Program. The audits will address water, gas,

## **Residential: Multifamily Energy Efficiency Rebate Program**

and electric savings for multifamily buildings. SCE and SCG 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**

A multifamily component will be added to the HEES program: SCE and SCG will create a pilot program that emulates the current energy audit program for single family residents. In order to accomplish this, SCE and SCG will work with a third party to create the multifamily audit tool. IOUS plan to offer the pilot program at various venues such as the Apartment Owners Association meetings, tradeshow, 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 MFEER core measures will be recommended when appropriate. We will incorporate recommendations for water savings and refer customers to their local water districts when appropriate.

### **h) EM&V**

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

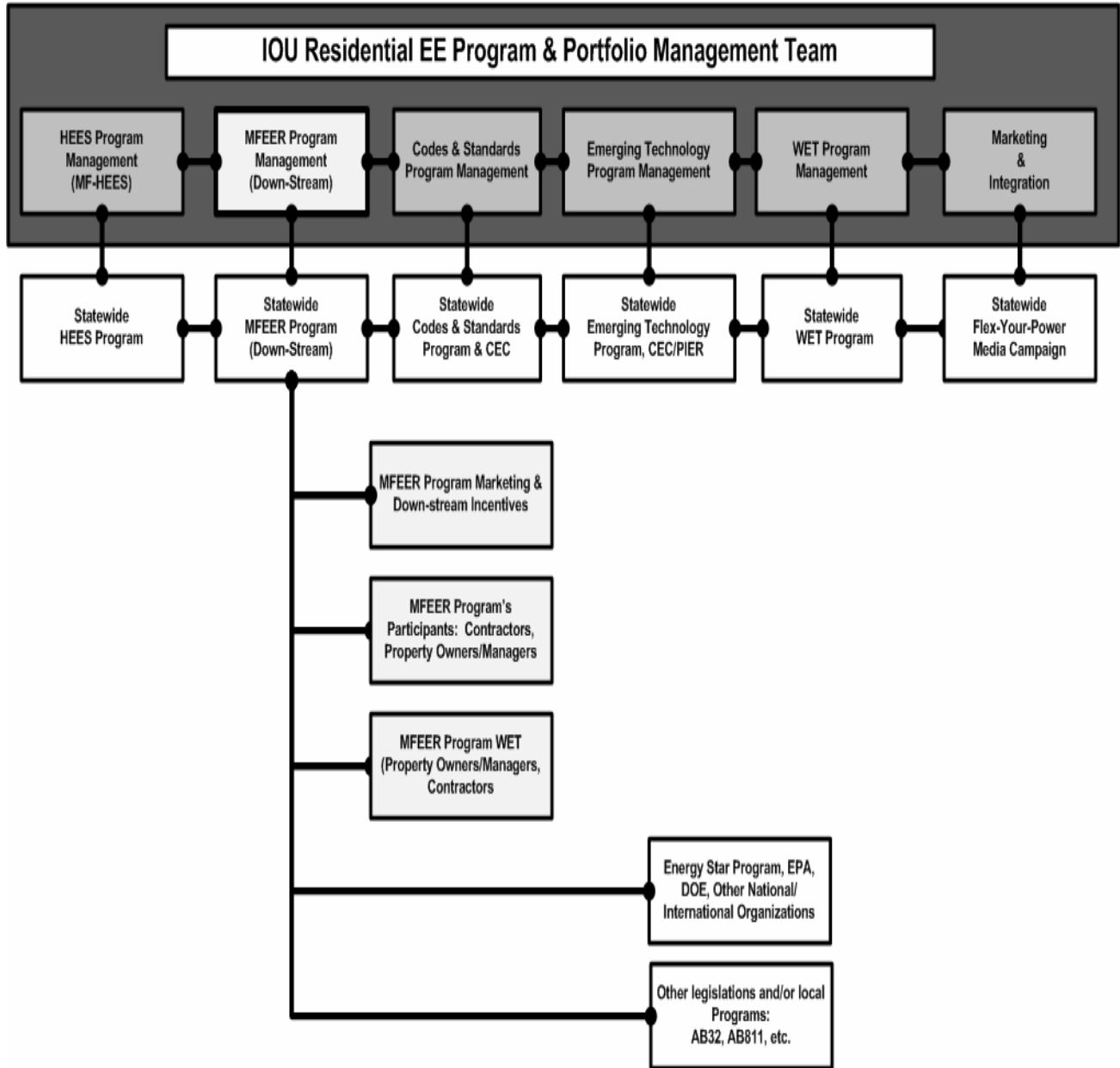
Detailed plans for process evaluations and other evaluation efforts specific to this program will be developed after the final program design is approved by the CPUC and program implementation has begun, since final plans will be based on identified program design and implementation issues and questions.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

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

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

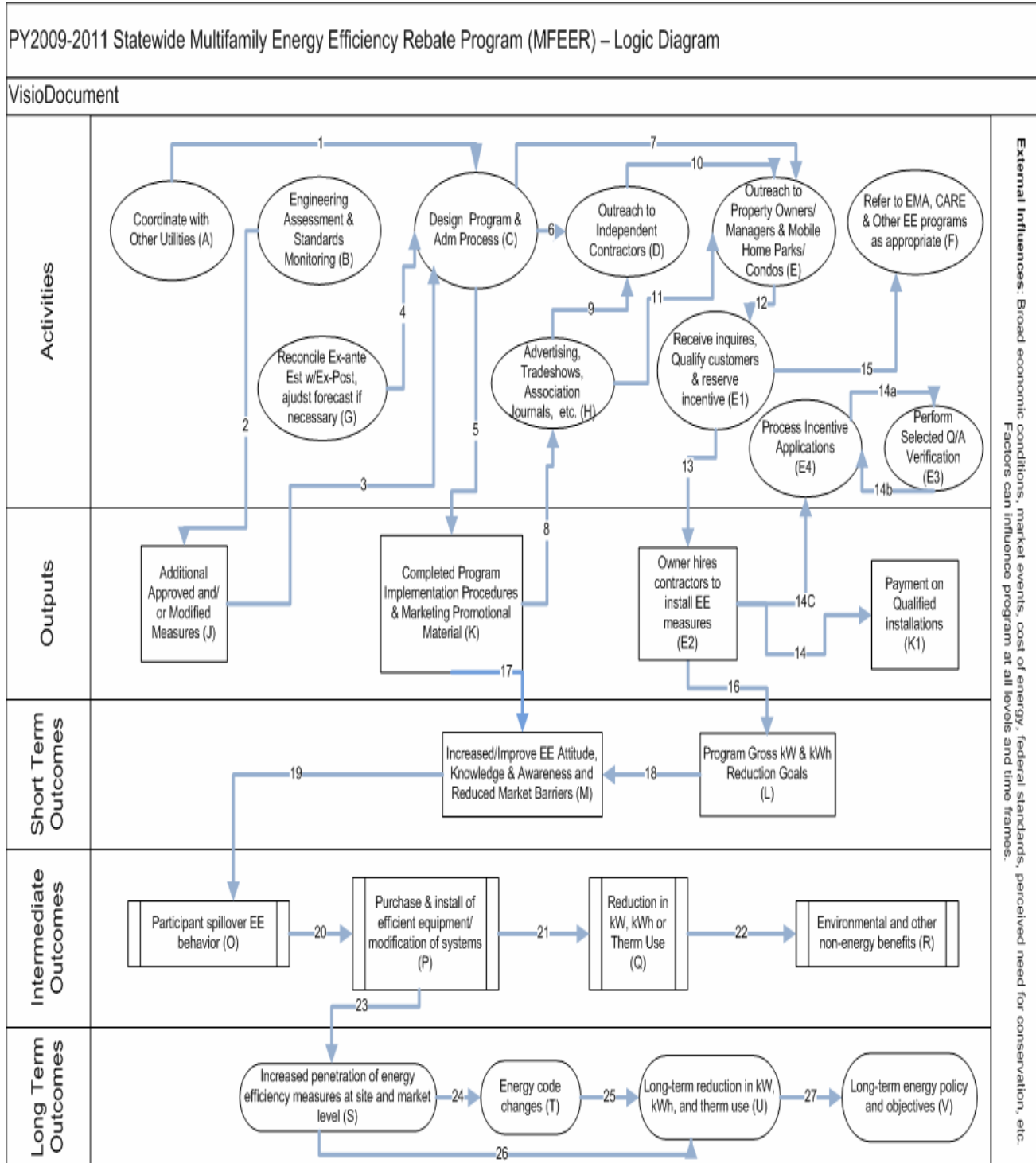
# Residential: Multifamily Energy Efficiency Rebate Program

## 7. Program Interaction Diagram MFEER



# Residential: Multifamily Energy Efficiency Rebate Program

## 8. Program Logic Model MFEER





# 2

# Commercial Energy Efficiency Program

1. **Program Name:** Commercial Energy Efficiency Program  
**Program ID:** SCE-SW-002  
**Program Type:** Core

## 2. Projected Program Budget Table

Table 1<sup>1</sup>

SCE-SW-002	Main Program Name / Sub-Program	Total Administrative Cost (Actual)	Total Marketing & Outreach (Actual)	Total Direct Implementation (Actual)	Integration Budget Allocated to other Programs (If Applicable)	Total Budget By Program (Actual)
<b>NONRESIDENTIAL</b>						
	Commercial Energy Efficiency Program					
	Nonresidential Audits	\$ 1,709,015	\$ 4,735,075	\$ 3,864,910		\$ 10,309,000
	Calculated Incentives Program	\$ 5,613,676	\$ 8,137,816	\$ 37,362,507		\$ 51,114,000
	Deemed Incentives Program	\$ 5,119,070	\$ 11,891,986	\$ 35,806,944		\$ 52,818,000
	Commercial Direct Install Program	\$ 8,852,962	\$ 3,279,000	\$ 95,829,038		\$ 107,961,000
	Continuous Energy Improvement	\$ 116,500	\$ -	\$ 487,500		\$ 604,000
	Energy Efficiency for Entertainment Centers	\$ 144,565	\$ -	\$ 1,968,435		\$ 2,113,000
	Private Schools and Colleges Program	\$ 370,201	\$ 75,000	\$ 2,032,799		\$ 2,478,000
	California Preschools Program	\$ 573,000	\$ -	\$ 3,636,000		\$ 4,209,000
	<b>TOTAL:</b>	<b>\$ 22,498,989</b>	<b>\$ 28,118,877</b>	<b>\$ 180,988,133</b>	<b>\$ -</b>	<b>\$ 231,606,000</b>

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

Table 2

SCE-SW-002	Commercial Energy Efficiency Program	2009-13 EE Program Gross kWh Savings	2009-13 EE Program Gross kW Savings	2009-13 EE Program Gross Therm Savings
	Non-Residential Audits	88,874,184	17,198	-
	Calculated Incentives Program	246,579,542	37,936	-
	Deemed Incentives Program	273,934,503	60,017	-
	Commercial Direct Install Program	321,697,024	64,263	-
	Continuous Energy Improvement	-	-	-
	Energy Efficiency for Entertainment Centers	6,961,230	4,476	-
	Private Schools and Colleges Program	9,692,624	3,168	-
	California Preschools Program	5,095,831	895	-
	<b>TOTAL</b>	<b>952,834,938</b>	<b>187,952</b>	<b>-</b>

SCE is forecasting installations beyond 2011 to capture those projects committed (funds reserved) in the 2009-2011 program cycle, however are not installed until after 2011.

<sup>1</sup> Definition of Table 1 Column Headings:

Total Administrative Cost includes all Managerial and Clerical Labor, Human Resource Support and Development, Travel and Conference Fees, and General and Administrative Overhead (labor and materials).

Total Direct Implementation – includes all financial incentives used to promote participation in a program and the cost of all direct labor, installation and service labor, hardware and materials, and rebate processing and inspection used to promote participation in a program.

Total Marketing & Outreach includes all media buy costs and labor associated with marketing production.

Integrated Budget Allocated to Other Programs includes budget utilized to coordinate with other EE, DR, or DG programs.

Total Budget is the sum of all other columns presented here

Definition of sub-program: A “sub-program” of a program has a specific title, targets, and 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.

## Commercial Energy Efficiency Program

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### 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, restaurants, 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 Non-Residential Audits, Calculated Incentives, Deemed Rebates, Direct Install, and Continuous Energy Improvement 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 response and distributed generation opportunities uniquely suited to the Commercial segment.

- 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 support a customer's short- or long-term energy plan, and overcome both informational and technical customer barriers.
- The Calculated program offering provides standardized incentives for customized and integrated energy efficiency/DR projects for 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 California Long Term Energy Efficiency Strategic Plan (*Strategic Plan*).
- 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.

## Commercial Energy Efficiency Program

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- 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.
- 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 Strategic Plan, a CEI approach also sets the stage for non-energy resource integration, such as greenhouse gas reduction, water conservation strategies, and regulatory compliance.

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 Strategic Plan. Leveraging national and state initiatives, tools and resources to manage energy and resources – including greenhouse gases (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 Section 6b, the Statewide Commercial Energy Efficiency Program design includes the staged integration and coordination with existing non-utility programs, initiatives and regulations, 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.

The commercial customer markets are uniquely suited to integrated energy strategies. Load management opportunities and demand response have had great success and show additional potential. 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 AB 32, 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.

## **Commercial Energy Efficiency Program**

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### **b) List measures**

Technologies addressed through this program effort are varied, and include lighting, HVAC, refrigeration, food service equipment, boilers, vertical transportation, motors and plug-load controls. A comprehensive list is located in Appendix A. Incentive levels will be 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.
- Baseline and benchmarking.
- Project implementation support.
- Customer recognition.
- Resources on Energy Design Resources website.
- Resource Conservation Manager (pilot).

#### Customer Education and Training

- DOE Basic, Intermediate, and Specialist Training – refrigeration systems, HVAC, motors, compressed air, and steam.
- Other commercial process systems training.
- Commercial lighting efficiency seminars.
- Regulatory compliance and energy efficiency convergence, e.g., 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 Strategic Plan.
- Title 24 Training.
- Commercial refrigeration best practices (for designers), in support of the Strategic Plan focus on refrigeration.
- HVAC best practices for data centers, laboratories, and other specialized use facilities.
- California Advanced Lighting Controls Training Program (CALCTP).

#### Non-Residential Audits

- Basic audits.
- Integrated audits.
- RCx audits.

## Commercial Energy Efficiency Program

### 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.”<sup>2</sup> 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<sup>3</sup>.

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<sup>4</sup>. Markets are social institutions<sup>5</sup>, 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<sup>6</sup> 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<sup>7</sup>. According to York<sup>8</sup>, “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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<sup>2</sup> California Public Utilities Commission Decision, D.98-04-063, Appendix A.

<sup>3</sup> California Public Utilities Commission (2008) *California Long Term Energy Efficiency Strategic Plan*, p. 5. Available at <http://www.californiaenergyefficiency.com/docs/EEStrategicPlan.pdf>

<sup>4</sup> 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>

<sup>5</sup> 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.ecee.org/conference\\_proceedings/ecee/2001/Panel\\_2/p2\\_7/Paper/](http://www.ecee.org/conference_proceedings/ecee/2001/Panel_2/p2_7/Paper/)

<sup>6</sup> 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](http://www.calmac.org).

<sup>7</sup> 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*.

<sup>8</sup> York, D., (1999). “A Discussion and Critique of Market Transformation”, Energy Center of Wisconsin. Available at <http://www.ecw.org/ecwresults/186-1.pdf>.

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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<sup>9</sup>. 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<sup>10</sup>, 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<sup>11</sup>. 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<sup>12</sup>. 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.)<sup>13</sup>" The Strategic Plan recognizes that regulatory policies are not

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<sup>9</sup> 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>

<sup>10</sup> Rogers (1995) Diffusion of Innovations, 5<sup>th</sup> Ed.

<sup>11</sup> 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>

<sup>12</sup> Sebold et al (2001) p. 6-5,

<sup>13</sup> 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>.

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yet in place to support the success of market transformation efforts<sup>14</sup>, 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<sup>15</sup>. 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<sup>16</sup> 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.

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<sup>14</sup> CPUC (2008) Strategic Plan, p. 5.

<sup>15</sup> Nadel, Thorne, Saches, Prindle & Elliot (2003).

<sup>16</sup> Pelozo & York, (1999).



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

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.

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

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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**

	<b>Baseline Metric</b>			
	<b>Metric A</b>	<b>Metric B</b>	<b>Metric C</b>	<b>Metric D</b>
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

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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**

	<b>Internal Market Transformation Planning Estimates</b>		
	<b>2009</b>	<b>2010</b>	<b>2011</b>
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 2009-2011 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 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.

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- Building owners, especially landlord owners<sup>17</sup>, 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.
- 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 activities like 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 High-Tech 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 operating optimally.
- Performance issues resulting from improper equipment installation, maintenance and poor owner/operator education create customer dissatisfaction with energy efficiency measures.

By uniquely approaching constituent vertical market sub-segments, this Program will better serve commercial customers while gaining efficiency and consistency in the delivery of the programs. This targeted and focused approach will mitigate the indicated EE adoption 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 lost opportunities as a more comprehensive program and service offering will be readily available for customers.

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<sup>2</sup> 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

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- 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 BOMA, DGS, Green Building Council, AHRI, ASHRAE, Manufacturers Trade Associations, and specific sub-segment professional association as CHA, CSHEE, ISPE, etc., to engage in a multi-faceted approach to marketing energy efficiency practices and programs to targeted users. As well, the program will focus marketing and outreach efforts on both regional and national chains.
- 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 government departments by allowing them to retain rebates and cost savings from EE projects without having to upstream these financial benefits to the General Fund. 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 Strategic Plan. This approach will make available the tools and resources necessary for customers who 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 2009-2011 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 associated with Retro-Commissioning services, focusing on operation improvements and allowing many projects to funded through operating budgets, overcoming a common financial barrier related to capital budget approvals.
- The California Advanced Lighting Controls Training Program (CALCTP) is a team made up of the IOUs, POUs, contractor and labor organizations, community colleges and other interested stakeholders. The goal is to promote the proper design, installation and commissioning of advanced lighting controls through training and certification of contractors. CALCTP is being piloted in 2009 and

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will be expanded into a full-fledge program in 2010-2011. CALCTP addresses specific market barriers preventing increased adoption of advanced lighting controls by ensuring a qualified contractor base is available for customers interested in lighting retrofits. Additional consideration will be given to including additional lighting incentives for systems installed by certified contractors. CALCTP also supports Statewide Workforce Education & Training activities by partnering with local community colleges and labor organizations to deliver the training.

### **d) Quantitative Program Targets**

**Table 5** -- In some cases, program targets are provided at the sub-program level. Refer to each Commercial sub-program for more information.

### **e) Advancing Strategic Plan goals and objectives**

Many activities under the Commercial Statewide Portfolio advance the goals, strategies, and objectives of the Strategic Plan. 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 response, solar and combined heat and power 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 protocols and professional training and accreditation programs for the Retro-commissioning 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.

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- **Financing and Funds Leveraging:** To overcome cost barriers to energy efficiency, the IOUs will:
  - Offer on-bill financing.
  - Create new incentives for on-peak demand reduction related to retrofits and Retro-commissioning.
  - Partner with integrators to aggregate energy efficiency with other building improvements, such as security, safety, waste management, and IT.
  - Analyze the green vision of the corporations to align energy plans towards their objectives.
- **Advanced Products:** IOUs will create demand for advanced, energy-saving products—such as lighting and 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:
  - Support 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.
  - Expand the CALCTP initiative to create additional opportunities for lighting contractors to become certified in the proper installation of advanced lighting control systems.
- **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.
  - Continue leadership position in the national Office of the Future Consortium (“Consortium”) which was established to help shape and inform the research and product development of individual component products that have the ability to communicate with each other, are interoperable, and that create a system that will meet defined performance standards for a described office space type. The recent publication of the 25% Solution is intended to identify significant reductions in energy used by lighting, plug-loads and HVAC systems using a comprehensive “Systems” approach that also improves lighting quality and air

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conditioning/heating performance. The efforts of the Consortium will be fully integrated into the Calculated and Deemed incentive programs to create a delivery mechanism that supports the path to ZNE buildings.

### 6. Program Implementation

#### 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 Commercial 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



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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, assist in correcting program weaknesses that reveal themselves during implementation, and help ensure achievement of Statewide targets across IOU service territories. These efforts will promote Statewide focus on program unity and continuous program improvement over the course of the three-year implementation cycle.

During implementation, this program will utilize subcontractors to deliver certain elements of the program (e.g., inspections, calculation review, and marketing). In so doing the program takes advantage of diverse skill sets for current and future program delivery.

### **iii. Incentive levels**

Incentives for commercial customers will be provided through both prescriptive and customized approaches. Refer to the Commercial Deemed and Calculated sub-program descriptions for information regarding specific incentive levels. Incentives are based upon energy savings established in the DEER database and through IOU systematic workpaper development processes.

### **iv. Marketing and outreach plans**

The IOUs are currently developing an in-depth segmentation of the commercial market. The results of this customer segmentation will support the development of targeted integrated marketing and outreach plans outlining multiple delivery

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channels that target customers based on their needs. Such delivery channels will likely include increased customer outreach through trade and community-based associations, third parties, government partnerships and core IOU programs. More specific marketing information is provided in each of the commercial sub-program plans.

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

The Commercial Energy Efficiency Program 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 commercial 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. Refer to the Commercial sub-program descriptions for more specific information on linkages with other government programs.

### **vi. Similar IOU and POU programs**

Several of the initiatives described herein (i.e., California Advanced Lighting Controls Training Program and Office of the Future Consortium) are joint efforts with the other California IOUs and POU, as well as other domestic and international utilities. In addition to these joint efforts, local third-party programs that address niche opportunities within the commercial market segmented will be implemented in each of the IOUs service territory. These various efforts will be coordinated to ensure a consistent approach in terms of program message, delivery and measure incentives (as appropriate).

## **b) Program delivery and coordination**

### **i. Emerging Technologies (ET) 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, LED lighting technologies, forklift battery chargers, commercial refrigeration advancements, commercial refrigeration design enhancements, and solar thermal applications (hot water).

### **ii. Codes & 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.

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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 Commercial Energy Efficiency Program, current work focuses on transitioning the market to accept new Title 24 code changes, and incorporating best practices and advanced energy efficiency practices into that marketing and outreach 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. 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 training 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 associations 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 trade association meetings and providing 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**

Integrated Energy Audits and Retro-commissioning (described in the Non-Residential Audit sub-program) and Continuous Energy Improvement are the primary vehicles to promote project solutions that look across the various IOU

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DSM program offerings, as well as complementary options available through other entities (e.g., water agencies). The results of the Water Efficiency Pilot Program will identify 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**

In addition to the interactions with local, state and national programs, 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 CA Climate Action Registry.
- AB32 support 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 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**

Refer to Section 6.b.ii. of each Commercial sub-program description.

### **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

## **Commercial Energy Efficiency Program**

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- 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. 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 building integrated 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 building integrated 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, DR, and DG, and advise customers on other sustainability practices such as water conservation opportunities, CO<sub>2</sub> reduction potential, or other program opportunities.

## **Commercial Energy Efficiency Program**

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- IOUs will link customers with the California Climate Registry to support carbon foot printing of a customer's plant.

### **Marketing:**

- Customer segmentation work currently underway 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 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 eQUEST and 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 to specific 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.

## **Commercial Energy Efficiency Program**

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- **Education and Training:** Workshops organized around a customer segment provide 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. For example, the California Advanced Lighting Controls Training Program addresses both the energy efficiency and demand response capabilities through the proper design, specification and installation of lighting system controls.
- **Continuous Energy Improvement:** This 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 Energy Audits:** Combines 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 California Loading Order: Permanent reductions will be achieved through energy efficiency first, and then through demand response. Incentives from both programs can help reduce payback cost and support advanced energy management decisions. Demand response opportunities will be targeted in the larger facilities, especially as part of monitoring-based retro-commissioning efforts where the controls to facilitate demand response efforts would be installed. Additionally, the energy audits that are required as a prerequisite for participation in distributed generation programs will be expanded to include DR opportunities and thus will address the three facets of DSM integration.
- **Emerging Technologies:** Along with CEC-PIER collaboration, ET is expected to include pilot projects and market acceleration assistance for market-ready products in the general categories of daylighting, lighting, 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.

## **Commercial Energy Efficiency Program**

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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 2006-2008 program cycle.

Third party programs at the utilities will focus on specific customer segments offering a complete project package that will include integration aspects.

### **g) Pilots**

During the course of the three-year cycle, pilots may be created based on the needs of the commercial customers. For example, 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. This pilot will implement the current and future recommendations of the Office of the Future Consortium as they demonstrate the path to ZNE buildings.

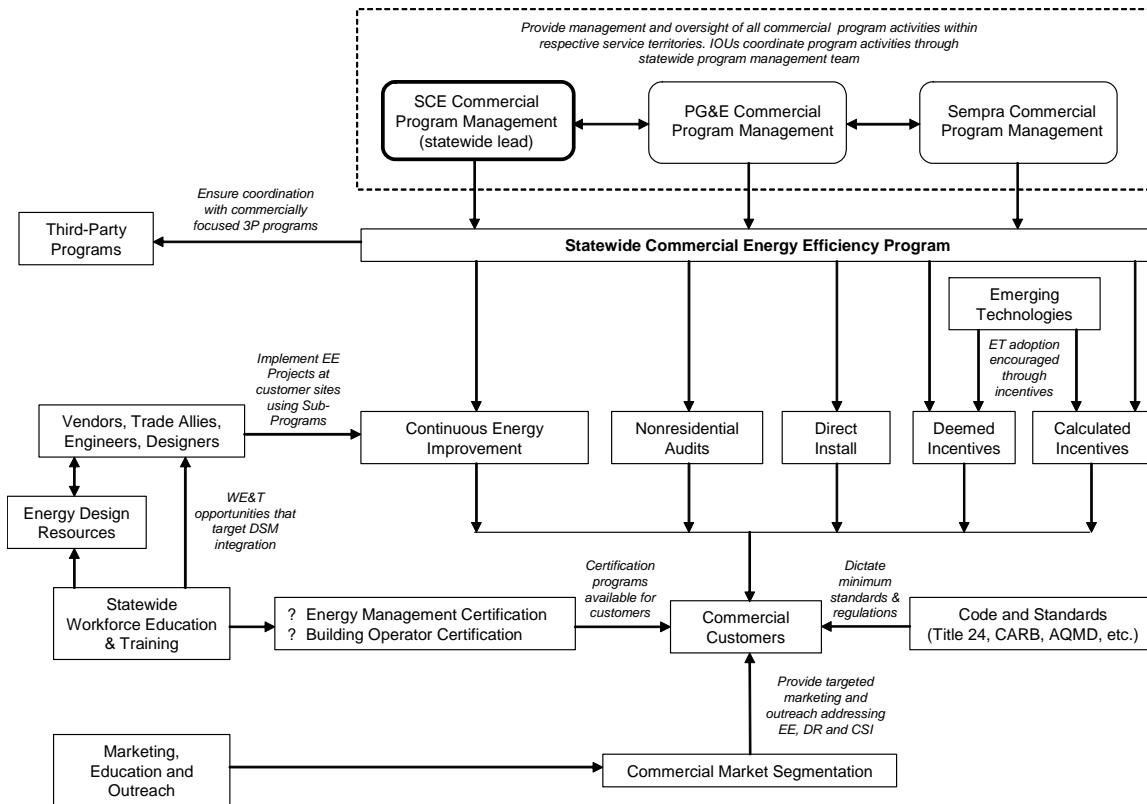
### **h) EM&V**

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.



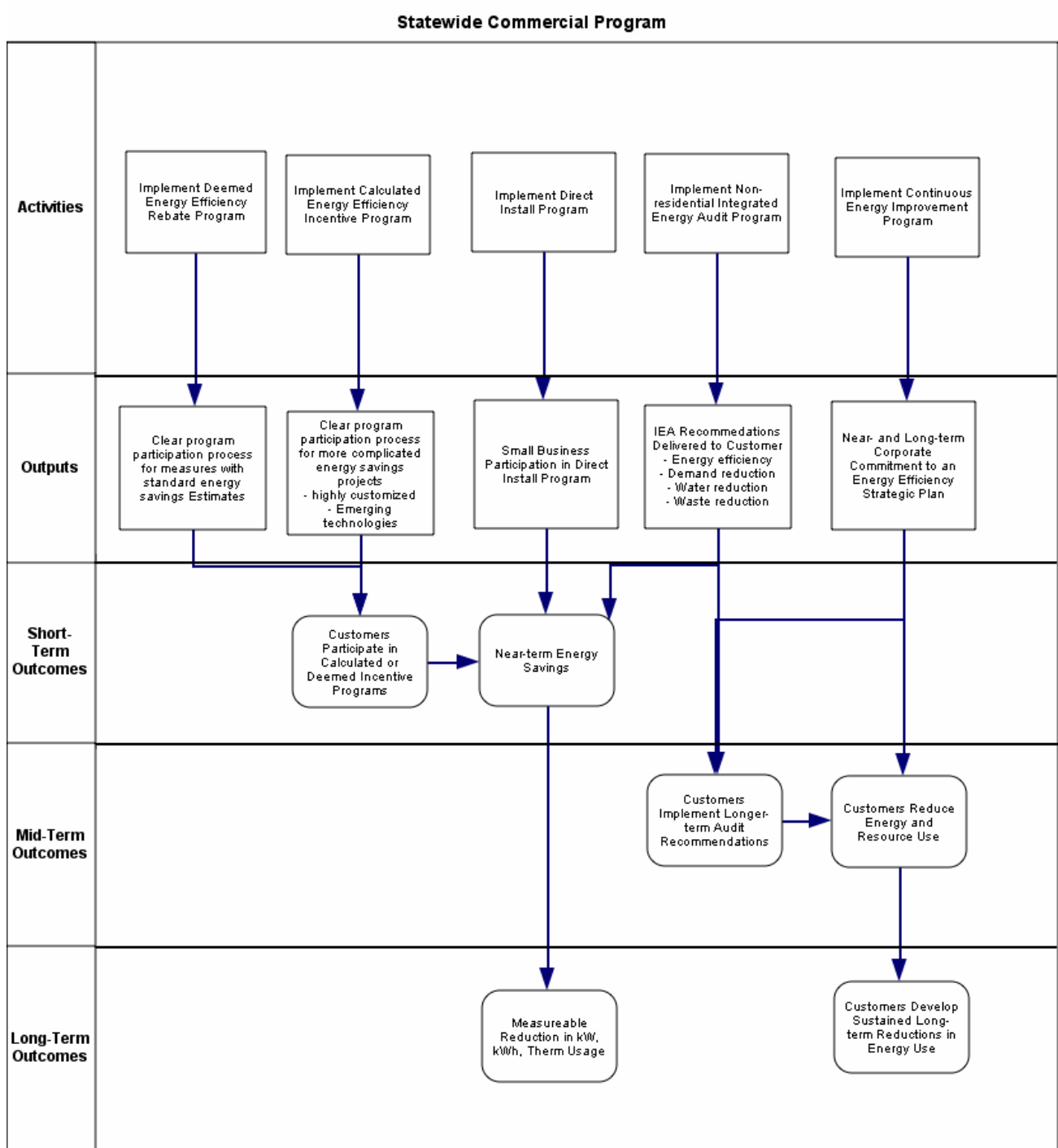
# Commercial Energy Efficiency Program

## 7. Diagram of Program



# Commercial Energy Efficiency Program

## 8. Program Logic Model



# 2a

## **Commercial: Nonresidential Audits**

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- 1. Program Name:** Nonresidential Audits  
**Program Type:** Core

- 2. Projected Program Budget Table**

**Table 1** – See the overarching program for budget details.

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

**Table 2** - See the overarching program for gross impact details.

- 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. The current audit forms used for the 2006-2008 program can be found at [www.sce.com](http://www.sce.com).

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. Efforts have begun to develop an integrated audit form by the time programs are underway.
- **Retro-commissioning:** The 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

## **Commercial: Nonresidential Audits**

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with simple payback periods of less than 4 years. These projects may involve resetting, repair or replacing of existing system controls and components. Through the RCx assessment report, comprehensive projects are identified and referred to other sub-programs for completion (i.e., Calculated and Deemed Incentives). Energy savings from projects identified through RCx will be claimed in the Calculated Incentives Program.

The Non-Residential Audits program is designed to support the goals of the Strategic Plan 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 Non-Residential sub-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.
- 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., solid state lighting, lighting controls, demand control ventilation, etc.)

### **b) List measures**

The Non-Residential Audit sub-program is a non-resource, service program which does not offer measures or 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).

## **Commercial: Nonresidential Audits**

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### **c) List non-incentive customer services**

All activities conducted under the Non-Residential Audit sub-program are non-resource with no associated incentives. Such activities include, but are not limited to: 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**

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

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

### **b) Market Transformation Information**

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

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

### **c) Program Design to Overcome Barriers**

The Non-Residential Audit sub-program will help overcome customers' 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 targets provided herein are best estimates, but nonetheless are forecasts.

**Table 5**

Program Name	Program Target by 2009	Program Target by 2010	Program Target by 2011
No. of audits	950	950	950
Square Footage Benchmarked	6,445,000	8,885,000	19,893,000

## **Commercial: Nonresidential Audits**

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### **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 Strategic Plan 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 Tools and Practices for Building Commissioning**

Based on the IOUs' experience with managing the 2006-2008 Retro-commissioning program, lessons learned and best practices can be integrated into the 2009-2011 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. Once implemented, recommendations for operation and maintenance (O&M) practices on on-going commissioning will ensure that customer facilities continue to operate in an efficient manner.<sup>18</sup>

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<sup>18</sup> 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 Strategic Plan.

## **Commercial: Nonresidential Audits**

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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 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 for providing energy conservation, energy efficiency, demand-response and distributed-generation information to customers with load less than 200 kW.
- 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**

#### **ii. 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



## **Commercial: Nonresidential Audits**

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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.

SCE's account representatives support this activity within the Statewide large commercial sector, as well as third parties, government partnerships, and SCE local programs.

### **iii. Incentive levels**

N/A (this sub-program is a non-resource offering).

### **iv. 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.

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 other IOU programs.

Additionally, SCE may investigate piloting alternative channel marketing and outreach options that utilize community-based organizations and/or third parties to recruit small businesses and influence them to take actions that result in energy efficiency improvements. Regional and community entities tend to interface with small businesses with some regularity; therefore, partnering with these organizations could be a viable delivery option. Through this marketing and outreach pilot, the proposed approach offers a "pay-for-performance" or capitation fee for contracted organizations ("channel partners") that successfully deliver energy efficiency programs, measures and/or solutions to small business customers.

## **Commercial: Nonresidential Audits**

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### **v. 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 may be incorporated into the customer recommendations and to factor into the projects cost-effectiveness.

### **vi. Similar IOU and POU programs**

Over the next three years, the IOUs will seek to increase their interactions with the POU 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 Strategic Plan and how programs could and 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 (ET) 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 & 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**

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

## **Commercial: Nonresidential Audits**

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leveraging local third-party programs. Specific IOU marketing budgets are provided in Table 1 of the core Commercial program.

### **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 will 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**

The Non-Residential Audits Program will not be implemented with a direct linkage to PIER.

### **viii. CEC work on C&S**

The Non-Residential Audits Program will not be implemented with a direct linkage to codes and standards efforts.

### **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

## **Commercial: Nonresidential Audits**

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customers operating multiple facilities across IOU service territories receive the same information.

### **d) Innovation**

For 2009-2011, 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 Strategic Plan. 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 2009-2011 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**

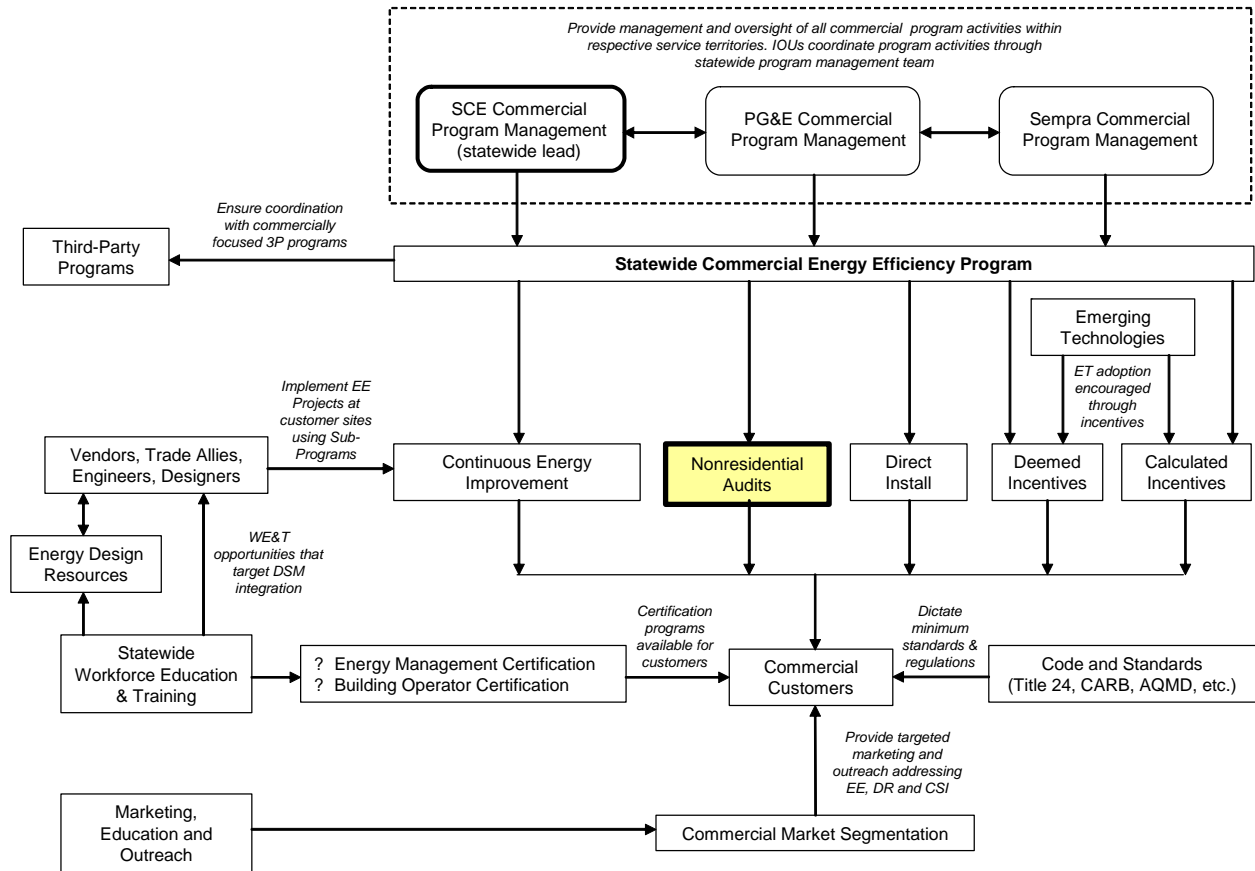
N/A

### **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.

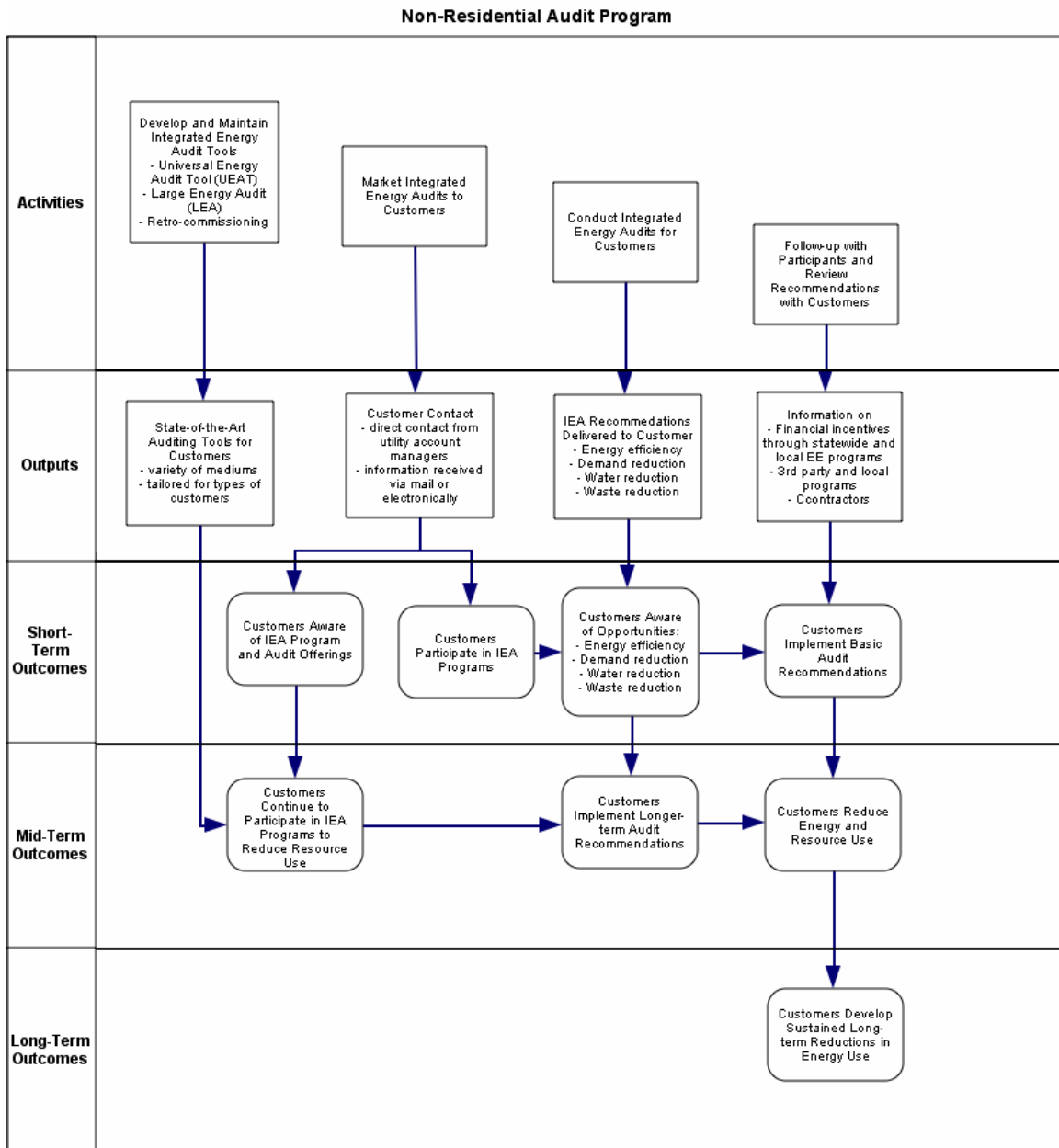
# Commercial: Nonresidential Audits

## 7. Diagram of Program



# Commercial: Nonresidential Audits

## 8. Program Logic Model



2b

## **Commercial: Calculated Incentives Program**

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- 1. Program Name:** Calculated Incentives Program  
**Program Type:** Core

- 2. Projected Program Budget Table**

**Table 1** – See the Commercial Energy Efficiency Program for budget details.

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

**Table 2** - See the Commercial Energy Efficiency Program for gross impact details.

- 4. Program Description**

- a) Describe program**

The Statewide Commercial 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) and post-inspections 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<sub>2</sub> 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 Statewide calculators are publically available to customers for use if desired. The Statewide utility-created and maintained SPC Calculator can be used for retrofits and is available online and through CDs. For whole building construction projects, IOUs accept both Energy Pro, available for license, and the utility-sponsored



## **Commercial: Calculated Incentives Program**

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EQUEST, available for free on the Statewide Energy Design Resources website <http://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**

The 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 (see following page) is a listing of all calculated incentives, grouped by measure category for all IOUs. Specific measures for each IOU are provided in the attached E3.

## Commercial: Calculated Incentives Program

#	MeasureName	Per kWh Incentive	Per kW Incentive
1	Air Compressor System Replacement / Upgrade	\$0.09	\$100
2	ASD - HVAC Compressor Motors	\$0.15	\$100
3	ASD - Others	\$0.09	\$100
4	Building Shell Improvements	\$0.09	\$100
5	Carbon Monoxide Sensors	\$0.09	\$100
6	Controls - Non-Lighting	\$0.09	\$100
7	Equipment - Other not specified	\$0.09	\$100
8	Extruder System Replacement / Upgrade	\$0.09	\$100
9	Fan and Pump System Upgrades	\$0.09	\$100
10	Furnace / Energy Efficient	\$0.09	\$100
11	Heat Recovery Equipment (Process)	\$0.09	\$100
12	Heat Recovery Equipment (Space Conditioning)	\$0.15	\$100
13	HVAC - Chiller	\$0.15	\$100
14	HVAC - Complete Subsystem Replacement / Upgrade	\$0.15	\$100
15	HVAC - Heat Pump	\$0.15	\$100
16	HVAC - Other	\$0.09	\$100
17	HVAC - Package Unit	\$0.15	\$100
18	Injection Molding Machine Replacement / Upgrade	\$0.09	\$100
19	Insulation	\$0.09	\$100
20	Lighting	\$0.05	\$100
21	Lighting Controls	\$0.05	\$100
22	Motors Project (HVAC Compressor)	\$0.15	\$100
23	Motors Project (Non-HVAC Compressor)	\$0.09	\$100
24	Precooling Equipment	\$0.15	\$100
25	Process - Chiller	\$0.15	\$100
26	Process - Complete Subsystem Replacement / Upgrade	\$0.15	\$100
27	Professional Wet Cleaning	\$0.09	\$100
28	Pumping System Replacement / Upgrade	\$0.09	\$100
29	Rapid Closing Door	\$0.09	\$100
30	Refrigeration - Complete Subsystem Replacement / Upgrade	\$0.15	\$100
31	Refrigeration - Other	\$0.09	\$100
32	Series to Parallel Street Lighting	\$0.09	\$100
33	Special Window Glazing & Glazing Treatments	\$0.09	\$100
34	Vacuum Systems	\$0.09	\$100
35	Window Replacement	\$0.09	\$100

### **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 complete the process.

## **5. Program Rationale and Expected Outcome**

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

By its nature, market transformation occurs as a result of numerous factors and programs, not single sub-programs. Therefore, all metrics are proposed at the

## **Commercial: Calculated Incentives Program**

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program level. Please refer to the quantitative baseline and market transformation discussion, presented in the overall program PIP.

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

### **b) Market Transformation Information**

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

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

### **c) Program Design to Overcome Barriers**

The Calculated Incentives sub-program is designed to eliminate a significant number of barriers to energy efficiency for commercial customers. Across all Non-Residential customer segments, a significant barrier often mentioned is access to information. This can include:

- Lack of awareness of operating best practices, energy efficiency opportunities, and the viability of high-efficiency emerging technologies (due to slow market penetration).
- Difficulty in accessing industry-relevant technical assistance.
- Inadequate availability of qualified industry specialists.
- Lack of personnel resources to fully assess a building, system, or process.
- Uncertainty as to how a specific energy efficiency project will impact their emissions, resource consumption, or waste discharge streams.

In addition, much of the time, developers, building owners, building managers, and building contractors only build or retrofit to current standards (i.e., Title 24), and on the Architect and Engineering Firm side, design engineers only specify what they already know or are familiar with.

To overcome these barriers, 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 and/or industry-accepted baseline standards when retrofitting existing buildings or systems. This is accomplished by:

- Providing up-to-date information on emerging technologies to bridge the "knowledge gap" which typically prevents such technologies from being adopted by the market.
- Offering “premium” incentives for emerging technologies that are proven but not widely employed in the markets for which they are intended (such as solid state lighting, advanced lighting controls, etc.)
- Providing highly skilled energy management professionals who perform basic and integrated facility assessments.

## **Commercial: Calculated Incentives Program**

- Providing IOU Workforce Education and Training seminars through the Energy Centers.
- Providing Web-based information and energy management tools that assist with identifying DSM opportunities.
- Conducting in-depth plant or system assessments, such as the assessments jointly provided by the IOUs and the U.S. Department of Energy (DOE) that focus on improving production and optimizing energy efficiency.
- Offering incentives based on energy savings quantified through technical assessments or basic audits that help customers overcome internal financial hurdles.
- Setting up incentive mechanisms that reward implementation of advanced technologies.
- Promoting integrated solutions that conserve energy and reduce GHG emissions.
- Providing a Statewide SPC Estimator that provides energy savings calculations for most popular and common retrofit projects and measures, assists in filling out program applications, and simplifies processing.

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 operating best practices offer. This eliminates the barrier of getting incorrect or out-of-date information from local networks.

The sub-program also provides additional information about other opportunities for project assistance, such as State or Federal funds available for energy efficiency projects, tax incentives, and/or local and other sources of project funding.

### **d) Quantitative Program Targets**

The targets provided herein are best estimates, but nonetheless are forecasts.

**Table 5**

Program Name	Program Target by 2009	Program Target by 2010	Program Target by 2011
Projects	680	820	970

### **e) Advancing Strategic Plan goals and objectives**

The unifying objective of the Strategic Plan is to employ market transformation strategies to encourage marketplace adoption of energy efficiency measures to a point that public investment in energy efficiency is no longer necessary.<sup>19</sup> The Calculated Incentives sub-program will support this effort by employing two of the five market transformation policies identified in the Strategic Plan. Specifically, the sub-program will offer “carrots” in the form of financial incentives to help pull the marketplace towards energy efficiency, and will also provide education and informational resources through marketing and program outreach efforts. Therefore, these program

<sup>19</sup> Strategic Plan, Section 1.3 – Targeting Market Transformation, Page 4.

## **Commercial: Calculated Incentives Program**

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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 Strategic Plan:

- 2-3: Ensure compliance with minimum Title 24 codes  
The Calculated Incentives sub-program provides incentives for projects that merely 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.
- 2-8: Improve utilization of plug-load technologies  
The existing incentive structure pays for energy reductions through plug-load measures. Additional incentives that encourage greater penetration of plug-load technologies may be required and will be developed to support technologies recommended by PIER, the Office of the Future Consortium, etc.

### **6. Program Implementation**

#### **a) Statewide IOU coordination**

The Statewide IOU Coordination process, described in detail in the Statewide Commercial Energy Efficiency Program, will ensure continuous improvement and consistent implementation of all of the sub-programs. The discussion below will focus on how the IOUs will coordinate the Calculated Incentives sub-program specifically.

The Statewide IOU Coordination process for the Calculated Incentives sub-program will be as follows:

## **Commercial: Calculated Incentives Program**

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- **Hold Regular Program Manager Meetings** – The Calculated sub-program managers from each of the IOUs will meet on a regular basis and will unify, to the extent possible, the implementation of program aspects such as program name, program delivery mechanisms, incentive levels, marketing and outreach plans, and IOU program interactions. The sub-program managers will also discuss new innovations and develop solutions to overcoming implementation challenges. Therefore, the regular meetings will focus on issues specific to the Calculated sub-program only.
- **Designate an IOU Program Lead** – One of the Calculated sub-program managers who participates in the regular meetings will be the designated sub-program IOU Lead. The IOU Lead will represent the sub-program at the regular Statewide Steering Committee meetings.
- **Participate in Regular Steering Committee Meetings** – The IOU Lead will be responsible for attending the regular Steering Committee Meetings and sharing Calculated sub-program innovations, experiences and challenges that have the potential to impact multiple sub-programs or the core Commercial Energy Efficiency Program as a whole.
- **Adopt Program Enhancements** – Once the Steering Committee agrees that a specific innovation or implementation policy has merit on a Statewide level, the IOU lead will distribute the information to the Calculated sub-program managers by e-mail or at the next regular meeting for adoption and integration. Therefore, the IOU lead will act as a conduit feeding Calculated sub-program-specific information up to the Statewide Steering Committee and distributing measures for adoption back to the Calculated sub-program managers.
- **Evaluate Program Enhancements** – To complete the adaptive management loop, the Calculated sub-program managers will track the success of the adopted Statewide enhancement or implementation policy and report any challenges or concerns at the regular Calculated Incentives sub-program meeting. The IOU lead will report any challenges that transcend the Calculated Incentives sub-program to the Steering Committee, who will determine whether further course corrections are needed.

By following the process stated above, the Calculated Incentives 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 Steering Committee process, where the IOU lead will act as participant and conduit between both Statewide coordination systems.

The coordination and unity of all program aspects will be handled through this Statewide coordination framework. However, these aspects will start off at a high level of Statewide consistency. In rare cases, there will be IOU-specific deviations. Instances where one IOU will favor a different approach than the other IOUs will be called out in italicized text throughout the Calculated Incentives sub-program.

## **Commercial: Calculated Incentives Program**

### **i. Program name:** Calculated Incentives

### **ii. Program delivery mechanisms**

The Calculated Incentives sub-program will be delivered consistently across IOUs using the same application materials and energy savings calculation to ensure consistency. Both retrofit and added load projects for commercial customers are eligible for incentives.

SCE's account representatives support this activity within the Statewide commercial sector, as well as third parties, government partnerships, and SCE local programs.

### **iii. Incentive levels**

Incentives are listed in the chart in Section 4.b, above, in detail. To summarize, the incentive levels are as follows:

- Lighting, \$0.05/kWh and \$100/kW.
- Air Conditioning & Refrigeration I, \$0.15/kWh and \$100/kW.
- Air Conditioning & Refrigeration II, \$0.09/kWh and \$100/kW.
- Other, \$0.09/kWh and \$100/kW.
- Therms, \$1.00/therms, capped at 50% of project cost.

### **iv. Marketing and outreach plans**

The Calculated Incentives sub-program will be marketed through IOU account executives, as well as through third-party programs, 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 Response Program outreach, phone and e-mail support will be provided.

In 2009-2011, the IOUs will implement segmentation research and messaging. 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 Calculated Incentives 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, direct mail, e-mail, personal contact, trade shows, trade association

## **Commercial: Calculated Incentives Program**

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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.

Additionally, SCE may investigate piloting alternative channel marketing and outreach options that utilize community-based organizations and/or third parties to recruit small businesses and influence them to take actions that result in energy efficiency improvements. Regional and community entities tend to interface with small businesses with some regularity; therefore, partnering with these organizations could be a viable delivery option. Through this marketing and outreach pilot, the proposed approach offers a “pay-for-performance” or capitation fee for contracted organizations (“channel partners”) that successfully deliver energy efficiency programs, measures and/or solutions to small business customers.

### **v. IOU program interactions**

The Calculated Incentives sub-program managers will partner with the programs offered by CEC, ARB, Air Quality Management Districts, and other government agencies to capitalize on opportunities to co-brand program information and marketing collateral with this sector’s 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, comprehensive information that discusses all resource efficiency issues will benefit the customer to the mutual advantage of the single resource programs.

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 and GHG emissions.

### **vi. Similar IOU and POU programs:**

The IOUs will be delivering many third-party programs that utilize the Calculated sub-program's infrastructure. This will help ensure a consistent delivery of measure incentives and protect programs from undermining each other and detracting from achieving cost-effective energy savings.



## **Commercial: Calculated Incentives Program**

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### **b) Program delivery and coordination**

The Calculated Incentives sub-program will be coordinated with the following activities:

#### **i. Emerging Technologies (ET) 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 Calculated sub-program is poised to adopt the efficiency potential of new technologies. In addition, portfolio staff will actively work to incorporate promising emerging technologies from IOU or PIER-funded projects.

#### **ii. Codes & Standards program**

The Calculated sub-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., solid state lighting) made available as these technologies transition from research and development to the 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 Ambassador 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**

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;

## **Commercial: Calculated Incentives Program**

- Participation and membership in one or two key trade associations affiliated with each high priority sub-segment within the Commercial Market Sector;
- Attendance at the key trade shows for each high priority sub-segment within the Commercial Market Sector;
- Utility-sponsored training events at the IOUs Customer Training Centers and other convenient locations within the IOUs 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 IOUs Energy Efficiency programs will be linked into the appropriate IOU DSM web page.

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

Integrated Energy Audits (described in the Non-Residential Audit sub-program) is the primary vehicle to promote project solutions that look across the various IOU DSM program offerings, as well as complementary options available through other entities (e.g., water agencies). The results of the Water Efficiency Pilot Program will identify 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.

### **viii. CEC work on C&S**

The program will not be implemented with a direct linkage to codes and standards efforts. However, see Section 6.b.ii., above.

### **ix. Non-utility market initiatives**

The sub-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

## **Commercial: Calculated Incentives Program**

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directed. The IOUs will remain engaged in these efforts and work to influence the development of increasingly higher standards.

### **c) Best Practices**

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 other.

IOUs are planning to consolidate various calculating software such as SPC Software, Engage and other measure specific calculating tools to standardize our calculating methodology. This will ensure that calculations will be more uniform and consistent among all stakeholders. This will not limit the use of nationally recognized standard DOE toolsets for certain measures.

IOUs are also planning to elaborate and utilize positive experience obtained using Savings By Design and Energy Design Resources tools 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.

Leveraging best practices from past program cycles, the Calculated Incentives sub-program information will also be made available through industry organizations such as the Building Owners and Managers Association (BOMA), and through advertising in industry and trade publications. Trade associations and vendor allies have historically delivered substantial energy savings through previous calculated program models.

An issue discussed with the Energy Division is the matter of automating the Commercial program application process. Key elements of the Commercial program are already automated. System development efforts are presently underway that will lead to complete automation in the future, to the extent possible. The IOUs intend to keep the Energy Division updated in system development processes during 2009-2011.

### **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.

## **Commercial: Calculated Incentives Program**

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For the new 2009-2011 program cycle, California IOUs have implemented a new incentive structure that emphasizes peak demand reduction, addresses the current economic downturn, and better motivates customers to participate in energy efficiency incentive programs. During the program cycle, new incentive structures will be periodically evaluated and necessary changes made in order to enhance program benefits and performance.

Where possible, the IOUs will use an integrated approach to addressing DSM opportunities. Innovative aspects such as merging energy efficiency and demand response analysis and converting recommendations to projects under the Retro-commissioning and/or Calculated programs, processing and reviewing energy efficiency and demand response 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.

The IOUs are planning to continue and expand their core RCx programs in multiple target markets. After energy auditing is complete and applicable no-cost/low-cost measures are identified, the scope of work will be handed off to an RCx implementer who will follow RCx program protocols and report final results to the core program office.

### **e) Integrated/coordinated Demand Side Management**

As the primary incentive vehicle customers have for implementing efficiency projects, the Calculated Incentives sub-program is the logical choice for implementing greater demand side integration. Appropriate incentive mechanisms will be developed and implemented during the 2009-2011 program cycle to reward customers who implement comprehensive DSM programs. The first step on the path towards DSM integration is to introduce incentives for kW demand reduction, which as shown in Section 4.b will be available immediately. This will provide additional incentives for demand reduction strategies such as lighting controls.

The IOU's have identified integrated Demand Side Management (IDSMD) as an important priority. As a result they have proposed the establishment of a Statewide Integration Task Force (Task Force). The program plans to work closely with the Task Force to identify comprehensive integration approaches that feed into the overall statewide strategy and to implement best practices as rapidly as practical.

### **f) Integration across resource types**

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.

## **Commercial: Calculated Incentives Program**

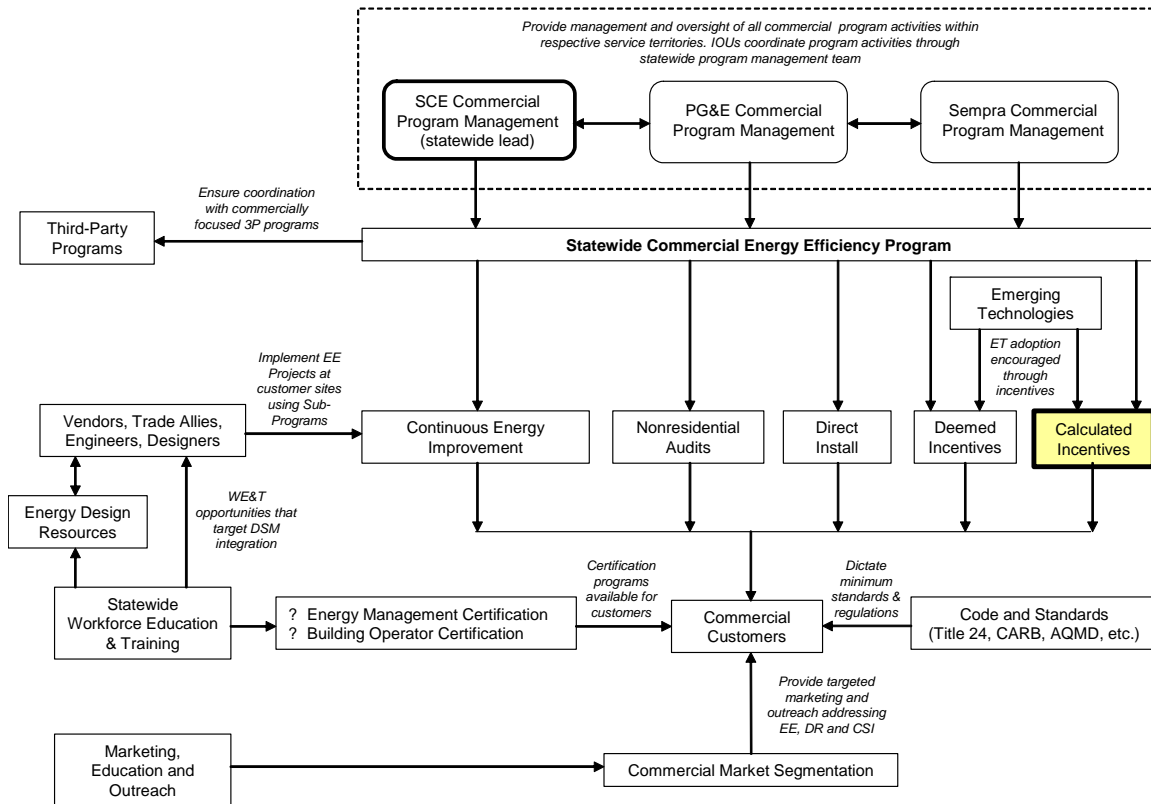
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g) **Pilots**  
N/A

h) **EM&V**  
Refer to the overarching PIP section

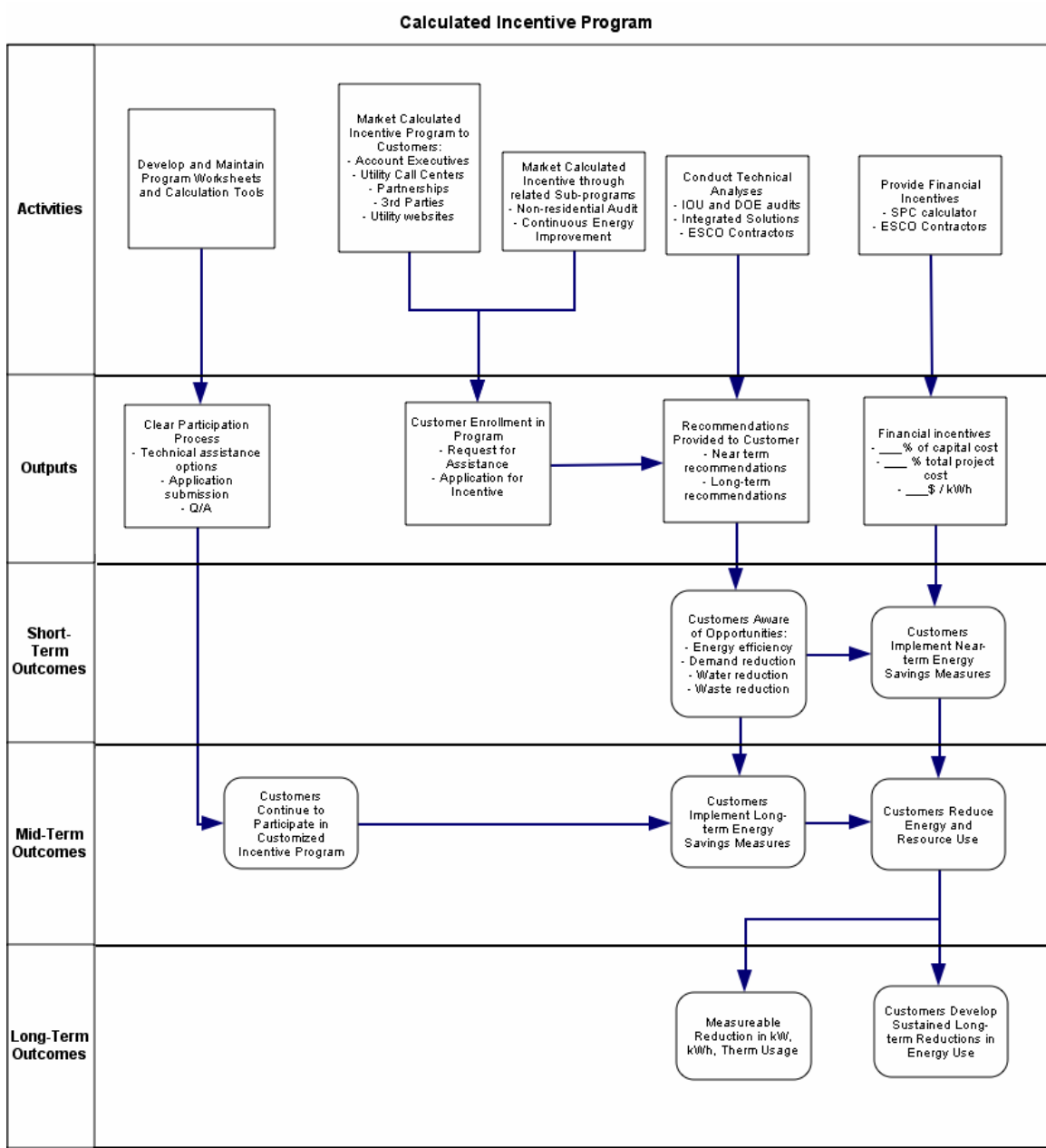
# Commercial: Calculated Incentives Program

## 7. Diagram of Program



# Commercial: Calculated Incentives Program

## 8. Program Logic Model







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## **Commercial: Deemed Incentives Program**

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- 1. Program Name:** Deemed Incentives Program  
**Program Type:** Core

- 2. Projected Program Budget Table**

**Table 1** – See the overall program for budget details.

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

**Table 2** - See the overall program for gross impact details.

- 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 inconvenience 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:

- Lighting.
- Air conditioning equipment.
- Food service equipment.
- Refrigeration.
- Plug Load Sensors

- 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.

## **Commercial: Deemed Incentives Program**

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### **5. Program Rationale and Expected Outcome**

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

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

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

#### **b) Market Transformation Information**

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

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

#### **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). Additionally, the easy-to-use online and paper application process reduces the inconvenience 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 operating best practices offer. This eliminates the barrier of getting incorrect or out-of-date information from local networks.

The sub-program also provides additional information about other opportunities for project assistance, such as State or Federal funds available for energy efficiency projects, tax incentives, or and local and/or other 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., solid state lighting, advanced lighting controls, etc.)

## **Commercial: Deemed Incentives Program**

### **d) Quantitative Program Targets**

The targets provided herein are best estimates, but nonetheless are forecasts.

**Table 5**

Program Name	Program Target by 2009	Program Target by 2010	Program Target by 2011
Projects	2460	3010	3230

### **e) Advancing Strategic Plan goals and objectives**

The unifying objective of the Strategic Plan is to employ market transformation strategies to encourage marketplace adoption of energy efficiency measures to a point that public investment in energy efficiency is no longer necessary.<sup>20</sup> The Deemed Incentives sub-program will support this effort by employing two of the five market transformation policies identified in the Strategic Plan. 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 Strategic Plan:

- 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., solid state lighting) 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.

<sup>20</sup> Strategic Plan, Section 1.3 – Targeting Market Transformation, Page 4.

## Commercial: Deemed Incentives Program

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- 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.

- 2-8: Improve utilization of plug-load technologies

The existing incentive structure pays for energy reductions through plug-load measures. Additional incentives that encourage greater penetration of plug-load technologies may be required and will be developed to support technologies recommended by PIER, the Office of the Future Consortium, etc.

### 6. Program Implementation

#### a) Statewide IOU coordination

The Statewide IOU Coordination process, described in detail in the Statewide Commercial Energy Efficiency Program, will ensure continuous improvement and consistent implementation of all of the sub-programs. The discussion below will focus on how the IOUs will coordinate the Deemed Incentives sub-program specifically.

The Statewide IOU Coordination process for the Deemed Incentives sub-program will be as follows:

- **Hold Regular Program Manager Meetings** – The Deemed sub-program managers from each of the IOUs will meet on a regular basis and will unify, to the extent possible, the implementation of program aspects such as program name, program delivery mechanisms, incentive levels, marketing and outreach plans, and IOU program interactions. The sub-program managers will also discuss new innovations and develop solutions to overcoming implementation challenges. Therefore, the regular meetings will focus on issues specific to the Deemed sub-program only.
- **Designate an IOU Program Lead** – One of the sub-program managers who participates in the regular meetings will be the designated Deemed Program IOU Lead. The IOU Lead will represent the sub-program at the regular Statewide Steering Committee meetings.
- **Participate in Regular Steering Committee Meetings** – The IOU Lead will be responsible for attending the regular Steering Committee Meetings and sharing Deemed Incentives sub-program innovations, experiences and challenges that have the potential to impact multiple sub-programs and/or the core Commercial Energy Efficiency Program as a whole.
- **Adopt Program Enhancements** – Once the Steering Committee agrees that a specific innovation or implementation policy has merit on a Statewide level, the IOU Lead will distribute the information to the Deemed sub-program managers

## **Commercial: Deemed Incentives Program**

by e-mail or at the next regular meeting for adoption and integration. Therefore, the IOU Lead will act as a conduit feeding Deemed sub-program-specific information up to the Statewide Steering Committee and distributing measures for adoption back to the Deemed sub-program managers.

- **Evaluate Program Enhancements** – To complete the adaptive management loop, the Deemed sub-program managers will track the success of the adopted Statewide enhancement or implementation policy and report any challenges or concerns at the regular Deemed Incentives sub-program meeting. The IOU Lead will report any challenges that transcend the Deemed Incentives sub-program to the Steering Committee, who will determine whether further course corrections are needed.

By following the process stated above, the Deemed Incentives 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 Steering Committee process, where the IOU Lead will act as participant and conduit between both Statewide coordination systems.

The coordination and unity of all program aspects will be handled through this Statewide coordination framework and will start off at a high level of Statewide consistency. In rare cases, there will be IOU-specific deviations. Instances where one IOU will favor a different approach than the other IOUs will be called out in italicized text throughout the Deemed Incentives sub-program.

**i. Program name:** Deemed Incentives

**ii. Program delivery mechanisms**

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

**iii. Incentive levels**

Incentive levels vary by measure type, but will be offered consistently across IOU service territory except where local market conditions necessitate different amounts.

**iv. Marketing and outreach plans**

The Deemed Incentives sub-program will be marketed through IOU account executives, as well as through third-party programs, 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 Response Program outreach, phone and e-mail support will be provided.

## **Commercial: Deemed Incentives Program**

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In 2009-2011, the IOUs will implement segmentation research and messaging. 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 and activities to promote the Deemed Incentives sub-program. Education, awareness and outreach efforts will rely on a combination of mass media and targeted communication channels to ensure that 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, 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.

Additionally, SCE may investigate piloting alternative channel marketing and outreach options that utilize community-based organizations and/or third parties to recruit small businesses and influence them to take actions that result in energy efficiency improvements. Regional and community entities tend to interface with small businesses with some regularity; therefore, partnering with these organizations could prove to be a viable delivery option. Through this marketing and outreach pilot, the proposed approach offers a “pay-for-performance” or capitation fee for those contracted organizations (“channel partners”) that successfully deliver energy efficiency programs, measures and/or solutions to small business customers.

### **v. IOU program interactions**

The Deemed Incentives sub-program managers will partner with the programs offered by CEC, ARB, Air Quality Management Districts, and other government agencies to capitalize on opportunities to co-brand program information and marketing collateral with this sector’s 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, comprehensive information that discusses all resource

## **Commercial: Deemed Incentives Program**

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efficiency issues will benefit the customer to the mutual advantage of the single resource programs.

With respect to water conservation, utility program managers will partner with the local water districts to co-brand marketing collateral, attend trade shows, and co-release brochures, for programs with interactive water and energy effects. Similarly, with ARB and Air Quality Management Districts, IOUs will offer customers Deemed sub-program incentives for energy efficient equipment that may also reduce air and GHG emissions.

### **vi. Similar IOU and POU programs**

The IOUs will be delivering many third-party programs that utilize the Deemed Incentives sub-program infrastructure. This will help ensure a consistent delivery of measure incentives and protect programs from undermining each other and detracting from achieving cost-effective energy savings.

### **b) Program delivery and coordination**

The Deemed Incentives sub-program will be coordinated with the following activities:

#### **i. Emerging Technologies (ET) 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 from IOU or PIER-funded projects.

#### **ii. Codes & 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 incorporate the latest cost-effective technologies and services (e.g., solid state lighting) made available as these technologies transition from research and development to the mainstream.



## **Commercial: Deemed Incentives Program**

### **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. The classes also address how customers engage energy efficiency program offerings. An Energy Efficiency Ambassador will be present at all classes to provide detailed information on the application process for the relevant Energy Efficiency programs.

### **iv. Program-specific marketing and outreach efforts**

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

- Account representatives will regularly and consistently call key Commercial Market Sector customers.
- Utility representatives, Energy Efficiency program management representatives, and field engineers will be available to provide additional expertise.
- Participation and membership in one or two key trade associations affiliated with each high priority Commercial Market Sector sub-segment.
- Attendance at the key trade shows for each high priority Commercial Market Sector sub-segment.
- Conducting utility-sponsored training events at IOU Customer Training Centers and other convenient locations within each IOU's service territory.
- Hosting of utility-sponsored Webinars that provide sub-segment training and program adoption.
- Written collateral pieces that provide an overview of the IOU Energy Efficiency programs will be linked into the appropriate IOU DSM web page.

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

Integrated Energy Audits (described in the Non-Residential Audit sub-program PIP) are the primary vehicle for promoting project solutions that look across the various IOU DSM program offerings, as well as complementary options available through other entities, such as water agencies. The results of the Water Efficiency Pilot Program will identify opportunities to reduce water use and the potential for associated Energy Efficiency savings. Since some Commercial Market Sector customers are major water users, they are 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

## **Commercial: Deemed Incentives Program**

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### **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**

The Deemed Incentives Program will not be implemented with a direct linkage to CEC codes and standards efforts. However, see Section 6.b.ii., above.

### **ix. Non-utility market initiatives**

The sub-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**

To maximize program effectiveness, best practices in Program Design and Implementation will be employed and shared among IOUs. Areas of best practices for the Deemed Incentive approach include:

- Best practices in Program Design:
  - Establish regular communication among IOUs, which is critical to effective program design.
  - Identify qualifying products simply and effectively (Examples: ENERGY STAR®, CEE, PIER, etc.).
  - 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 customer's 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 the program.
  - Ensure that outreach efforts make the program visible to customers and the market that caters to them.
  - Always communicate program marketing and advertising plans in advance to appropriate industry channels. Advanced notice allows industry partners an

## **Commercial: Deemed Incentives Program**

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opportunity to leverage from utility marketing efforts and reinforce messaging.

- Statewide coordination is important as it makes 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 administrative expenses through cost sharing arrangements.

### **d) Innovation**

Innovative aspects of the program for 2009-2011 include persistent integration of new and emerging technologies into the program processes. This will manifest itself in an increased emphasis on plug-load technologies (in support of the Strategic Plan) and by aligning rebates with the recommendations of the Office of the Future Consortium to help make their “25% Solution” a reality.

Additionally, incentive mechanisms that emphasize peak demand reduction, address the current economic downturn, and better motivate customers to participate in energy efficiency incentive programs will be pursued. During the 2009-2011 program cycle, new incentive structures will be periodically evaluated and necessary changes made to enhance program benefits and performance.

Where possible, IOUs will use an integrated approach to addressing DSM opportunities. Innovative aspects such as merging energy efficiency and demand response analysis and converting recommendations to projects under Retro-commissioning and/or Non-Residential Audits, processing and reviewing energy efficiency and demand response 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.

### **e) Integrated/coordinated Demand Side Management**

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, similar programs, but because of siloing – thinking of programs as separate, unrelated efforts – this has proved difficult. To overcome this, the Deemed Incentives sub-program will leverage lessons learned from IDSM efforts by offering comprehensive, coordinated marketing and program delivery.

A primary issue when integrating energy efficiency and demand response 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 that demand response program incentives are based on. Since benefits from long-term energy savings derived from technological measures outweigh the temporary demand reduction benefits derived

## **Commercial: Deemed Incentives Program**

from behavioral actions, the program will offer additional incentives for energy efficiency measures that enable demand response when customers enroll, or are already enrolled, in demand response 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 response programs is that communications of both types of DSM program are not often coordinated, since energy efficiency is typically technology-based and demand response is often focused on behavior. Also, demand response efforts often cluster before 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 consolidated applications, collateral, websites, and events, where applicable, giving customers the opportunity to enroll in both types of programs.

The integration of energy efficiency and demand response programs presents several issues and, as stated previously, the Deemed sub-program seeks to overcome these issues by focusing 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, websites, and events).
- Linking of program eligibility requirements (e.g., customer size).
- Providing unified technical assistance through enhanced EE/DR Audits through the TA/TI Program to allow for cross-harvesting opportunities.
- Integrated presence on utility websites.
- Regular coordination meetings between energy efficiency and demand response program management.

During the 2009-2011 program cycle, funding for energy efficiency and demand response cannot be commingled. Therefore, payments will be split between the two programs as appropriate.

A new incentive mechanism called an Integration Bonus (iBonus) will be put in place to promote greater integration of DSM resources. The iBonus is available for customers who:

- Purchase, install, and are eligible to receive a rebate for an addressable energy saving device, and
- Sign up for, or are already signed up for, a voluntary or rate-based Demand Response Program.

Technologies eligible for an iBonus will initially include the following addressable Deemed measures, with additional measures added, as appropriate, when identified:

- Addressable Lighting Measures
- Addressable HVAC Measures

## **Commercial: Deemed Incentives Program**

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- Addressable Computer Network Power Management Software
- Addressable Refrigeration Measures
- Addressable Anti-Sweat Heaters

The technologies listed above will be clearly demarked on the Deemed sub-program application as being eligible for the iBonus and specific terms and conditions concerning the respective measure will be included in the application.

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

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.

### **g) Pilots**

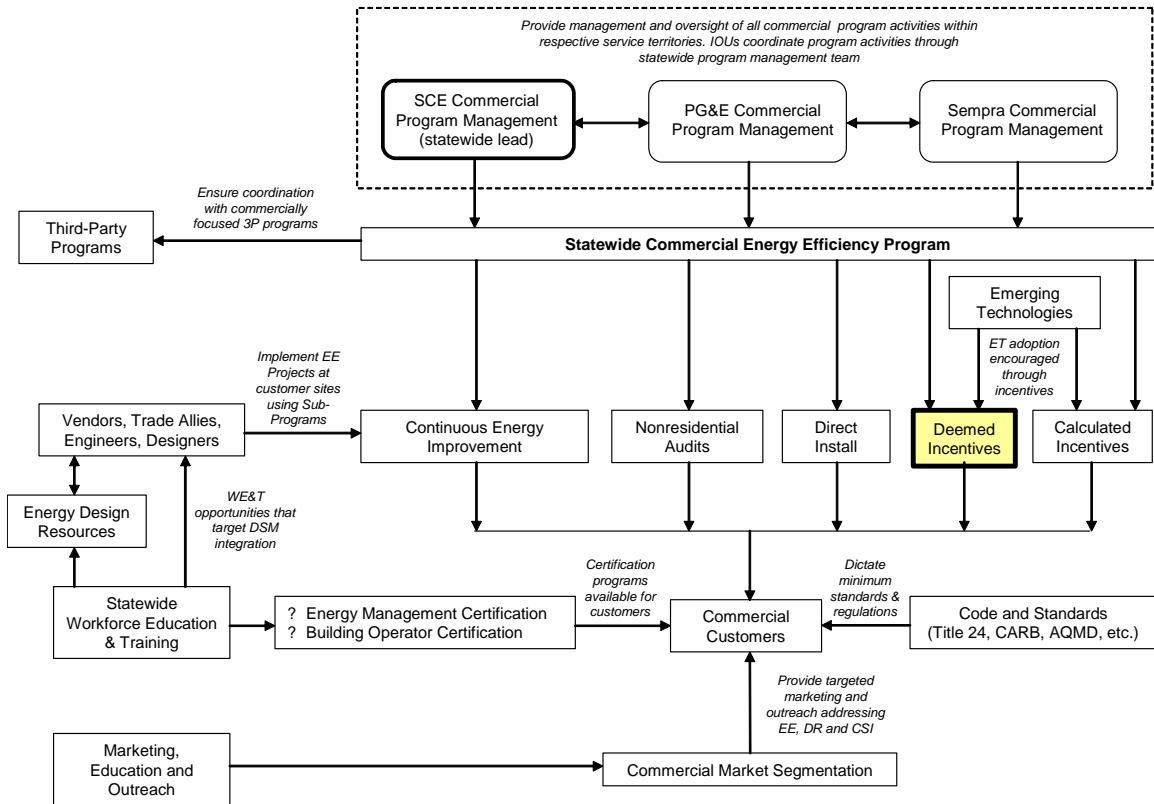
N/A

### **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.

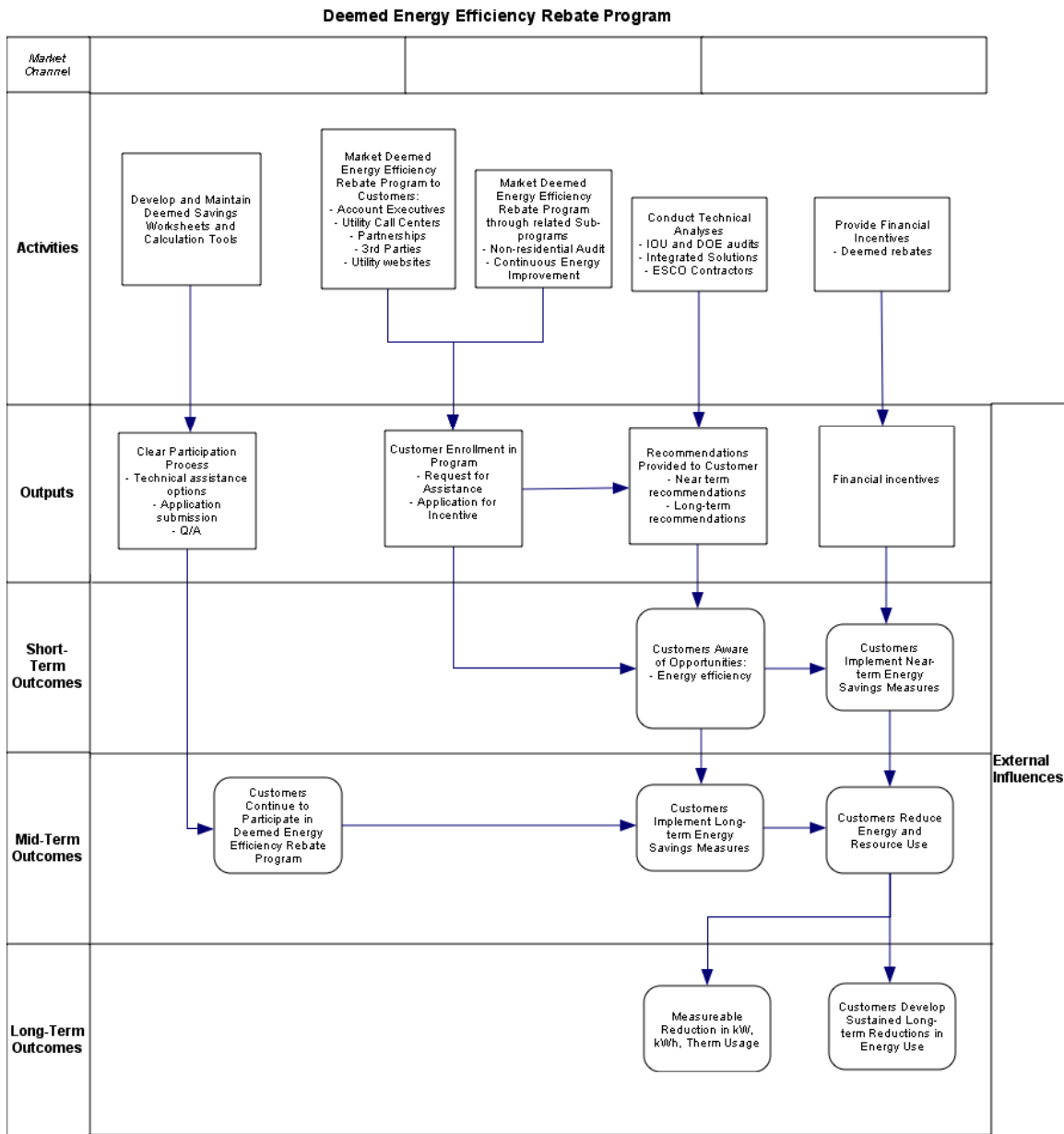
# Commercial: Deemed Incentives Program

## 7. Diagram of Program



# Commercial: Deemed Incentives Program

## 8. Program Logic Model







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## **Commercial: Commercial Direct Install Program**

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**1. Program Name:** Commercial Direct Install Program  
**Program Type:** Core

**2. Projected Program Budget Table**

**Table 1** – See the overall program for budget details.

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

**Table 2** - See the overall program for gross impact details.

**4. Program Description**

**a) Describe program**

The Direct Install sub-program delivers free energy efficiency hardware retrofits, through installation contractors, to reduce peak demand and energy savings for commercial customers with monthly demand of less than 100 kW. The program targets very small and small businesses (those with monthly demand of less than 100 kW) in a staged delivery approach that provides program services in specific geographic areas at different times, allowing for a more concentrated, directed, yet comprehensive program.

**b) List measures**

Direct Install will implement selected measures at no cost to the customer. Eligible measures include:

- Lighting.
- Air conditioning equipment.
- Refrigeration – gaskets, auto-closers, and strip closers.
- LED Exit Signs.

**c) List non-incentive customer services**

The sub-program provides a complete turnkey solution for the customer, including equipment purchasing, installation, clean-up and disposal. In addition, it provides information about the installed measures to the customer, explaining the energy efficiency benefits they received and proper operation and maintenance practices to ensure sustained performance.

**5. Program Rationale and Expected Outcome**

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

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

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

## **Commercial: Commercial Direct Install Program**

### **b) Market Transformation Information**

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

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

### **c) Program Design to Overcome Barriers**

Small businesses are a significant source of untapped energy-efficiency potential. The primary barriers to participation include limited capital resources, lack of expertise and understanding of the benefits of energy efficiency, a suspicion of the “free offer” and its legitimacy, and generally higher interest rates for smaller customers.

In addition, the majority of these customers occupy short-term leased facilities. Consequently, there is also a split incentive barrier to adoption of energy efficiency improvements. Split incentives occur when the customer or owner does not own the equipment for which they pay a utility bill (for example, when the landlord owns the HVAC equipment and the customer pays utility bills for it, or vice versa).

While these very small and small commercial customers may be eligible for other program elements such as the itemized retrofit incentive, the primary barriers to their participation are not addressed by that program, beyond some cost reduction. The No-Cost Installation element addresses these barriers by providing all equipment and installation services at no charge to the customer.

Additionally, the Direct Install sub-program has team members fluent in the languages spoken and familiar with the cultures in its territory, so they can proactively:

- Bridge cultural and language barriers to understanding the benefits of energy efficiency, and
- Overcome suspicion of the “free offer” and its legitimacy.

### **d) Quantitative Program Targets**

The targets provided herein are best estimates, but nonetheless are forecasts.

**Table 5**

Program Name	Program Target by 2009	Program Target by 2010	Program Target by 2011
Customer Installations	7,500	28,000	28,000

### **e) Advancing Strategic Plan goals and objectives**

In accordance with the Strategic Plan, this sub-program advances comprehensive energy efficiency, including:

## **Commercial: Commercial Direct Install Program**

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- Integrating marketing and outreach to the commercial customer sector
- Integrating the approach to better maximize savings and minimize lost opportunities
- Identifying the most promising technologies that can provide multiple solutions for energy efficiency.
- Cross-promoting other energy efficiency and demand response programs (e.g., Workforce, Education & Training).

### **6. Program Implementation**

#### **a) Statewide IOU coordination**

All California IOUs will offer the Direct Install sub-program in a consistent manner. Specific areas of coordination include:

**i. Program name:** Commercial Direct Install.

**ii. Program delivery mechanisms:**

Third-party contractors will be used to perform program services such as customer outreach, surveying existing equipment, explaining and promoting retrofits, performing retrofit installations for customers, and coordinating services performed by Community-Based Organizations (CBOs).

**iii. Incentive levels:**

The sub-program does not pay a rebate or incentive. The products and their installation are free to the customer.

**iv. Marketing and outreach plans:**

The sub-program is designed to increase the adoption of energy-efficient measures by small and hard-to-reach commercial customers through offering energy efficiency assessments, energy-efficient equipment, and installation at no cost. Target commercial customers are those with monthly demand under 100 kW. Marketing efforts will be targeted based on customer size and demographics. Program interactions include working closely with Faith-Based Organizations (FBOs) and CBOs as job development partners, creating and providing jobs in addition to the contract deliverables, and thus establishing a partnership in the community that otherwise might not have been developed.

**v. IOU program interactions:**

The sub-program will coordinate its activities with local government partnerships in order to leverage existing infrastructures (e.g., Chambers of Commerce) that provide outreach to small business customers.

**vi. Similar IOU and POU programs:**

N/A

## **Commercial: Commercial Direct Install Program**

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### **b) Program delivery and coordination**

Direct Install contractors are selected using a competitive bidding process to ensure cost-effective delivery of services. The contractors will deliver all customer outreach, existing equipment surveys, explanation and promotion of retrofits, and installation of retrofits to customers.

The IOU Direct Install management staff will provide a customer contact list to contractors. Using this list, the contractors will contact each customer to set up an appointment to assess and install the recommended measures at no cost to the customer. In cases where a customer name is not shown on the list (for example, a new business that opened after the list was generated), the contractor confirms the customer's eligibility before performing a survey. Contractors will have the main responsibility for contacting eligible customers, but will also work with appropriate CBOs, FBOs, and local government partnerships to reach customers.

After completing an energy survey, the contractor must discuss the recommendations with the customer, explain which fixtures and/or lamps are recommended for upgrade and/or replacement, and then ask the customer whether to proceed with the retrofit:

- If the customer needs time to consider the offer, the contractor must leave a copy of a “Customer Authorization Form” and a contact telephone number.
- If the customer declines or decides not to proceed, the contractor must record this, along with the customer’s reasons (if given), on the Authorization Form.
- If the customer accepts or decides to proceed with the retrofit/installation, the contractor must have him or her sign the Authorization Form. This provides the customer’s written permission to proceed with the work. The Authorization Form includes language defining an agreement between the customer and the contractor, and holds the contractor solely responsible, even if the contractor assigns a subcontractor to perform the actual work.

The contractor typically installs the equipment within a few days of obtaining permission to proceed, and must complete the installation no more than 30 days after the customer signs the Customer Authorization Form. After completing the installation, the contractor must do three things:

1. Perform an on-site post-verification of the installation. The test must ensure that all retrofit work is completed and in compliance with all applicable statutes, acts, ordinances, regulations, codes and standards of the federal, state and local governmental agencies having regulatory jurisdiction.
2. Have the customer complete and sign a Customer Questionnaire.
3. If a customer has any complaint about work done through the Program, the contractor is ultimately responsible for handling it.

Any advertising or marketing material that the contractor uses must be approved by the sub-program manager in advance. All customer communications must be presented in the customer’s primary language whenever possible.

## **Commercial: Commercial Direct Install Program**

### **i. Emerging Technologies (ET) program**

N/A (this program does not seek to influence emerging technologies).

### **ii. Codes & Standards program**

N/A (this program is not directly involved with the Codes and Standards, but is indirectly involved insofar as Title 20/24 requirements dictate minimum efficiency standards).

### **iii. WE&T efforts**

Direct Install contractors will be required to provide customers with informational materials on Statewide and local WE&T opportunities. In addition, the Direct Install program (through its contractor delivery network) offers an opportunity for achieving one of the primary goals of Workforce Education & Training – providing energy efficiency jobs for low income and disadvantaged workers. The linkage between Direct Install and the Statewide WE&T efforts will be made stronger as the WE&T program coalesces.

### **iv. Program-specific marketing and outreach efforts**

Program outreach occurs by working closely with local governments, FBOs and CBOs. Marketing and outreach efforts focus on the energy efficiency benefits of the equipment installed, proper operation and maintenance, and cross-promotion of DR activities. (Specific IOU budget information for this marketing activity is provided in Table 1 of the Commercial Energy Efficiency Program, above.)

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

As a turnkey program, Direct Install contractors are responsible for outreach efforts, equipment specification, equipment procurement, equipment installation, job-site clean-up, equipment disposal, and post-installation inspection.

### **vi. Non-IOU programs**

Direct Install will leverage the efforts of other philanthropic organizations, FBOs, and CBOs to achieve additional energy savings. These efforts will be further defined as the program design details are finalized and third-party contracts are negotiated.

### **vii. CEC work on PIER**

N/A (see Section 6.b.i, above).

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

N/A (see Section 6.b.ii, above).

### **ix. Non-utility market initiatives**

N/A

## **Commercial: Commercial Direct Install Program**

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### **c) Best Practices**

Direct Install Programs were successfully offered during the 2006-2008 program cycle. Best practices were derived from these programs and include:

- Keep messaging and participation simple for the customer.
- Understand the key motivators that drive an industry and use that information to market the program.
- Make the program visible to targeted customers.
- Contact targeted customers through identified organizations and associations.
- Maintain a high level of customer service by providing customers with assistance with vendor management and other no-cost / low cost recommendations.
- Identify qualifying products simply and effectively.

### **d) Innovation**

As the market matures with information regarding energy efficiency, many small businesses are expressing an interest in the adoption of advanced technologies, such as solid state lighting, T-12 to T-8 retrofits and demand response enabling technologies. The IOU Direct Install sub-program management team will continually evaluate these technologies and incorporate them into the program, including potential customer co-payments.

### **e) Integrated/coordinated Demand Side Management**

The Direct Install model provides a great opportunity to market other DSM programs (DR and CSI) to traditionally hard-to-reach customers. The sub-program will make every effort to do so; however, these small business customers are unlikely to have either the financial or personnel resources to actively pursue participation in such programs, especially CSI. To help bridge this resource gap, DSM promotional materials will describe all known non-IOU programs that offer tax credits, rebates, and/or financing for solar PV systems. Information on DR programs appropriate to the small-business customer class (demand less than 100 kW) will also be provided.

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

Promotional materials described in Section 6.e., above, will also include information on water energy savings. In addition, such water savings measures (e.g., low flow faucets) may be evaluated for inclusion in the program delivery.

### **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

## **Commercial: Commercial Direct Install Program**

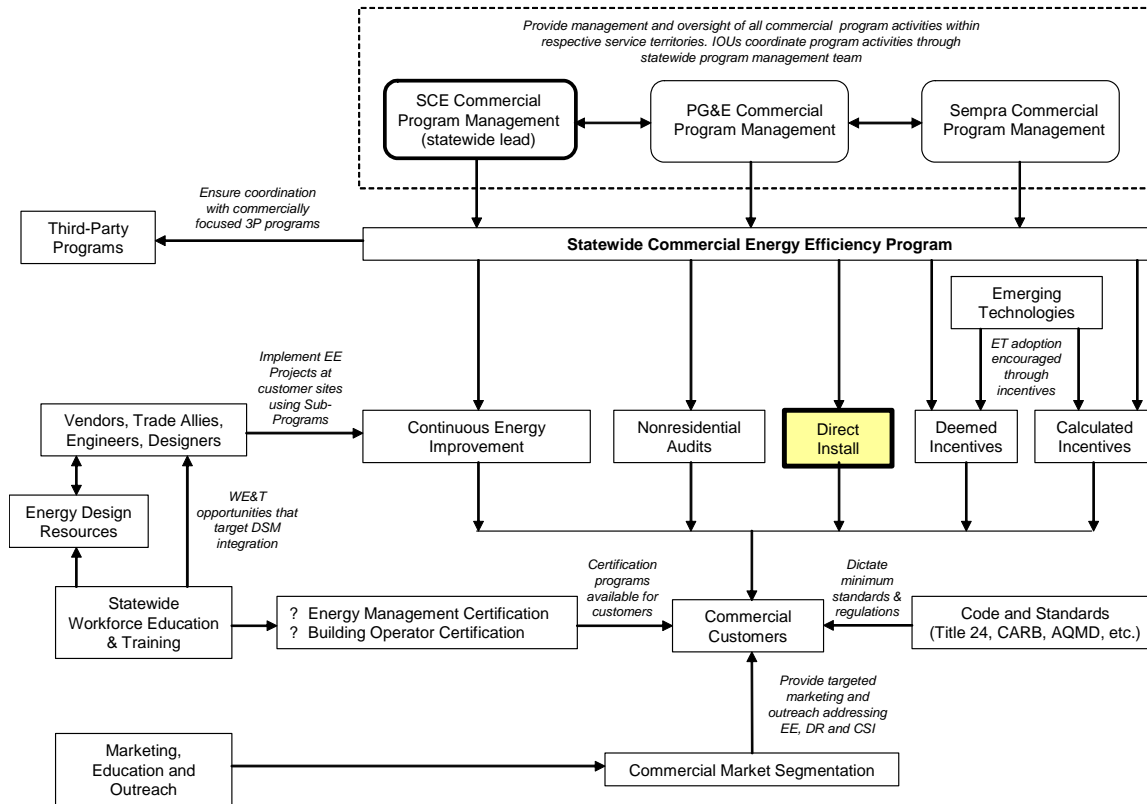
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developed until after the final program design is approved by the CPUC and in many cases after program implementation has begun, since plans need to be based on identified program design and implementation issues.



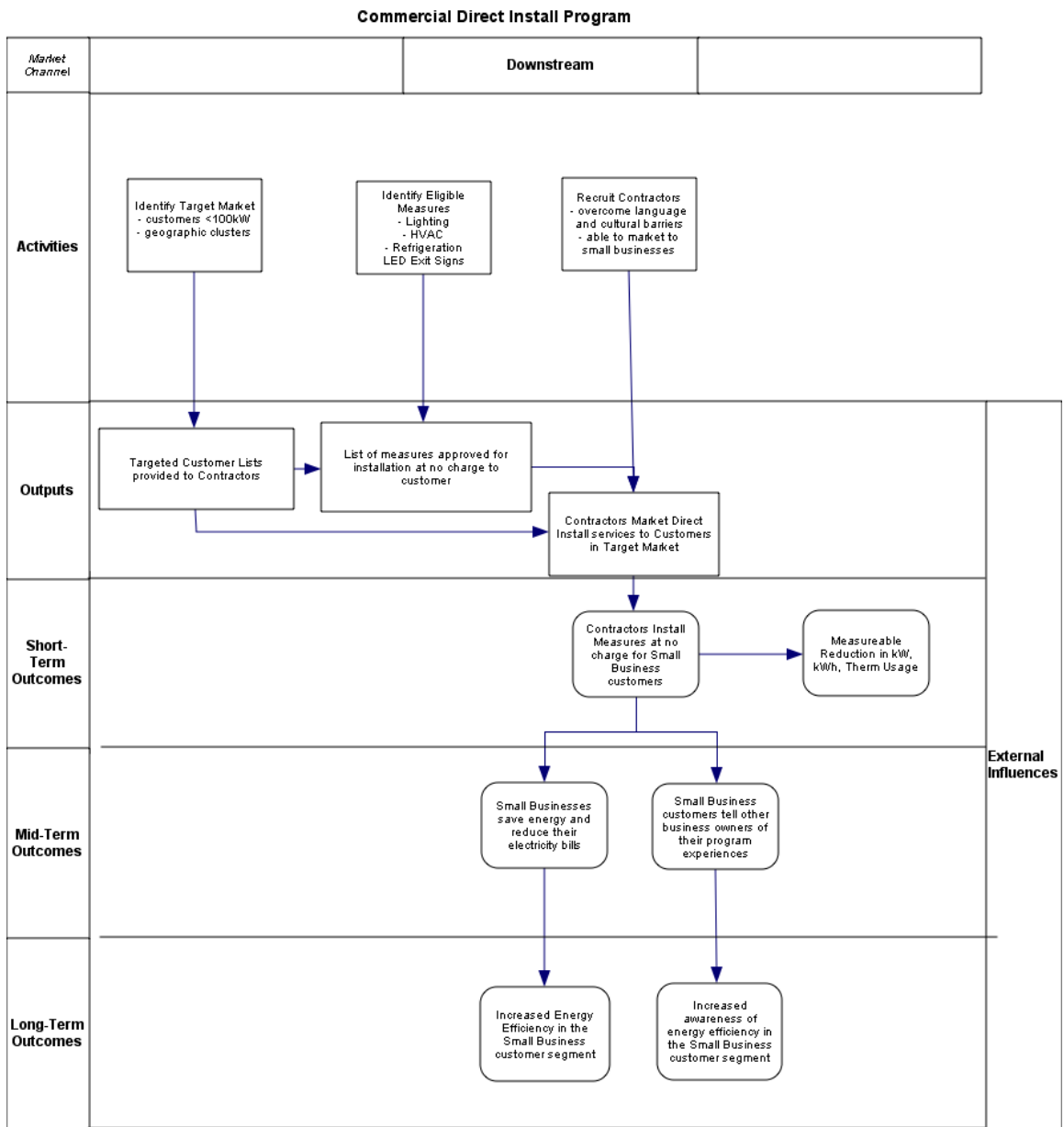
# Commercial: Commercial Direct Install Program

## 7. Diagram of Program



# Commercial: Commercial Direct Install Program

## 8. Program Logic Model



2e

## **Commercial: Continuous Energy Improvement**

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- 1. Program Name:** Continuous Energy Improvement  
**Program Type:** Core

- 2. Projected Program Budget Table**

**Table 1** – See the overall program for budget details.

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

**Table 2** - See the overall program for gross impact details.

- 4. Program Description**

- a) Describe program**

Continuous Energy Improvement (CEI) is a consultative service 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. 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 principles of well-known business continuous improvement programs, such as Six Sigma and International Standards Organization (ISO) standards, to facility and plant energy management. These principles are: (1) Commitment; (2) Assessment; (3) Planning; (4) Implementation; (5) Evaluation; and (6) Modification. At each stage of customer engagement, a variety of complementary utility and non-utility products and services 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 – like safety – is a priority issue requiring attention, and also paves the way for establishing the company resources required to implement the steps of CEI. These resources can include capital, personnel such as energy champions or teams, and/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 energy intensive

## **Commercial: Continuous Energy Improvement**

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 both technical opportunities and systemic energy management practices and cultural shifts that can improve overall facility management practices and sustain continuous improvement towards long-term company targets.

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

- EnergyStar's Guidelines for Energy Management is housed on the EnergyStar website. It provides step-by-step guidelines for customers to support CEI in general, and also guides customers to EnergyStar'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 the energy performance of a company, building, process, or piece of equipment against 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 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, CO<sub>2</sub>, 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 discussed in the Strategic Plan and in Section 6.e. below, strategic planning can also include complementary non-energy considerations as well, such as GHG reductions, water efficiency, and waste-stream minimization, all of which have embedded energy components.

## **Commercial: Continuous Energy Improvement**

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Data and findings from a comprehensive customer assessment are critical in developing any comprehensive energy plan for the customer, 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 short-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 its 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 stated in internal documents or can be made public through press releases as part of larger sustainability plans, which are 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, and
- Developing 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 and/or repair.
- Third-Party and Government Partnership programs (described in the Statewide and local third party filings).
- Non-utility financing options.
- Owners engineer support.

### **Evaluation and Modification**

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,

## **Commercial: Continuous Energy Improvement**

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- 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**

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

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

### **b) Market Transformation Information**

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

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

### **c) Program Design to Overcome Barriers**

CEI is intended to address several market barriers that prevent wider adoption of energy efficiency practices. These barriers and the strategies to overcome them 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.

## Commercial: Continuous Energy Improvement

- Organizational customs: The high-level customer commitment that is at the core of CEI increases the likelihood of changing corporate cultures that prevent successful implementation of comprehensive energy policies.

### **d) Quantitative Program Targets**

The targets provided herein are best estimates, but nonetheless are forecasts.

**Table 5**

Program Name	Program Target by 2009	Program Target by 2010	Program Target by 2011
Square Footage Benchmarked	6,445,000	8,889,000	19,893,000

### **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 Strategic Plan:

- 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 an 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 Strategic Plan.

- 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 help commercial customers reduce initial energy usage at their facilities, then continue to operate their facilities in an efficient manner. Current tools used for benchmarking tools and resources include those developed by the EPA for EnergyStar and by Lawrence Berkeley National Lab (LBNL) with CEC funding:

- EnergyStar Portfolio Manager Commercial Benchmarking: Benchmarks customer facility against a national database of similar NAICS codes for an EnergyStar score (0-100), kBTU/sq ft-yr., lbs CO<sub>2</sub>/yr.
- Management Standard for Energy SME2000-2008.
- LBNL Superior Energy Performance.



## **Commercial: Continuous Energy Improvement**

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- 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**

#### **a) Statewide IOU coordination**

The Statewide IOU Coordination process will ensure continuous improvement and consistent implementation of all sub-programs. The discussion below will focus on how the IOUs will coordinate the CEI sub-program specifically. The Statewide IOU Coordination process for the CEI sub-program will be as follows:

- **Hold Regular Sub-program Manager Meetings** – The CEI sub-program managers from each of the IOUs will meet on a regular basis. The sub-program managers will unify, to the extent possible, the implementation of program aspects such as program name, program delivery mechanisms, incentive levels, marketing and outreach plans, and IOU program interactions. The sub-program managers will also discuss new innovations and develop solutions to overcoming implementation challenges.
- **Input to Program Sector Lead Meetings** – The CEI sub-program managers will communicate to their Program Sector Leads the CEI sub-program innovations, experiences, and challenges that have the potential to impact multiple sub-programs or the Program as a whole. When a specific innovation or implementation policy has merit on a Statewide-level, the Sector Lead will distribute the information to the CEI sub-program managers by e-mail for adoption and integration.
- **Evaluate Program Enhancements** – To complete the adaptive management loop, the CEI sub-program managers will track the success of the adopted Statewide enhancement or implementation policy and report any challenges or concerns at the monthly CEI sub-program meeting.

By following the process stated above, the CEI sub-program managers will play a critical role in ensuring unified implementation on a Statewide level over the course of the 2009-2011 program 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.

The coordination and unity of all program aspects will be handled through this Statewide coordination framework. However, these aspects will start off at a high-level of Statewide consistency. In some cases, there will be local IOU-specific deviations. Instances where certain IOUs favor a different approach than the other IOUs will be called out in italicized text.

## **Commercial: Continuous Energy Improvement**

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**i. Program name:** Continuous Energy Improvement

**ii. Program delivery mechanisms**

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 delivery channels may also be developed.

Where applicable, SCE's account representatives will support this activity within the statewide commercial sector, as well as third parties, government partnerships, and SCE local programs.

**iii. Incentive levels**

N/A (CEI is a non-resource program).

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

CEI will be available to all commercial customers meeting certain eligibility criteria to justify the cost of the offering. Criteria will include, but not be limited to, customer energy use, complexity, number of facilities, energy decision-making structure, and environmental commitment or demonstrated motivation. Collateral materials such as fact sheets, how-to documents, Power Point slides, case studies, etc., will be produced and distributed during sales calls, public events, association meetings, and/or trade shows. In addition, sponsoring and/or holding recognition events that present customers with awards for achieving specific levels of efficiency, sustainability and/or integration will be explored as a means to promote greater levels of participation.

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

CEI will include the CEC's PIER and Green Building Initiative programs, DOE's "ISO plant certification" programs, EPA EnergyStar Portfolio Manager benchmarking and other programs, USGBC LEED certification, and local and other government incentive programs as applicable.

**vi. Similar IOU and POU programs**

Over the next three years, the IOUs will seek to increase their interactions with the POUs to promote the CEI concept throughout the state. This may involve the creation of periodic California energy efficiency program summits that seek to increase awareness of the Strategic Plan and how programs could and should be designed to help meet its aggressive targets.

**b) Program delivery and coordination**

CEI includes the following coordination efforts:

## **Commercial: Continuous Energy Improvement**

### **i. Emerging Technologies (ET) program**

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

### **ii. Codes & Standards program**

CEI implementation will 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 will integrate with WE&T efforts by providing CEI process, lessons learned, and case study input to energy engineering curriculum designers for community colleges and universities. This activity will be coordinated through the Statewide WE&T program team and will ultimately be integrated into the web portal that team is now developing.

### **iv. Program-specific marketing and outreach efforts**

CEI will be marketed through utility 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 Response 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 and 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 help 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, 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.

## **Commercial: Continuous Energy Improvement**

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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 will include non-energy activities such as recognition awards, local area or sector competitions, awareness campaigns, education about non-energy-related LEED points and definitions, and use of computerized financial analysis tools and cost estimating and forecasting tools.

### **vi. Non-IOU programs**

CEI implementation will include information on Non-IOU Programs to expose customers to funding, such as from air or water agencies, to support integrated efforts. The Statewide Calculated Incentives sub-program managers 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 targeted 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, 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 emissions.

### **vii. CEC work on PIER**

CEI implementation will continually seek to promote the adoption of new technologies developed through the PIER process and to expose customers to demonstration, research and/or pilot projects. The continuous improvement process envisioned by CEI will provide new equipment, processes, and methods that will enable customers to achieve energy efficiency "stretch" goals that produce significant energy savings beyond an established baseline in a cost-effective manner.

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

The program will not be implemented with a direct linkage to codes and standards efforts. However, see Section 6.b.ii., above.

### **ix. Non-utility market initiatives**

Education about federal tax incentives for energy efficiency investments is an example of non-utility information and guidance that CEI will provide to customers. In addition, the IOUs will participate in national efforts to develop

## **Commercial: Continuous Energy Improvement**

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and/or improve benchmarking tools and services that can be used by customers to better facilitate their adoption of sustainable energy management practices.

### **c) Best Practices**

CEI's 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, in order to achieve widespread adoption of long-lasting sustainable energy management practices in the commercial market sector. As stated above, these principles are: (1) Commitment, (2) Assessment, (3) Planning, (4) Implementation, (5) Evaluation, and (6) Modification. This approach can now be successfully implemented given the three-year program cycle for 2009-2011, allowing longer-term and deeper project development engagement with customers.

During the 2006-2008 program cycle, PG&E's Commercial program piloted a similar offering to CEI called "More than a Million." Lessons learned from this pilot program will be integrated into and ultimately guide the initial implementation of CEI.

### **d) Innovation**

CEI 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 Statewide 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, similar programs, but because of siloing – thinking of programs as separate, unrelated efforts – this has proved difficult. To overcome this, the CEI sub-program will leverage lessons learned from IDSME efforts by offering comprehensive, coordinated marketing and program delivery.

A primary issue when integrating energy efficiency and demand response 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 which the demand response program incentives are based on. 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 response when customers enroll, or

## **Commercial: Continuous Energy Improvement**

are already enrolled, in demand response 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 response programs is that communications of both types of DSM program are often non-coordinated, since energy efficiency is typically technology-based and demand response is often focused on behavior. Also, demand response efforts often happen before 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 consolidated applications, collateral, websites, and events, where applicable, which will give customers the opportunity to enroll in demand response programs as well as energy efficiency programs.

To support the integration of energy efficiency and demand response programs, the sub-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, websites, 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.

During the 2009-2011 program cycle, funding for energy efficiency and demand response cannot be commingled; therefore, payments will be split between the two programs as appropriate.

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

CEI implementation will include information on Non-IOU Programs to expose customers to funding, such as from air or water agencies, to support integrated efforts. IOU CEI sub-program managers will partner with 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 provide information 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

## **Commercial: Continuous Energy Improvement**

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agencies. With respect to water conservation, utility program managers will partner with the local water districts to produce co-branded marketing collateral, attend trade shows, and co-release brochures, for programs with interactive water and energy effects.

### **g) Pilots**

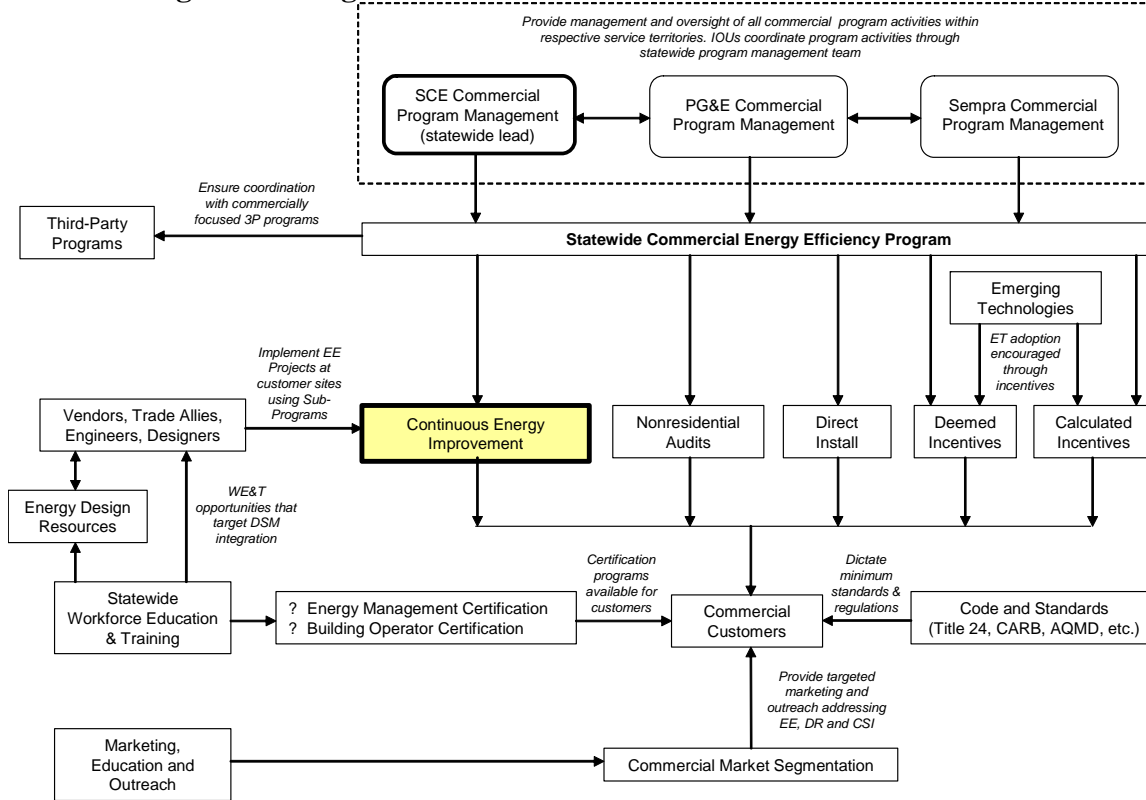
Based on Energy Division feedback, a potential pilot that will be explored in the 2009-2011 program cycle is that of a “Resource Energy Manager” (REM). An REM is essentially an energy manager who is placed at a customer facility to be a project champion and shepherd energy efficiency projects through to completion. The REM's salary is typically paid for by the energy savings the REM generates. REMs have been successfully used by IOUs in the government sector (typically military bases) in past program cycles, and a similar program has been available for commercial customers in the Pacific Northwest. The concept of using REMs in the commercial segment will be explored to determine the viability and cost-effectiveness of such an approach. An appropriate EM&V plan will also be required before launching an REM pilot, so that the effects of the pilot on achieving higher levels of energy efficiency can be determined easily.

### **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.

# Commercial: Continuous Energy Improvement

## 7. Diagram of Program

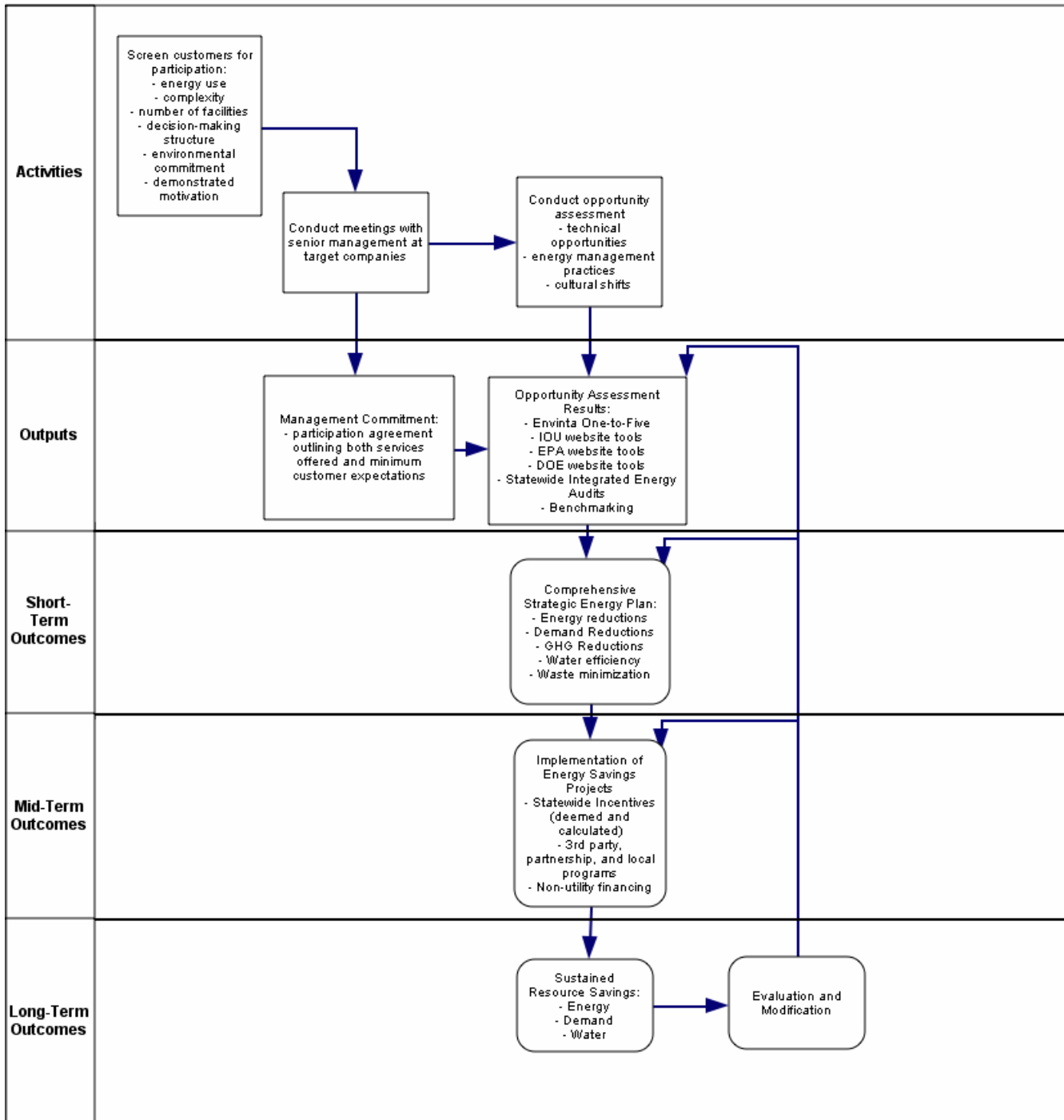




# Commercial: Continuous Energy Improvement

## 8. Program Logic Model

Continuous Energy Improvement Program





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## **Commercial: Energy Efficiency for Entertainment Centers**

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**1. Program Name:** Energy Efficiency for Entertainment Centers  
**Program Type:** Core

**2. Projected Program Budget Table**

**Table 1** – See the overarching program for budget details.

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

**Table 2** - See the overarching program for gross impact details.

**4. Program Description**

**a) Describe program**

Target customers include movie theaters, amusement parks, bowling alleys, concert halls, auditoriums, exercise/recreation centers and night clubs. Similar facilities will be considered for eligibility on a case-by-case basis.

The program will feature:

- An energy audit to identify energy efficiency and demand response opportunities.
- Direct installation of no-cost/low-cost measures.
- Limited technical assistance, including specifications assembly, procurement assistance and project management for large capital measures.
- Post-installation inspection to verify performance.
- Funding assistance to identify sources and types of funding.
- Financial assistance coordination and processing with SCE.
- Customer satisfaction surveys and resolution.

**b) List measures**

Measures will include the full range of no-cost/low-cost measures, such as:

- Air filter replacement.
- Refrigerant charge adjustments.
- Condenser coil repairs.
- Condenser and evaporator coil cleaning.
- Economizer repair.
- Lighting replacements, including compact fluorescent lamps and LED exit signs.
- Low-flow showerheads and faucet aerators.
- Plug-load timers.
- Vending machine controllers.

Retrofit measures needing more capital that will be eligible for incentives include:

- Demand control ventilation controls.
- Occupancy controlled thermostats.
- Boiler temperature controllers.
- Lighting motion and occupancy sensors.

## **Commercial: Energy Efficiency for Entertainment Centers**

- Daylighting sensors.
- Other high efficiency lighting measures.

Financial incentives will be available in several forms, including:

- No charge for low cost/no cost measures .
- Development of an investment strategy for retrofit capital items.
- Incentives for retrofit capital items earned from SCE based on Deemed Incentives and Calculated Incentives in core programs.
- Assistance in locating other funds for capital items from other private and public sources.

### **c) Non-incentive customer services**

Non-incentive customer services will include:

- Energy audits.
- Technical assistance.
- Demonstration project opportunities.
- Program information, toll free phone number and website.
- Analysis of green house gas reductions associated with energy efficiency.

The program will be implemented by a third party contractor to SCE.

## **5. Program Rationale and Expected Outcome**

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

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

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

### **b) Market Transformation Information**

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

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

### **c) Program Design to Overcome Barriers**

Market Transformation Tools to Overcome Barriers (Strategic Plan, p. 5)	Program Design Features to Overcome Barriers
Customer Incentives	<ul style="list-style-type: none"> <li>• Free installation for no cost measures</li> </ul>

## Commercial: Energy Efficiency for Entertainment Centers

	<ul style="list-style-type: none"> <li>• Rebates from SCE for capital items</li> <li>• Financing from other sources</li> </ul>
Codes and Standards	<ul style="list-style-type: none"> <li>• Recommended measures comply with building codes and equipment standards</li> </ul>
Education and Information	<ul style="list-style-type: none"> <li>• Program marketing materials</li> <li>• Case studies</li> <li>• Recognition</li> <li>• Websites</li> </ul>
Technical Assistance	<ul style="list-style-type: none"> <li>• Energy audits</li> <li>• Direct installation</li> <li>• Equipment specification</li> <li>• Procurement assistance</li> <li>• Project management assistance</li> <li>• Performance verification</li> </ul>
Emerging Technologies	<ul style="list-style-type: none"> <li>• New technologies, such as direct control ventilation</li> <li>• Facilitating demonstration projects</li> </ul>

### **d) Quantitative Program Targets**

The targets provided herein are best estimates, but nonetheless are forecasts.

**Table 5**

Program Name	Program Target by 2009	Program Target by 2010	Program Target by 2011
Projects	35	55	45

### **e) Advancing Strategic Plan goals and objectives**

SCE will work with third party implementers - including renegotiating program scope — to undertake initiatives of the Strategic Plan based upon the CPUC's approval of programs.

As proposed, this program supports much of the Strategic Plan of September 2008 as presented in Section 3, Commercial Sector. More specifically, the program supports:

- *Goal 2:* 50 percent of existing buildings will be retrofitted to zero net energy by 2030 through achievement of deep levels of energy efficiency and with the addition of clean distributed generation.
- *Strategy 2-5:* Develop tools and strategies to use information and behavioral changes, commissioning, and training to reduce energy consumption in commercial buildings. Near-term actions include:
  - Identify new and improved tools and strategies that apply information and behavioral strategies, including presentation of economic, comfort and productivity cases to owners, occupants and appraisers.

## **Commercial: Energy Efficiency for Entertainment Centers**

- Strengthen tools and practices in building commissioning.
- Strengthen Building Operator Certification (BOC) training for commissioning.
  
- *Strategy 2-6:* Develop effective financial tools for EE improvements in existing buildings. Near-term actions include:
  - Identify tools, instruments and information necessary to attract capital to EE.
  - Explore changes to standard lease terms to address perceived tenant/owner “split incentives” issue.
  
- *Strategy 2-7:* Develop business models and supplier infrastructure to deliver integrated and comprehensive “one stop” energy management solutions. Near-term actions include:
  - Explore other mechanisms to more highly reward comprehensive energy management retrofits, e.g., premium incentives for measured performance, local government permits, incentives, insurance discounts, etc.
  - Initiate utility incentive pilots that test the viability of integrated DSM service delivery models (ESCOs, aggregators, etc.)

The program will advance the goals, strategies and near-term actions of the plan through customer education and information, technical assistance, codes and standards compliance, customer incentives and fostering emerging technologies.

### **6. Program Implementation**

#### **a) Statewide IOU coordination**

Because this program is a Statewide program for the 2009-2011 program cycle, SCE will closely coordinate its implementation with the other IOUs, such as SCG and PG&E. Particular attention will be paid to addressing overlaps between SCE and the other IOUs, especially where the overlap is in service territory. SCE intends to work with the other IOUs to arrive at an arrangement where IOU programs complement, rather than compete, with one another, and to establish regular coordination activities, such as conference calls and in-person meetings between key personnel.

#### **b) Program delivery and coordination**

##### **i. Emerging Technologies (ET) program**

The installation of demand ventilation control systems is expected to be a key measure in the program. This is a relatively unfamiliar technology with attractive applications in common areas with irregular occupancy. Both gas and electricity savings come from reduced heating and cooling loads associated with higher outdoor air intake than necessary. The measure will reduce the outdoor air intake in proportion to the number of occupants. The program will work with chain account customers to demonstrate innovative energy efficient technologies on a test installation basis at selected facilities.

## **Commercial: Energy Efficiency for Entertainment Centers**

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### **ii. Codes & Standards program**

Wherever applicable, Title 24 and Title 20 standards will be used as measure baselines, particularly where the use of new (2008 version) codes and standards as baseline equipment is mandatory. Title 24 requires newly built facilities with high but irregular occupancy to have demand control ventilation, so this program will help stimulate retrofits in legacy facilities.

### **iii. WE&T efforts**

Workforce education and training will be approached through individual participating customers as well as through their trade associations and trade associations of their vendors. Customer staff will be engaged as partners in energy efficiency programs.

### **iv. Program-specific marketing and outreach efforts**

The program will achieve its market penetration objectives by using such practices as:

- One-to-one marketing by contractor with customer through telephone and personal meetings.
- Seminars for facility managers and executives.
- Program marketing materials including brochures, flyers, and short case studies.
- Encouragement of word-of-mouth among entertainment center managers.
- Participation at conferences and trade associations.
- Coordination with core programs of SCE for possible joint marketing activities including: distribution of marketing materials, joint presentation to target audiences, and periodic referrals via e-mail
- Program website where potential participants can find out more information about the program. Links to other IOU programs will also be made available on the website

Overall, the program marketing cost is expected to average about \$1,500 per site recruited.

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

The program will offer customers educational information about non-energy benefits associated with recommended measures, such as improved safety, indoor air quality, comfort, and appearance.

### **vi. Non-IOU programs**

The program will monitor industry practices and manufacturer programs to identify possible opportunities for participation in energy efficiency programs offered by other organizations besides investor-owned utilities.



## **Commercial: Energy Efficiency for Entertainment Centers**

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### **vii. CEC work on PIER**

The program will not be implemented with a direct linkage to PIER.

### **viii. CEC work on Codes and Standards**

The program will not be implemented with a direct linkage to codes and standards efforts. However, see Section 6.b.ii., above.

### **ix. Non-utility market initiatives**

The program will work with manufacturers or vendors to demonstrate their products and services in the service territory of SCE and in educational facilities.

### **c) Best Practices**

The program delivery strategy is based on a re-evaluation of existing programs, historical successes, and the needs of the market sector. The resulting program component design uses a combination of proven and innovative approaches to markets and delivery mechanisms that maximize energy savings opportunities. The program will be flexible enough to evaluate and adjust offerings based on successes and customer responses.

### **d) Innovation**

The program includes innovations as follows:

- Standardize the application of demand control ventilation.
- Identify demand response opportunities while identifying energy efficiency opportunities.
- Develop a financial plan for the customer that features an agreement that no cost/low cost measures will be installed for the customer at no charge, in exchange for the customer committing to installing retrofit capital measures for energy efficiency based, in part, on the energy savings from measures installed for free.

### **e) Integrated/coordinated Demand Side Management**

As part of the audit, the program will identify energy efficiency measures with large capital requirements that fit with other programs of SCE. The audit will also identify potential demand response measures. A discussion will be held with the facility manager to determine the feasibility of each measure. Limited technical and administrative assistance will be provided as necessary. Assistance will be provided to help customers enroll in existing energy efficiency programs, demand response programs, and renewable energy programs of SCE.

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

The program will provide information on GHG emission reductions associated with energy savings. Furthermore, the program will remain sensitive to other resource types by flagging recommended energy saving measures with meaningful impacts on other resources.

## **Commercial: Energy Efficiency for Entertainment Centers**

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### **g) Pilots**

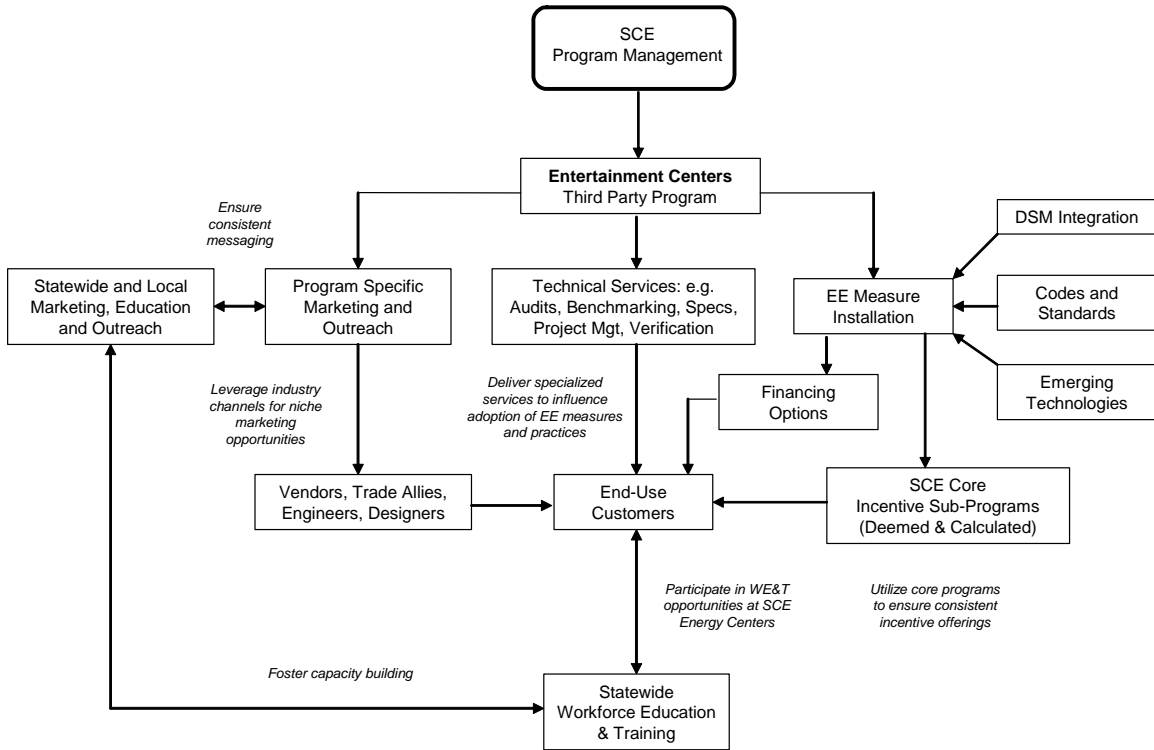
The program contractor will interact with manufacturers of energy efficiency equipment to obtain information on new and emerging technologies applicable to entertainment facilities. Attempts will be made to install promising technologies at test sites with the participation of the customer and the manufacturer.

### **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.

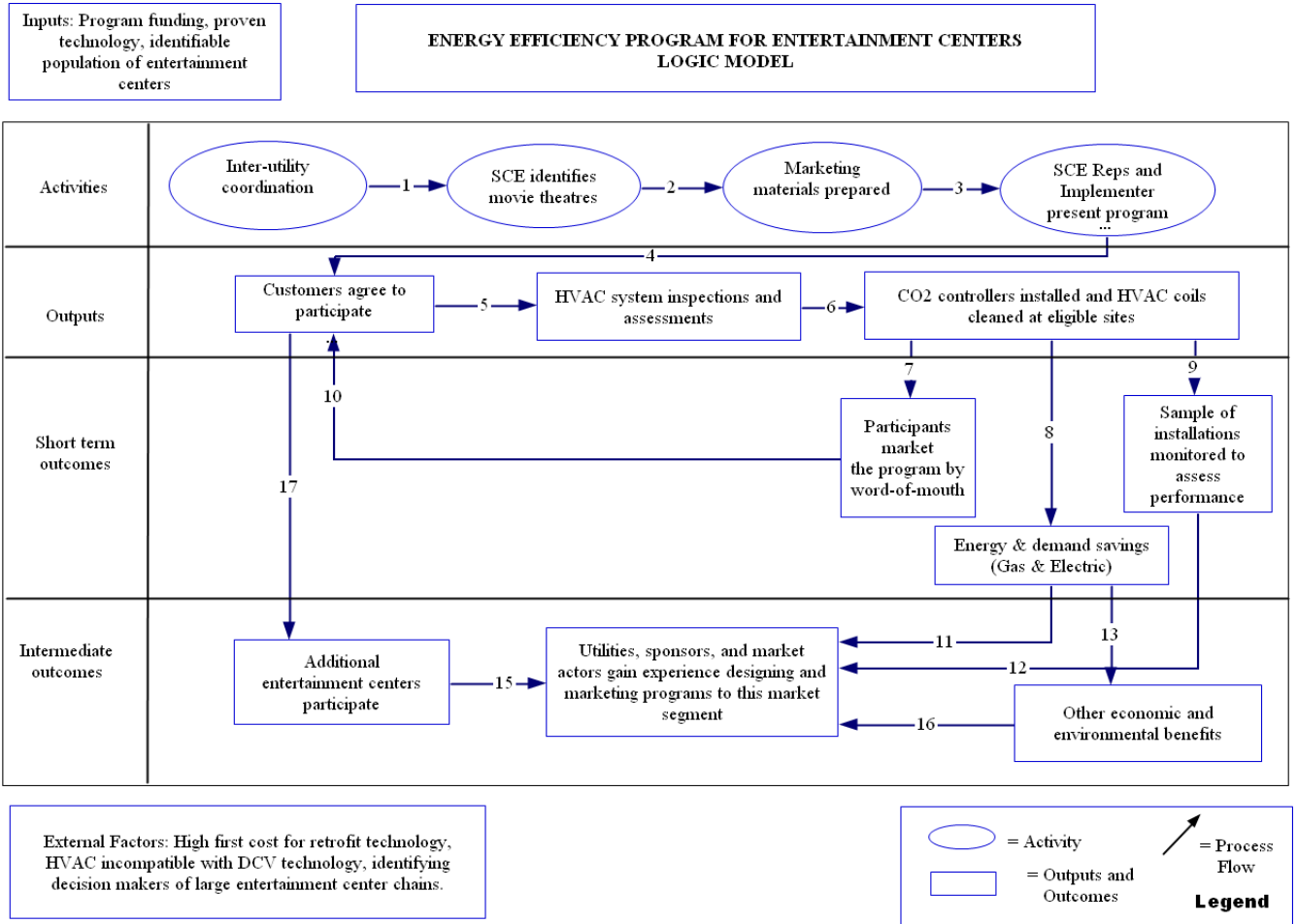
# Commercial: Energy Efficiency for Entertainment Centers

## 7. Diagram of Program



# Commercial: Energy Efficiency for Entertainment Centers

## 8. Program Logic Model



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## **Commercial: Private Schools and Colleges Program**

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- 1. Program Name:** Private Schools and Colleges Program  
**Program Type:** Core

- 2. Projected Program Budget Table**

**Table 1** – See the overarching program for budget details.

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

**Table 2** - See the overarching program for gross impact details.

- 4. Program Description**

- a) Describe program**

Target customers for the program will include private schools, colleges, universities, and trade and technical schools. Eligible private schools include preschools and K-12 schools. Eligible facilities include classrooms, administration buildings and service buildings, but not dormitories.

The program will feature:

- An energy audit covering energy efficiency and demand response opportunities.
- Direct installation of no-cost/low-cost measures.
- Technical assistance, including specifications assembly, procurement assistance and installation overview, for large capital measures.
- Retro-commissioning for large space conditioning systems.
- Post-installation inspection to verify performance.
- Funding assistance to identify sources and types of funding.
- Financial assistance coordination and processing with SCE.
- Customer satisfaction surveys and resolution.

- b) List measures**

Measures will include the full range of no-cost/low-cost practices and screening for large capital cost items.

- Air filter replacement.
- Refrigerant charge adjustments.
- Condenser coil repairs.
- Condenser and evaporator coil cleaning.
- Economizer repair.
- Lighting replacements, including with compact fluorescent lamps and LED exit signs.
- Low-flow showerheads and faucet aerators.
- Plug-load timers.
- Vending machine controllers.

## **Commercial: Private Schools and Colleges Program**

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Retrofit measures eligible for incentives include:

- Demand control ventilation controls.
- Occupancy controlled thermostats.
- Boiler temperature controllers.
- Lighting motion and occupancy sensors.
- Daylighting sensors.
- Other high efficiency lighting measures.

Financial incentives will be available in several forms, including:

- No charge for low cost/no cost measures.
- No charge for capital measures with paybacks of less than one year.
- Development of an investment strategy for capital items.
- Assistance in locating funds for capital items from other SCE programs.  
Incentives earned from SCE will be based on Deemed Incentives and Calculated Incentives.
- Assistance in locating funds for capital items from other private and public sources.

### **c) Non-incentive customer services**

Non-incentive customer services include:

- Benchmarking of energy use with other facilities.
- Energy audits.
- Demonstration project opportunities.
- Awards and recognition possibilities.
- Student and staff participation.
- Program newsletters and website.
- Analysis of green house gas reductions associated with energy efficiency.

The program will be implemented by a third party under contract to SCE.

## **5. Program Rationale and Expected Outcome**

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

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

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

### **b) Market Transformation Information**

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

## **Commercial: Private Schools and Colleges Program**

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

### **c) Program Design to Overcome Barriers**

Market Transformation Tools to Overcome Barriers (Strategic Plan, p. 5)	Program Design Features to Overcome Barriers
Customer Incentives	<ul style="list-style-type: none"> <li>• Free installation for no cost measures</li> <li>• Rebates from SCE for capital items</li> <li>• Financing from other sources</li> </ul>
Codes and Standards	<ul style="list-style-type: none"> <li>• Recommended measures comply with building codes and equipment standards</li> </ul>
Education and Information	<ul style="list-style-type: none"> <li>• Program marketing materials</li> <li>• Case studies</li> <li>• Newsletters</li> <li>• Awards</li> <li>• Recognition</li> <li>• Websites</li> </ul>
Technical Assistance	<ul style="list-style-type: none"> <li>• Energy audits</li> <li>• Benchmarking</li> <li>• Direct installation</li> <li>• Equipment specification</li> <li>• Procurement assistance</li> <li>• Retro-commissioning</li> <li>• Project management assistance</li> <li>• Verification</li> </ul>
Emerging Technologies	<ul style="list-style-type: none"> <li>• New technologies, such as direct control ventilation</li> <li>• Facilitating demonstration projects</li> </ul>

### **d) Quantitative Program Targets**

The targets provided herein are best estimates, but nonetheless are forecasts.

**Table 5**

Program Name	Program Target by 2009	Program Target by 2010	Program Target by 2011
Projects	30	45	40

### **e) Advancing Strategic Plan goals and objectives**

The program supports the Strategic Plan of September 2008 as presented in Section 3, Commercial Sector. More specifically, the program supports:



## **Commercial: Private Schools and Colleges Program**

- *Goal 2:* 50 percent of existing buildings will be retrofit to zero net energy by 2030 through achievement of deep levels of energy efficiency and with the addition of clean distributed generation.
  - *Strategy 2-5:* Develop tools and strategies to use information and behavioral changes, commissioning, and training to reduce energy consumption in commercial buildings. Near-term actions include:
    - Identify new and improved tools and strategies that apply information and behavioral strategies, including presentation of economic, comfort and productivity cases to owners, occupants and appraisers.
    - Strengthen tools and practices in building commissioning.
    - Strengthen Building Operator Certification (BOC) training for commissioning.
  - *Strategy 2-6:* Develop effective financial tools for EE improvements in existing buildings. Near-term actions include:
    - Identify tools, instruments and information necessary to attract capital to EE.
    - Explore changes to standard lease terms to address perceived tenant/owner “split incentives” issue.
  - *Strategy 2-7:* Develop business models and supplier infrastructure to deliver integrated and comprehensive “one stop” energy management solutions. Near-term actions include:
    - Explore other mechanisms to more highly reward comprehensive energy management retrofits, e.g., premium incentives for measured performance, local government permits, incentives, insurance discounts, etc.
    - Initiate utility incentive pilots that test the viability of integrated DSM service delivery models (ESCOs, aggregators, etc.)

The program will advance the goals, strategies and near-term actions of the plan through customer education and information, technical assistance, codes and standards compliance, customer incentives and fostering emerging technologies.

### **6. Program Implementation**

#### **a) Statewide IOU coordination**

Because this program is a Statewide program for the 2009-2011 program cycle, SCE will closely coordinate its implementation with the other IOUs, including SCG and PG&E. Particular attention will be paid to addressing overlaps between SCE and the other IOUs, especially where there is an overlap in service territory.

SCE intends to work with the other IOUs to arrive at an arrangement where IOU programs complement, rather than compete, with one another, and to establish regular coordination activities, such as conference calls and in-person meetings between key personnel.

## **Commercial: Private Schools and Colleges Program**

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### **b) Program delivery and coordination**

#### **i. Emerging Technologies program**

The installation of demand ventilation control systems is expected to be a key measure in the program. This is a relatively new technology with attractive applications in common areas with irregular occupancy, such as gyms, multi-purpose-rooms, and cafeterias. Both gas and electricity savings come from reduced heating and cooling loads associated with higher outdoor air intake than necessary. The measure will reduce the outdoor air intake in proportion to the number of occupants.

The program will work with customers to demonstrate innovative energy efficient technologies. To qualify for the demonstration projects, the customer must demonstrate intent to adopt the measure in the rest of its facilities, and the project can be replicated elsewhere without a significant re-design/re-engineering effort.

Priority will be given to facilities with multiple locations and/or technologies that are universally applicable to facilities in the region. Additional information is provided below in Section 6.g.

#### **ii. Codes & Standards program**

The program will coordinate with the Collaborative for High Performance Schools (CHPS) and the Codes and Standards program to identify measures that are proposed and/or adopted for future minimum and beyond code standard that can be used as program measures.

Wherever applicable, Title 24 and Title 20 standards will be used as measure baselines, particularly where the use of new (2008 version) codes and standards as baseline equipment is mandatory.

#### **iii. WE&T efforts**

Workforce Education and Training will be approached through individual participating customers as well as through their trade associations and trade associations of their vendors. For schools and colleges, staff and students will be engaged as partners in energy efficiency programs.

#### **iv. Program-specific marketing and outreach efforts**

The program will achieve its market penetration objectives by using such practices as:

- One-to-one marketing by contractor with customer through telephone and personal meetings.
- Seminars for facility managers and school administrators with no upfront cost and meals or refreshments.
- Program marketing materials including brochures, flyers, and short case studies.
- Effective partnerships with individual schools.
- Participation at conferences and trade associations.

## **Commercial: Private Schools and Colleges Program**

- Marketing tools such as ENERGY STAR® Portfolio Manager, for benchmarking, case studies, demonstration projects, and reinvestment strategies.
- Information on how average schools have saved \$10,000 or more in utility bills by implementing no-cost/low-cost services.
- Coordination with core programs of SCE for possible joint marketing activities including: distribution of marketing materials, joint presentations and periodic referrals via e-mail.
- Program website where potential participants can find more information about the program. Links to other IOU programs will also be made available on the website.
- Program newsletter to be published on a quarterly basis.

Overall, the program marketing cost is expected to average about \$4,000 per site recruited.

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

The program will offer customers educational information about non-energy benefits associated with recommended measures, such as improved safety, indoor air quality, comfort and appearance.

### **vi. Non-IOU programs**

The program will coordinate with the Collaborative for High Performance Schools (CHPS) and the Codes and Standards program to identify measures that are proposed and/or adopted for future minimum and beyond code standard that can be used as program measures.

### **vii. CEC work on PIER**

The program will not be implemented with a direct linkage to PIER

### **viii. CEC work on Codes and Standards**

The program will not be implemented with a direct linkage to codes and standards efforts. However, see Section 6.b.ii., above.

### **ix. Non-utility market initiatives**

The program will actively pursue any non-utility market initiatives that allow customers to adopt new technologies at reduced cost. The program will work with manufacturers or vendors to demonstrate their products and services in the service area of SCE in education facilities. See Section 6.g., below.

### **b) Best Practices**

The program delivery strategy is based on a re-evaluation of existing programs, historical successes, and the needs of the market sector. The resulting program component design uses a combination of proven and innovative approaches to markets and delivery mechanisms that maximize energy savings opportunities,

## **Commercial: Private Schools and Colleges Program**

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including CHPS. The program will be flexible enough to evaluate and adjust offerings based on successes and customer responses.

### **c) Innovation**

A key feature of the program design is retro-commissioning. Based on innovative work of the contractor for SCE, retro-commissioning will entail the following activities:

- Collecting drawings, specifications, and other construction documents for a building, its existing energy systems, and associated Building Automation System (BAS) – also often referred to as Energy Management System (EMS), Energy Management and Control System (EMCS) or Direct Digital Control (DDC) System.
- Develop a detailed schedule and scope of work for retro-commissioning effort.
- Interview with the building engineer or other facility staff for information on occupancy schedules, lighting schedules, ventilation schedules, equipment schedules, operational practices, preventative maintenance practices and schedules, and a number of other "human factors" that are associated with energy use at the building.
- Inspect equipment and systems for control settings, lighting levels, inventory of equipment, ventilation rates, building population, occupancy level, and other parameters.
- Analyze the data gathered during the site visits and to develop preliminary lists of potential enhancements to the systems for each building.
- Prepare building-specific test plans, based on the information collected in previous tasks.
- Take measurements to verify the performance of the HVAC equipment.
- Analyze the test data with the DOE-2 building energy analysis model.
- Develop estimates of the cost to make each change or improvement being analyzed and calculate paybacks.
- Prepare a commissioning report that summarizes the project, all findings and recommendations, and gives the present status for each item will be prepared. This report will also include information on how to operate the buildings most effectively.
- Encourage the facility to implement measures with payback of less than 3 years and to seriously consider all measures with payback of less than 5 years.

### **d) Integrated/coordinated Demand Side Management**

As part of the audit, the program will identify energy efficiency measures with large capital requirements that fit with other programs of SCE. The audit will also identify potential demand response measures. A discussion will be held with the facility manager to determine the feasibility of each measure. Technical and administrative assistance will be provided as necessary.

Assistance will be provided to help customers enroll in existing energy efficiency programs, demand response programs and renewable energy programs of SCE.

## **Commercial: Private Schools and Colleges Program**

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**e) Integration across resource types (energy, water, air quality, etc)**

The program will provide information on GHG emission reductions associated with energy savings. Furthermore, the program will remain sensitive to other resource types by flagging recommended energy saving measures with meaningful impacts on other resources.

**f) Pilots**

The program contractor will interact with manufacturers to obtain information on new and emerging technologies applicable to educational facilities. Promising technologies will be selected for demonstration projects. Manufacturers will be encouraged to cooperate with program participants in various ways, such as providing in-kind engineering support and equipment.

Up to three demonstration projects will be held on an annual basis.

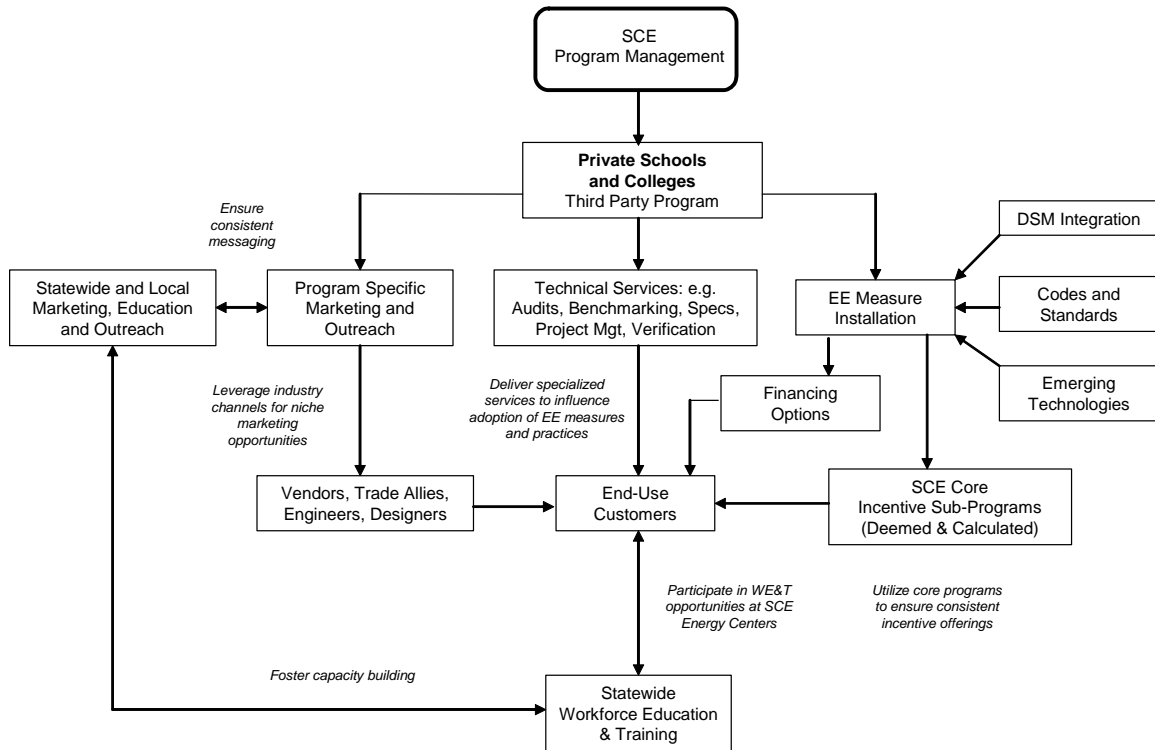
Participants will be recruited based on their interest and commitment to the pilot demonstration and other factors. The program will coordinate with manufacturers and participating facilities to arrange for installations, pay incentives, verify performance and document in reports and studies.

**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.

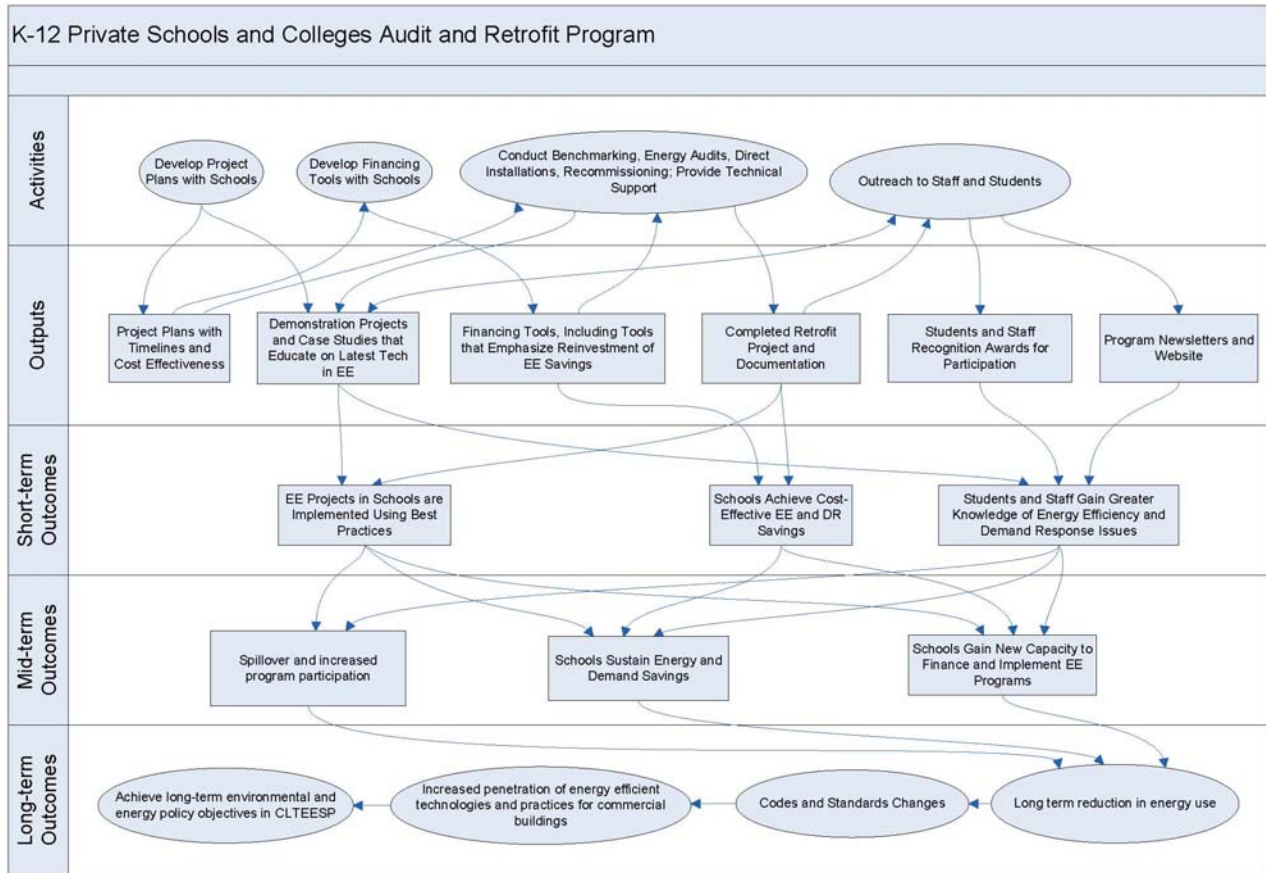
# Commercial: Private Schools and Colleges Program

## 7. Diagram of Program



# Commercial: Private Schools and Colleges Program

## 8. Program Logic Model







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## **Commercial: California Preschools Program**

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- 1. Program Name:** California Preschools Program  
**Program Type:** Core

- 2. Projected Program Budget Table**

**Table 1** – See the overall program for budget details.

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

**Table 2** - See the overall program for gross impact details.

- 4. Program Description**

- a) Describe program**

Target customers are preschools. Eligible facilities include classroom, administrative, recreational and service areas, in both stand-alone and shared space facilities.

The program will feature:

- An energy audit covering energy efficiency.
- Direct installation of no-cost/low-cost measures.
- Limited technical assistance, including specifications assembly, procurement assistance and project management, for large capital measures.
- Post-installation inspection to verify performance.
- Customer satisfaction surveys and resolution.

- b) List measures**

Measures will include the full range of no-cost/low-cost measures, such as:

- Air filter replacement.
- Refrigerant charge adjustments.
- Condenser coil repairs.
- Condenser and evaporator coil cleaning.
- Economizer repair.
- Lighting replacements, including with compact fluorescent lamps and LED exit signs.
- Low-flow showerheads and faucet aerators.
- Plug-load timers.
- Vending machine controllers.

Retrofit measures needing more capital that will be eligible for incentives include:

- Demand control ventilation controls.
- Occupancy controlled thermostats.
- Boiler temperature controllers.
- Lighting motion and occupancy sensors.
- Daylighting sensors.
- Other high efficiency lighting measures.

## **Commercial: California Preschools Program**

Financial incentives will be available in several forms, including:

- No charge for low cost/no cost measures.
- Incentives for retrofit capital items earned from SCE that will be based on Deemed Incentives and Calculated Incentives in core programs.

### **c) Non-incentive customer services**

Non-incentive customer services include:

- Energy audits.
- Technical assistance.
- Student and staff participation.
- Analysis of green house gas reductions associated with energy efficiency.

## **5. Program Rationale and Expected Outcome**

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

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

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

### **b) Market Transformation Information**

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

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

### **c) Program Design to Overcome Barriers**

Market Transformation Tools to Overcome Barriers (Strategic Plan, p. 5)	Program Design Features to Overcome Barriers
Customer Incentives	<ul style="list-style-type: none"> <li>• Free installation for no cost measures</li> <li>• Rebates from SCE for capital items</li> </ul>
Codes and Standards	<ul style="list-style-type: none"> <li>• Recommended measures comply with building codes and equipment standards</li> </ul>
Education and Information	<ul style="list-style-type: none"> <li>• Program marketing materials</li> <li>• Case studies</li> <li>• Newsletters</li> <li>• Workshops</li> <li>• Recognition</li> <li>• Websites</li> </ul>

## Commercial: California Preschools Program

Technical Assistance	<ul style="list-style-type: none"> <li>• Energy audits</li> <li>• Direct installation</li> <li>• Equipment specification</li> <li>• Procurement assistance</li> <li>• Project management assistance</li> <li>• Performance verification</li> </ul>
Emerging Technologies	<ul style="list-style-type: none"> <li>• New technologies, such as direct control ventilation</li> </ul>

### **d) Quantitative Program Targets**

The targets provided herein are best estimates, but nonetheless are forecasts.

**Table 5**

Program Name	Program Target by 2009	Program Target by 2010	Program Target by 2011
Measures	1,510	1,500	-

### **e) Advancing Strategic Plan goals and objectives**

SCE negotiated contracts with third party implementers before the CPUC's Strategic Plan was adopted. As such, SCE will work with third party implementers - including the renegotiation of program scope - to undertake initiatives of the Strategic Plan based upon the CPUC's approval of programs.

As proposed, this program supports much of the Strategic Plan of September 2008 as presented in Section 3 Commercial Sector. More specifically, the program supports:

- *Goal 2:* 50 percent of existing buildings will be retrofit to zero net energy by 2030 through achievement of deep levels of energy efficiency and with the addition of clean distributed generation.
- *Strategy 2-5:* Develop tools and strategies to use information and behavioral changes, commissioning, and training to reduce energy consumption in commercial buildings. Near-term actions include:
  - Identify new and improved tools and strategies that apply information and behavioral strategies, including presentation of economic, comfort and productivity cases to owners, occupants and appraisers.
  - Strengthen tools and practices in building commissioning
  - Strengthen Building Operator Certification (BOC) training for commissioning
- *Strategy 2-6:* Develop effective financial tools for EE improvements in existing buildings. Near-term actions include:
  - Identify tools, instruments and information necessary to attract capital to EE.

## **Commercial: California Preschools Program**

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- Explore changes to standard lease terms to address perceived tenant/owner “split incentives” issue.
- *Strategy 2-7:* Develop business models and supplier infrastructure to deliver integrated and comprehensive “one stop” energy management solutions. Near-term actions include:
  - Explore other mechanisms to more highly reward comprehensive energy management retrofits, e.g., premium incentives for measured performance, local government permits, incentives, insurance discounts, etc.
  - Initiate utility incentive pilots that test the viability of integrated DSM service delivery models (ESCOs, aggregators, etc.)

The program will advance the goals, strategies and near-term actions of the plan through customer education and information, technical assistance, codes and standards compliance, customer incentives and fostering emerging technologies.

### **6. Program Implementation**

#### **a) Statewide IOU coordination**

As a Statewide program for the 2009-2011 program cycle, SCE will closely coordinate the program implementation with the other IOUs, such as SCG and PG&E. Particular attention will be paid to addressing overlaps between SCE and the other IOUs, especially where there is an overlap in service territory. SCE intends to work with the other IOUs to arrive at an arrangement where IOU programs complement, rather than compete, with one another, and to establish regular coordination activities, such as conference calls and in-person meetings between key personnel.

#### **b) Program delivery and coordination**

##### **i. Emerging Technologies (ET) program**

The installation of demand ventilation control systems is expected to be a key measure in the program. This is a relatively unfamiliar technology with attractive applications in common areas with irregular occupancy, such as gyms, multi-purpose-rooms, and cafeterias. Both gas and electricity savings come from reduced heating and cooling loads associated with higher outdoor air intake than necessary. The measure will reduce the outdoor air intake in proportion to the number of occupants.

##### **ii. Codes and Standards program**

The program will coordinate with the Collaborative for High Performance Schools (CHPS) and the Codes and Standards program to identify measures that are proposed and/or adopted for future minimum and beyond code standard that can be used as program measures.

## **Commercial: California Preschools Program**

Wherever applicable, Title 24 and Title 20 standards will be used as measure baselines, particularly where the use of new (2008 version) codes and standards as baseline equipment is mandatory.

### **iii. WE&T efforts**

Workforce Education and Training will be approached through individual participating customers as well as through their professional associations and education agencies. Coordination will take place with the California Department of Education and the California Head Start Association. Staff will be engaged as partners in energy efficiency programs.

### **iv. Program-specific marketing and outreach efforts (budget not available)**

The program will achieve its market penetration objectives by using such practices as:

- One-to-one marketing by contractor with customer through telephone and personal meetings.
- Seminars for faculty and school administrators with no upfront cost and meals or refreshments.
- Program marketing materials including brochures, flyers, and short case studies.
- Encouragement of word-of-mouth marketing among school administrators.
- Effective partnerships with individual schools.
- Participation at conferences and trade associations.
- Coordination with education organizations such as the California Department of Education and the California Head Start Association
- Coordination with WE&T EARTH Program.
- Coordination with core programs of SCE for possible joint marketing activities including, distribution of marketing materials, joint presentations and periodic referrals via e-mail.
- Program website where potential participants can find more information about the program. Links to other IOU programs will also be made available on the website.
- On-line enrollment capability.

The program marketing cost is not available.

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

The program will offer customers educational information about non-energy benefits associated with recommended measures, such as improved safety, indoor air quality, comfort and appearance.

### **vi. Non-IOU Programs**

The program will monitor the Collaborative for High Performance Schools (CHPS) and the Codes and Standards program to identify measures that are

## **Commercial: California Preschools Program**

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proposed and/or adopted for future minimum and beyond code standards that can be used as program measures.

**vii. CEC work on PIER**

The program will not be implemented with a direct linkage to PIER

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

The program will not be implemented with a direct linkage to codes and standards efforts. However, see Section 6.b.ii., above.

**ix. Non-utility market initiatives**

The program will monitor non-utility market initiatives that allow customers to adopt new technologies at reduced cost. The program will work with manufacturers or vendors to demonstrate their products and services in the service area of SCE in education facilities.

**c) Best Practices**

The program delivery strategy is based on an evaluation of existing related programs, historical successes, and the needs of the market sector. The resulting program component design uses a combination of proven and innovative approaches to markets and delivery mechanisms that maximize energy savings opportunities, including CHPS. The program will be flexible enough to evaluate and adjust offerings based on successes and customer responses.

**d) Innovation**

One innovation is to foster the application of demand control ventilation. Another innovation is to identify demand response opportunities while identifying energy efficiency opportunities.

**e) Integrated/coordinated Demand Side Management**

As part of the audit, the program will identify energy efficiency measures with large capital requirements that fit with other programs of SCE. The audit will also identify potential demand response measures. Assistance will be provided to help customers enroll in existing energy efficiency programs, demand response programs and renewable energy programs of SCE.

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

The program will provide information on GHG emission reductions associated with energy savings. Furthermore, the program will remain sensitive to other resource types by flagging recommended energy saving measures with meaningful impacts on other resources.

**g) Pilots**

The program contractor will interact with manufacturers on energy efficiency equipment to obtain information on new and emerging technologies applicable to

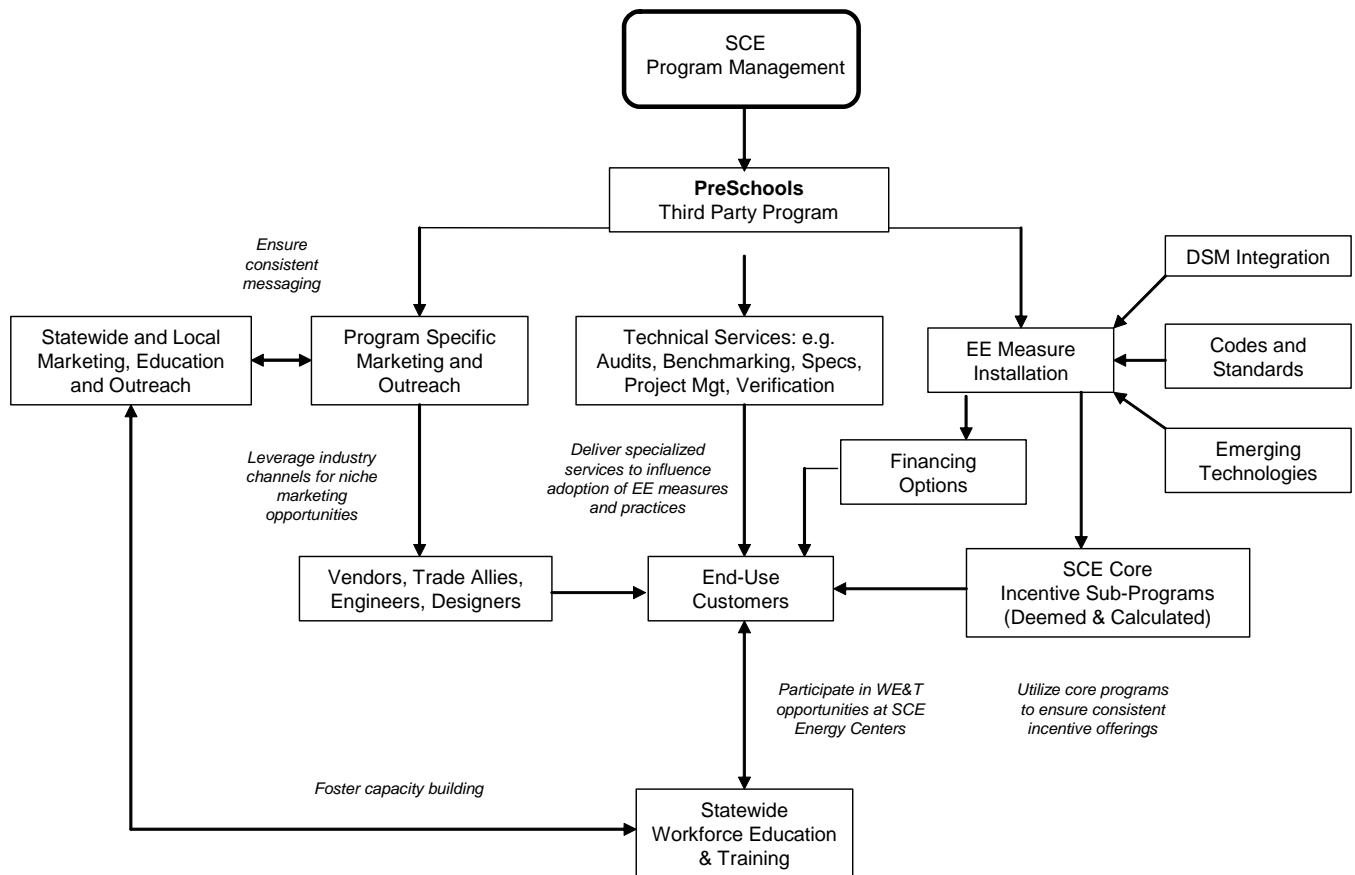
## Commercial: California Preschools Program

education facilities. Attempts will be made to install promising technologies at test sites with the participation of the customer and the manufacturer.

### 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.

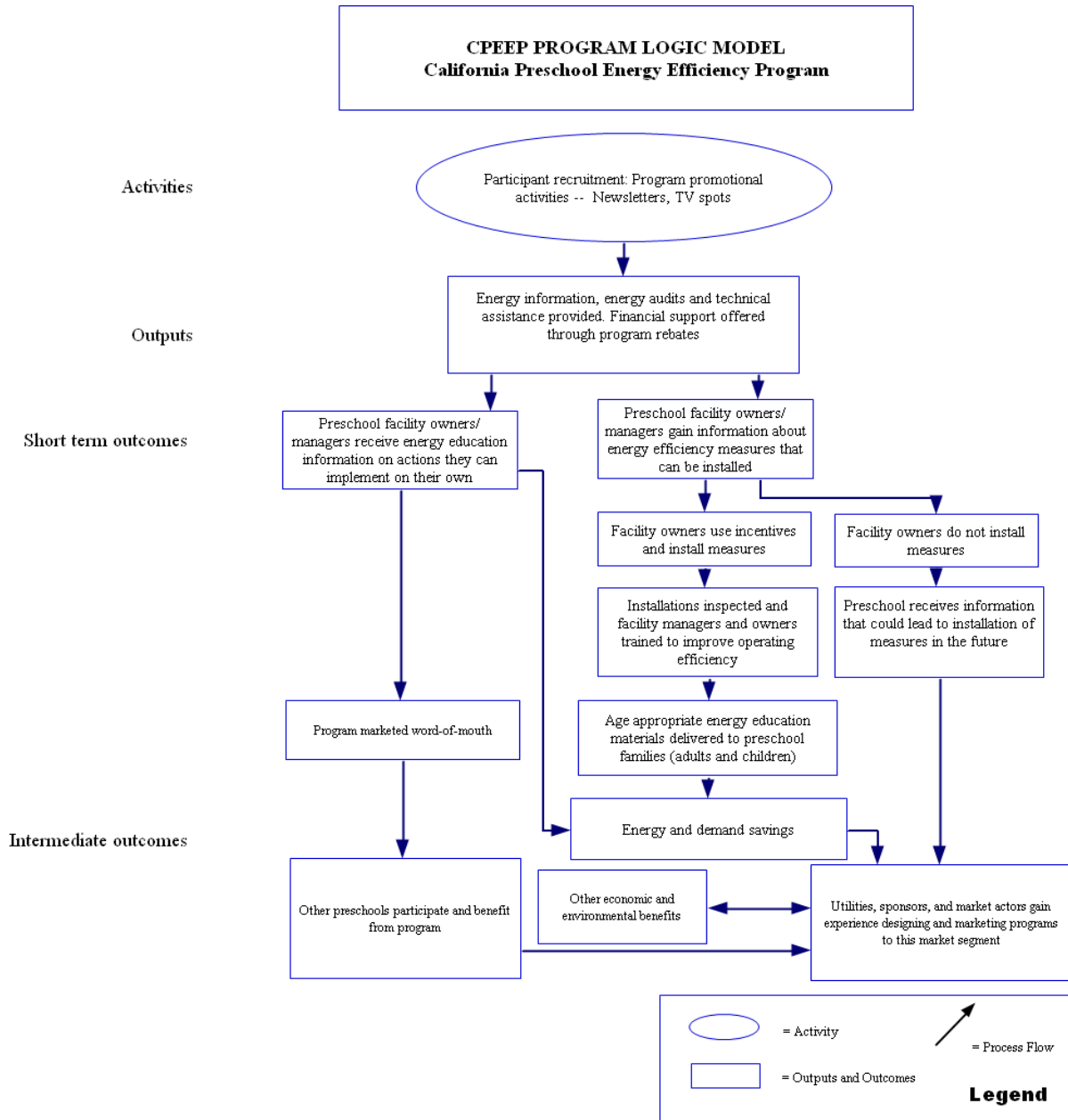
## 7. Diagram of Program





# Commercial: California Preschools Program

## 8. Program Logic Model





# 3

# Industrial Energy Efficiency Program

1. **Program Name:** Industrial Energy Efficiency Program  
**Program ID:** SCE-SW-003  
**Program Type:** Core

## 2. Projected Program Budget Table

Table 1<sup>1</sup>

SCE-SW-003	Main Program Name / Sub-Program	Total Administrative Cost (Actual)	Total Marketing & Outreach (Actual)	Total Direct Implementation (Actual)	Integration Budget Allocated to other Programs (If Applicable)	Total Budget By Program (Actual)
NONRESIDENTIAL						
	Industrial Energy Efficiency Program					
	Industrial Energy Audit Program	\$ 398,198	\$ 2,009,085	\$ 766,717		\$ 3,174,000
	Industrial Calculated Energy Efficiency Program	\$ 9,307,968	\$ 6,570,698	\$ 68,931,335		\$ 84,810,000
	Industrial Deemed Energy Efficiency Program	\$ 1,134,538	\$ 5,440,036	\$ 6,386,427		\$ 12,961,000
	Industrial Continuous Energy Improvement Program	\$ 23,500	\$ -	\$ 97,500		\$ 121,000
	<b>TOTAL:</b>	<b>\$ 10,864,203</b>	<b>\$ 14,019,818</b>	<b>\$ 76,181,979</b>	<b>\$ -</b>	<b>\$ 101,066,000</b>

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

Table 2

SCE-SW-003	Industrial Energy Efficiency Program	2009-13 EE Program Gross kWh Savings	2009-13 EE Program Gross kW Savings	2009-13 EE Program Gross Therm Savings
	Industrial Energy Audit Program	68,059,926	11,767	-
	Industrial Calculated Energy Efficiency Program	468,090,293	75,101	-
	Industrial Deemed Energy Efficiency Program	48,341,383	10,591	-
	Industrial Continuous Energy Improvement Program	-	-	-
	<b>TOTAL</b>	<b>584,491,601</b>	<b>97,459</b>	<b>-</b>

SCE is forecasting installations beyond 2011 to capture those projects committed (funds reserved) in the 2009-2011 program cycle, however are not installed until after 2011.

<sup>1</sup> 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.

## Industrial Energy Efficiency Program

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### 4. Program Description

#### a) Describe program

The purpose of the Statewide Industrial Energy Efficiency Program is to provide services to improve the energy efficiency of industrial facilities in California. The primary services provided to industrial customers include:

- Energy audits covering energy efficiency and demand management opportunities;
- Technical assistance in measures specification, procurement, and project management;
- Post-installation inspection and analysis to verify performance;
- Continuous energy improvement consultation; and
- Financial incentives for installed measures

Financial incentives will be based on:

- Deemed energy savings by per unit of equipment; and
- Calculated energy savings by per unit of energy

The significance of the industrial sector in energy use in California is evident by recognizing that it is responsible for a third of energy consumption in the state, as shown in the table below, taken from the California Long-Term Energy Efficiency Strategic Plan.

Contribution of the Industrial Sector	(% of total in CA)
Electricity use	16
Natural gas use	33
Energy use	22
End-use CO <sub>2</sub>	20

There are several factors unique to the industrial sector, as compared to the residential and commercial sectors, that present challenges to achieving energy efficiency and greenhouse gas (GHG) goals for the state. As taken from the Strategic Plan, these factors include:

- Industry uses a large quantity of energy and other resources via complex proprietary processes to create and bring products to market. Products, to varying degrees, have embedded energy that traditionally cannot be “zeroed out.”
- Industrial facilities are increasingly managed by corporations that reside outside of the state or the country, and that view these facilities as mobile assets in a competitive global marketplace.
- Industry is highly diverse in type, size, and operation. Customer types include the full range of industries from assembly plants, beverage manufacturing, and chemical production to water and wastewater treatment. Thus, uniform programs often will not match corporate or facility needs.
- Industries are subject to multiple policies and rules in resource areas (e.g. air quality, water quality, energy efficiency, GHG reductions, solid waste management), where compliance can raise competing objectives and outcomes.

## **Industrial Energy Efficiency Program**

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To address these factors and challenges, the Statewide Industrial Energy Efficiency Program offers California's industrial segment a statewide-consistent suite of products and services designed to:

- meet customer needs;
- overcome market barriers to energy management;
- enhance adoption of integrated demand-side management (IDSM) practices; and
- advance the industry toward achieving the goals of the California Long Term Energy Efficiency Strategic Plan.

The program overcomes barriers through policies that:

- provide integrated solutions for the customer;
- create heightened awareness through education and outreach,
- foster continuous energy improvement (CEI);
- promote the use of commonly accepted standards; and
- support training to create a highly skilled energy efficiency workforce that is accessible to industry.

The Statewide Industrial Energy Efficiency Program includes four statewide sub-program elements that together comprise the core product and service offerings. Each of the four investor-owned utilities in the state also offers local programs that complement and enhance the core offerings in their region. The local portfolio mix of SCE is specifically designed to enhance energy efficiency and DSM opportunities for industrial customers. These include the AB 32 Carbon Emissions Reduction (CER) Program and financial solutions.

Together, these offerings are designed to not only overcome the traditional market barriers to energy efficiency, but also use efficiency to advance demand response (DR) and distributed generation (DG) opportunities (including solar and renewables) uniquely suited to the industrial segment.

The four statewide sub-programs are summarized below.

- Energy Audits Program: Basic audits, integrated audits, and (RCx) audits that provide an inventory of technical project opportunities and financial analysis information to populate a customer's short- or long-term energy plan.
- Calculated Energy Efficiency Program: Features incentives based on calculated energy savings for measures installed as recommended by comprehensive technical and design assistance for customized and integrated energy efficiency/DR initiatives in new construction, retrofit, and RCx projects. Because it presents a calculation method that can consider system and resource interactions, the program will become the preferred approach for supporting the integrated, whole system, and multi-resource management strategies of the Strategic Plan.
- Deemed Energy Efficiency Program: Features rebates per unit measure for installed energy-saving projects. It provides utility representatives, equipment vendors, and customers an easy-to-use mechanism to cost-effectively subsidize

## **Industrial Energy Efficiency Program**

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- and encourage adoption of mass market efficiency measures through fixed incentive amounts
- **Continuous Energy Improvement (CEI) Program:** Offers 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, the 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 Energy Efficiency 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.

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 measures**

The key end-use 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 Energy Efficiency Program and the Deemed Energy Efficiency Program.

## **Industrial Energy Efficiency Program**

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The Deemed Energy Efficiency Program offers itemized retrofit measures that have prescribed energy savings and incentive amounts. These measures are categorized under the following end uses:

- Lighting
- Air conditioning
- Food service
- Refrigeration
- Industrial
- Motors
- Plug loads

For the Calculated Energy Efficiency Program, statewide incentive levels are based on type of measure and savings in kilowatt-hours (kWh) and kilowatts (kW).

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

### **c) List non-incentive customer services**

Non-incentive customer services offered through the Statewide Industrial Program will include the following:

#### Energy Audits

- Basic remote audits
- Integrated energy audits
- Retrocommissioning 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](http://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 pumps, motors, compressed air, and steam
- Other system-specific training
  - Steam system and process heating seminar



## **Industrial Energy Efficiency Program**

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- Air systems
- Industry-specific integrated energy management workshops and seminars developed by the IOUs
  - Control systems
  - Energy Management systems
- Workforce Education and (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.”<sup>2</sup> 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<sup>3</sup>.

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<sup>4</sup>. Markets are social institutions<sup>5</sup>, 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<sup>6</sup> 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

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<sup>2</sup> California Public Utilities Commission Decision, D.98-04-063, Appendix A.

<sup>3</sup> California Public Utilities Commission (2008) *California Long Term Energy Efficiency Strategic Plan*, p. 5. Available at <http://www.californiaenergyefficiency.com/docs/EEStrategicPlan.pdf>

<sup>4</sup> Pelozo, 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>

<sup>5</sup> 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/](http://www.eceee.org/conference_proceedings/eceee/2001/Panel_2/p2_7/Paper/)

<sup>6</sup> 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](http://www.calmac.org).

## **Industrial Energy Efficiency Program**

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price signals and may directly counter market transformation progress<sup>7</sup>. According to York<sup>8</sup>, “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<sup>9</sup>. 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<sup>10</sup>, 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<sup>11</sup>. 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<sup>12</sup>. 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

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<sup>7</sup> 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*.

<sup>8</sup> York, D., (1999). “A Discussion and Critique of Market Transformation”, Energy Center of Wisconsin. Available at <http://www.ecw.org/ecwresults/186-1.pdf>.

<sup>9</sup> 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>

<sup>10</sup> Rogers (1995) *Diffusion of Innovations*, 5<sup>th</sup> Ed.

<sup>11</sup> 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>

<sup>12</sup> Sebold et al (2001) p. 6-5,

## **Industrial Energy Efficiency Program**

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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.)<sup>13</sup>” The Strategic Plan recognizes that regulatory policies are not yet in place to support the success of market transformation efforts<sup>14</sup>, 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<sup>15</sup>. 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<sup>16</sup> 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.

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<sup>13</sup> 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>.

<sup>14</sup> CPUC (2008) Strategic Plan, p. 5.

<sup>15</sup> Nadel, Thorne, Saches, Prindle & Elliot (2003).

<sup>16</sup> Peloza & York, (1999).

## **Industrial Energy Efficiency Program**

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

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.

## **Industrial Energy Efficiency Program**

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.

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

**Table 3**

	<b>Baseline Metric</b>			
	<b>Metric A</b>	<b>Metric B</b>	<b>Metric C</b>	<b>Metric D</b>
Measure-based metric	Ratio of high efficiency motors sold over a base 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	

## Industrial Energy Efficiency Program

Behavioral-Adoption based metric				Behaviors of sector are gauged based on a scale developed to measure energy efficient behaviors in businesses
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### **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**

	<b>Internal Market Transformation Planning Estimates</b>		
	<b>2009</b>	<b>2010</b>	<b>2011</b>
Ratio of high efficiency motors sold over a base 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

## **Industrial Energy Efficiency Program**

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### **c) Program Design to Overcome Barriers**

There are a multitude of significant barriers to achieving technical and economic potential for energy efficiency in the industrial sector according to the Strategic Plan (p. 46). While primarily institutional and behavioral, rather than technical, these barriers include:

- Lack of awareness of energy efficiency opportunities;
- Difficulty in accessing industry specific technical assistance;
- Inadequate availability of plant and management personnel to foster energy efficiency;
- 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; and
- Limited capital and inhibiting internal investment rates

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 Industrial Energy Efficiency Program will employ all four strategies listed in the Strategic Plan to address the barriers.

- Integrated solutions
- Education and outreach
- Branding and certification
- Workforce training

### **d) Quantitative Program Targets**

**Table 5** - Program targets are provided at the sub-program level.

### **e) Advancing Strategic Plan goals and objectives**

The Industrial Energy Efficiency Program supports all three goals in the Strategic Plan for the Industrial Sector.

## **Industrial Energy Efficiency Program**

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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, in line with the Strategic Plan, 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 is 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. In addition, SCE will offer a local AB32 Carbon Emissions Reduction (CER) Program in conjunction with the IOU-CARB AB32 efforts. 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. Industrial customers will then be able to reach their GHG emission reductions targets via a supported, structured program based on best practices and develop world-wide recognition for their efforts through third-party certification e.g. 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 interest with this goal 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 resource.



## **Industrial Energy Efficiency Program**

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### **6. Program Implementation**

#### **a) Statewide IOU coordination**

**i. Program name:** Industrial Energy Efficiency Program

#### **ii. Program delivery mechanisms**

The Statewide Industrial Energy Efficiency 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, each of the four subsidiary programs in the Industrial Energy Efficiency Program 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 utility program interactions. A detailed description of each of these program aspects and how they will be coordinated statewide is provided in sub-program descriptions. The two coordination systems, one for the core program, one designed for the sub-program level, will interact with and support one another. The broad, high-level coordination effort for the core program will be described below, focusing on how the utilities 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 Energy Efficiency 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 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 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 periodical 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.

## **Industrial Energy Efficiency Program**

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### **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 enabled. The details of actual implementation of these coordination activities are to be determined by the IOU's industrial program managers.

### **iii. Incentive levels**

Details on the incentive levels are discussed with each of the four sub-programs.

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

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

## **Industrial Energy Efficiency Program**

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- 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 energy efficiency 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.

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

The Industrial Energy Efficiency Program will leverage 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 commercial customers. Conventionally, each government agency and utility has operated natural resource and energy programs independently, missing

## **Industrial Energy Efficiency Program**

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opportunities to serve customers who must manage more than one resource type. The sub-program descriptions provide more specific information on linkages with other government programs.

### **vi. Similar IOU and POU programs**

Some initiatives, such as the California Advanced Lighting Controls Training Program, are joint efforts with the other California IOUs and POUs, as well as other domestic and international utilities. In addition to these joint efforts, local third-party programs that address niche opportunities within the commercial market segmented will be implemented in each of the IOUs service territory. These various efforts will be coordinated to ensure a consistent approach in terms of program message, delivery and measure incentives.

### **b) Program delivery and coordination**

#### **i. Emerging Technologies (ET) program**

The long-term energy efficiency vision of California can 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 energy efficiency 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 & Standards program**

The industrial offering 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., LEDs) made available as these technologies transition from 1) R&D to 2) Emerging technologies to 3) Incubation to 4) Mainstream.

#### **iii. WE&T efforts**

Workforce Education & Training 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 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

## **Industrial Energy Efficiency Program**

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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 offerings take place through utilities energy centers and technology centers. In general, the Industrial Energy Efficiency Program will interface with the Workforce Education and Training Program Implementation Plan to serve the goals of the Strategic Plan.

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

In addition to the general efforts listed above in 6.a.iv., specific marketing and outreach efforts for sub-programs are found in the sub-program documents.

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

Integrated energy audits that look across the various energy efficiency 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 on-going 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.

The Industrial Energy Efficiency Program will offer information to customers about the non-energy benefits associated with recommended measures, such as improved safety, productivity, indoor air quality, comfort, and appearance.

### **vi. Non-IOU programs**

A variety of programs to be determined will be coordinated and leveraged to support program objectives. These include:

- Connecting customers with the CA Climate Action Registry
- AB32 support through CO<sub>2</sub> 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

## **Industrial Energy Efficiency Program**

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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 C&S**

As indicated in Section 6.b.ii, planned enhancements to Title 24 will be reflected in incentive levels and in eligible measures and services.

### **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 SCE Industrial Energy Efficiency 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.

## **Industrial Energy Efficiency Program**

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- Leveraging Industry-Specific Resources: We will make full use of resources available, such as industry trade and professional associations.

### **d) Innovation**

One innovation is that the program 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 customers 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 (energy audits, calculated energy savings, deemed energy savings, and continuous energy improvement) makes it easier for customers to participate in a one-stop shop program. Integrated offerings will also garner significant gains in energy efficiency and make the goals envisioned in California's long term energy efficiency Strategic Plan a reality.

In addition, this approach will 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 the program 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 the 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.

A web based technical resource is envisioned that includes tools to help customers calculate their energy savings. Also web based training may be offered 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.

## **Industrial Energy Efficiency Program**

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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:

- 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, Department of Industrial 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.



## **Industrial Energy Efficiency Program**

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- Application process improved for statewide consistency, making it easier for customers to participate in the program.

### **e) Integrated/coordinated Demand Side Management**

Integrating the portfolio of utility offerings to include energy efficiency, demand response 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 instituted by the California Energy Action Plan. Integration serves 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 know multiple options, and benefit 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. The 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 demand response 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. Demand response opportunities will be targeted in the larger facilities, particularly as part of monitoring-based

## **Industrial Energy Efficiency Program**

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retrocommissioning efforts, where controls to facilitate demand response efforts would be installed.

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 day lighting, lighting, HVAC, controls, and building envelope improvements.

Over the last few years, traditional DSM programs shown 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 remain 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 response programs is that these two efforts are at odds with each other, as both programs reduce the potential for each other's financial incentives to the customer. For example, energy efficiency may reduce the overall baseline that serves as the basis for the demand response program's incentives. Also, benefits from long-term energy savings derived from technological measures often outweigh the temporary demand reduction benefits derived from behavioral actions. To overcome this barrier and maximize the potential of both programs, additional incentives will be paid for energy efficiency measures that enable demand response

A secondary issue when integrating energy efficiency and demand response programs is that communication messages for both types of DSM program are often not coordinated, since energy efficiency is typically technology based and demand response is often focused on behavior. Also, demand response 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 consolidated 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 response, as well as energy efficiency, programs.

In summary, the program seeks to overcome the many issues raised by integration of energy efficiency and demand response by focusing on several tactics:

- Promoting and setting incentives for demand response in such a way as help ensure that energy efficiency is completed first to maximize potentials
- Integrating and coordinating year-round marketing (e.g. applications, collateral, web sites, and events)

## **Industrial Energy Efficiency Program**

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- Linking of program eligibility requirements (e.g., customer size)
- Providing unified technical assistance through enhanced energy efficiency and demand response audits through the TA Program to allow for cross-harvesting opportunities
- Integrating presence on utility websites
- Coordinating regular meetings between energy efficiency and demand response program management

During the current cycle, funding for energy efficiency and demand response must remain non-commingled; therefore payments will be split between the two programs as appropriate.

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

California's industrial sector faces a multitude of environmental and regulatory challenges that affect their competitiveness and, in some cases, survival. 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.

To help deal with these challenges, the industrial program will coordinate with the 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.

Utilities will pursue opportunities to partner with water agencies to offer joint energy and water conservation incentives to support projects that would reduce both resources. Partnering with other utilities will help 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 Energy Efficiency 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

## **Industrial Energy Efficiency Program**

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customer's needs or to further advance the goals of the Strategic Plan. A current program of note is the water and energy pilot program.

### **h) EM&V**

SCE plans to work with other utilities and the Energy Division to develop a complete plan for 2009-11 studies and budgets after the program plans are finalized and filed. This plan will be submitted to the CPUC in time for approval along with the Program Implementation Plans.

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

Because the segment approach is a significant change from recent core programs, a preliminary process evaluation will be conducted during the first program year to determine how well the new program elements are operating, and to obtain recommendations on how to improve program operations. After the beginning of the last program year, a full process evaluation will address researchable issues based on the program theory and logic model. These issues will include, but not be limited to, the following:

- Whether program incentive levels for the deemed savings and the calculated savings elements are sufficient, not enough, or more than necessary to motivate program participation, while minimizing free ridership.
- Whether direct install elements are penetrating the intended markets.
- Whether the integrated energy audit element is inducing customers to take advantage of other program offerings, like the rebates.
- Whether the continuous energy improvement element is successful in getting corporate commitments to an EE Strategic Plan.
- How well the industrial sector activities are supporting the Strategic Plan.
- How well the core industrial activities are coordinated with other industrial program offerings, to leverage resources.
- How well program marketing supports and complements the marketing efforts of other IOU demand side management programs.

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

- *Logic model and program theory.* The logic model and program theory will establish a starting point for all evaluation activities. The structure of the logic model, which links program activities and expected outcomes, will be a useful instrument for identifying specific program assumptions that can be tested using a survey or other primary data collection activities. The original logic model in the PIP will be refined to reflect the Commission-approved program “as built.”
- *In-depth interviews.* In-depth interviews will be conducted with program

## **Industrial Energy Efficiency Program**

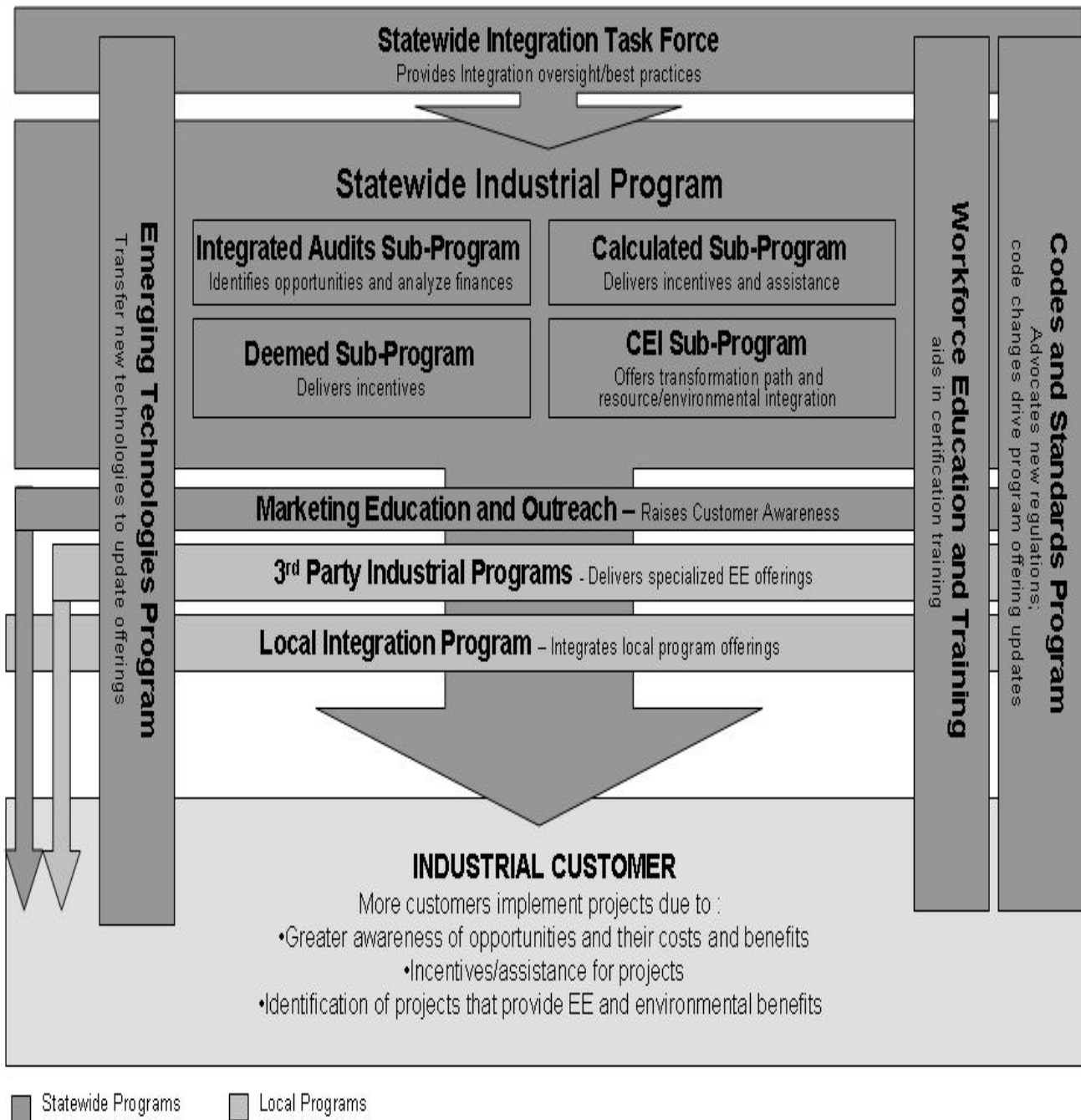
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managers and other key staff members. Program staff members will clarify program goals and gauge program progress, provide valuable insight into daily operations, and proposed research topics to be addressed during the evaluation. The coordinated activities of the Business Customer Division personnel and the EE Division program managers will be an important focus of this redesigned program approach.

- *Participant survey.* The primary data collection instrument will be a participant survey, fielded over the phone. Some will be conducted in person for selected key customers with large savings, complex projects, multiple sites, etc. The surveys will explore the participant experience with program services and address the research issues identified by the logic model.
- *Program-specific data collection and review.* Another key evaluation activity will involve a comprehensive review of all program documents. In particular, this evaluation will assess the effectiveness of the program's marketing materials and will identify which specific recommendations have been implemented.

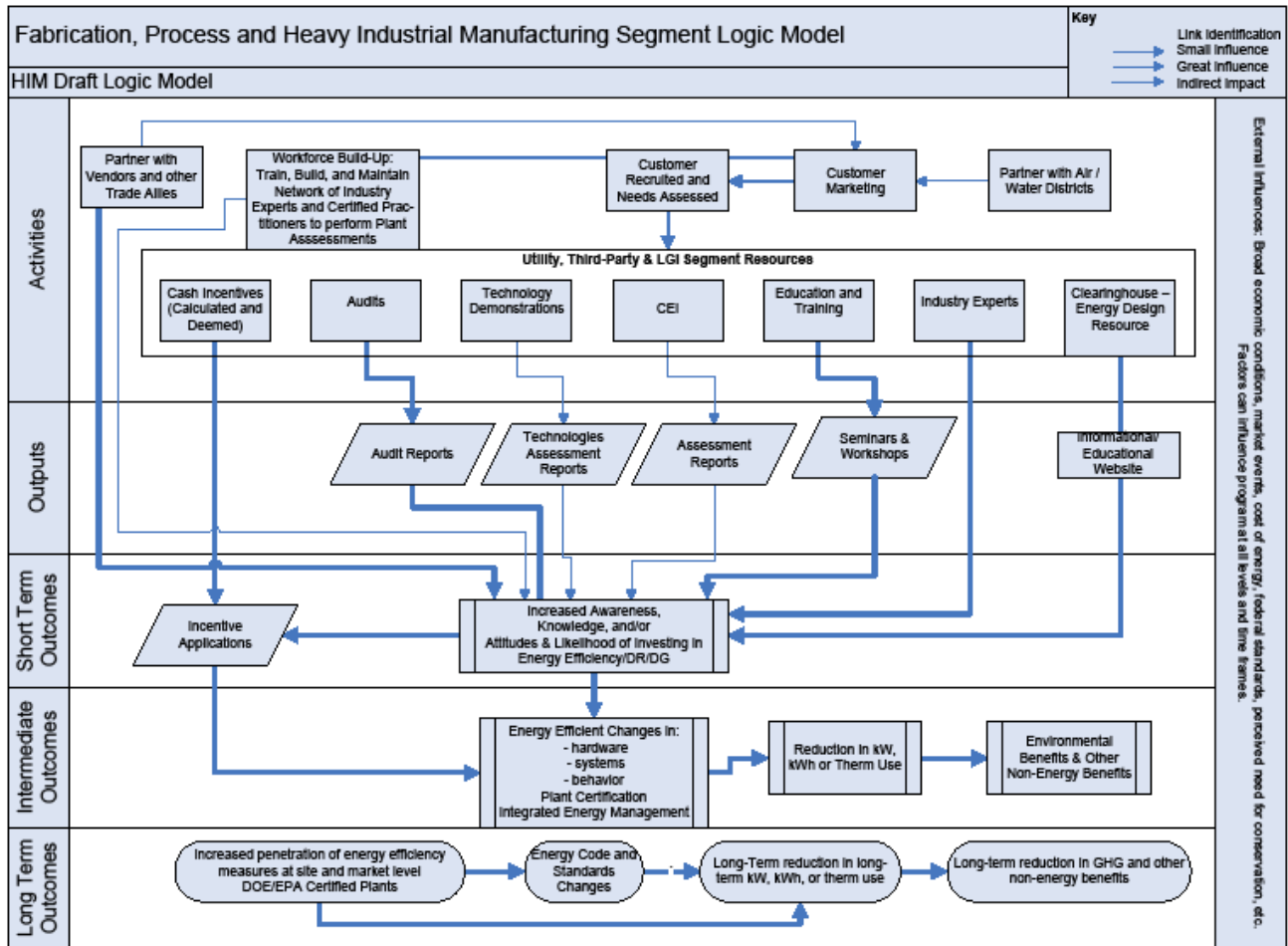
# Industrial Energy Efficiency Program

## 7. Diagram of Program



# Industrial Energy Efficiency Program

## 8. Program Logic Model







# 3a

## **Industrial: Industrial Energy Audit Program**

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**1. Program Name:** Industrial Energy Audit Program  
**Program Type:** Core

**2. Projected Program Budget Table**

**Table 1** – reference the overall program for budget details

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

**Table 2** - reference the overall program for gross impact details

**4. Program Description**

**a) Describe program**

The purpose of the Statewide Industrial Energy Audit Program is to provide energy analysis services leading to improving the energy efficiency of industrial facilities in California. The energy audit will recommend measures for energy efficiency, but will also include demand response and distributed generation. The audit will recommend emerging technologies and greenhouse gas reductions.

The Industrial Energy Audit Program is part of a suite of programs within the Statewide Industrial Energy Efficiency Program. The Industrial Energy Audit Program will be designed to lead customers to the incentive and long-term programs, namely:

- Industrial Deemed Energy Savings Program
- Industrial Calculated Energy Savings Program
- Continuous Energy Improvement Program

Several types of energy audits will be available from SCE and standardized under the statewide program.

**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. Target customers will be those under 200 kW in maximum demand.

**Integrated Energy Audits**

The Integrated Energy Audit (IEA) 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 (IDSMS) portfolio. In addition,

## **Industrial: Industrial Energy Audit Program**

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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 SCE engineers or through contracted third-party energy engineering firms. They will provide technical assistance by helping participating customers prepare and submit accurate, technically complete retrofit project applications to the incentive programs. This technical assistance will expedite the process and reduce expensive and time consuming rework later in the process.

### **Retrocommissioning**

The Retrocommissioning (RCx) audit 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 programs for completion (i.e. Calculated Energy Savings and Deemed Energy Savings).

Features in the audit will include the following:

- Recommendations on no-cost, low-cost measures
- Recommendations on capital intensive measures
- Guidance on participating in other industrial energy efficiency and demand response programs
- Guidance on available incentives from SCE

Energy audits will be fully underwritten by SCE.

### **b) List measures**

Energy audits will include the full range of applicable end-uses and measures for those end-uses. This will include process changes. The energy audit provides a tool that will lead customers to the measures and incentives offered in the other industrial programs.

### **c) List non-incentive customer services**

Activities conducted under the Industrial Energy Audit Program are non-resource that with direct incentives for actions taken. These activities include: marketing and outreach, savings calculation assistance, retrofit project scoping, technical assistance, and incentive application assistance.

## **5. Program Rationale and Expected Outcome**

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

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

## **Industrial: Industrial Energy Audit Program**

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

**b) Market Transformation Information**

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

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

**c) Program Design to Overcome Barriers**

The Industrial Energy Audit 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 customer's completion of an incentive program application for their project(s)

**d) Quantitative Program Targets**

The targets provided herein are best estimates, but nonetheless are forecasts.

**Table 5**

Program Name	Program Target by 2009	Program Target by 2010	Program Target by 2011
No. of audits	25	25	25
Square Footage Benchmarked	1,291,000	1,780,000	3,985,000

**e) Advancing Strategic Plan goals and objectives**

The Industrial Energy Efficiency Program supports all three goals in the Strategic Plan for the Industrial Sector. General advancement of the goals is presented in the program implementation plan for the Industrial Energy Efficiency Program. More specific support of the goals in the Industrial Energy Audit Program is presented here.

*Goal 1: Support California Industry's adoption of energy efficiency by integrating energy efficiency savings with achievement of GHG goals and other resource goals.*

*Strategy 1.1: Develop coordinated energy and resource management program for CA's industrial sector, to enhance use of energy efficiency*

*Near-term: Establish CARB AB 32 Industry Team*

## **Industrial: Industrial Energy Audit Program**

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One feature of the energy audits performed under this program will be tying greenhouse gas reductions to energy efficiency recommendations and providing this information in the audit report output. This broadly supports the overall goal of better integrating energy efficiency and GHG. More specific integration will be achieved through the establishment of an IOU CARB AB 32 Industry Team.

Goal 2: Build market value and demand for continuous improvement in industrial efficiency through branding and certification.

*Strategy 2.2: Implement certification*

Near-term: Plan pilot and recruit host sites (8-10 facilities)

The program will seek out opportunities to recruit host sites for the certification program using the Industrial Energy Audit Program as a gateway to Continuous Energy Improvement.

*Strategy 2.5: Implement ME&O program to educate industry and consumers*

*Near-term: Form industrial collaboration mechanisms*

The audit program facilitates education by introducing customers to energy efficiency at its most basic level and then encouraging them to take a more active role in managing their energy usage. SCE will implement marketing and outreach activities through account representatives, trade associations, mass marketing (e.g. e-mail blasts) and in numerous other ways to stimulate participation in EE and DR programs and pointing them to educational opportunities relevant to their industry.

Goal 3: Provide centralized technical and public policy guidance for California industrial energy and resource efficiency.

*Strategy 3.1: Compile technical and resource management regulatory materials into centralized assistance repository.*

*Near-term: 1) Identify and incorporate priority energy and other data; 2) Develop clearinghouse or integration system.*

The audit program will give support by providing information on results and experience in the program, including case studies of innovative projects.

### **6. Program Implementation**

#### **a) Statewide IOU coordination**

**i. Program name:** Industrial Energy Audit Program

#### **ii. Program delivery mechanisms**

At the local level, program delivery mechanisms for SCE will include account representatives, technical services personnel, and communications resources on the telephone and the internet. Also important to program delivery will be customer facility owners and managers; energy efficient equipment manufacturers, distributors, and services contractors; industry trade associations; and others in the energy efficiency equipment value chain.

## **Industrial: Industrial Energy Audit Program**

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At the state level, audit program will be coordinated to unify the implementation of program aspects such as program name, program delivery mechanisms, marketing and outreach plans, and utility program interactions. The Industrial Energy Audit Program will coordinate with the core Industrial Energy Efficiency Program to provide mutual support.

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 enabled.

SCE's account representatives support this activity within the statewide industrial sector, as well as third parties, government partnerships, and SCE local programs.

**iii. Incentive levels - N/A.** This is a non-resource program.

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

A comprehensive marketing plan for the audit program will be aligned and coordinated with the marketing plans for each of the IOUs in order to maximize effectiveness, integrate offerings, and 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.

The evaluation studies for the audit program 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

## **Industrial: Industrial Energy Audit Program**

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can serve as a gateway to other programs in the IOU portfolio, identifying customer options and recommending energy solutions.

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

The program will leverage 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 industrial customers.

**vi. 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 Strategic Plan and how programs could/should be designed to help meet its aggressive targets.

**b) Program delivery and coordination**

**i. Emerging Technologies (ET) program**

The audit program management team will stay abreast of and incorporate relevant emerging technologies into 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 & Standards program**

The program will work with 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 recommended 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., LEDs) made available as these technologies transition from research and development to mainstream program offerings.

**iii. WE&T efforts**

Energy audits can support Statewide Workforce Education & Training 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 activities will create opportunities for third-party providers who deliver commissioning services such

## **Industrial: Industrial Energy Audit Program**

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as project scoping, investigations and assessments, air balancing, HVAC quality maintenance, etc.

### **iv. Program-specific marketing and outreach efforts**

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 which specify necessary steps to be taken to enhance program performance. Audits will be promoted via direct communication between customers and account representatives 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, Demand Response and Distributed Generation departments within SCE.

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

Integrated energy audits are a key tool for identifying non-energy opportunities for specific customers. The energy audits can identify non-energy benefits associated with recommended measures, such as improved safety, productivity, indoor air quality, comfort and appearance.

### **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 not be implemented with a direct linkage to PIER

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

The program will not be implemented with a direct linkage to codes and standards efforts

### **ix. Non-utility market initiatives**

Education about federal tax incentives for energy efficiency investments is an example of non-utility information and guidance that CEI will provide customers. In addition, the IOUs will participate in national efforts to develop and/or improve benchmarking tools and services that can be used by customers to better facilitate their adoption of sustainable energy management practices.

## **c) Best Practices**

To maximize customer outreach, the Industrial Energy Audits Program will sponsor training to interested third party personnel to develop a workforce that will implement energy efficiency products and practices. 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



## **Industrial: Industrial Energy Audit Program**

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the Strategic Plan, SCE can increase the workforce available to California by increasing its training efforts.

One focus of the Industrial Energy Audit Program will be to improve the adoption rate of energy efficiency audit recommendations. As such, staff will provide comprehensive support and establish an extended follow-up plan.

Customers who complete an online remote audit will be targeted for follow up. 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, 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 RCx program builds upon the initial feedback from the current RCx program and expands its reach into the industrial segment. Additionally, the audit program will improve existing tools and practices for building retrocommissioning to reduce energy consumption in industrial facilities.

### **d) Innovation**

SCE and the other IOUs will discuss and consider various innovations for customer engagement in energy audits and implementation of energy efficiency, demand response and distributed generation recommendations. Several innovations will be pursued.

### **Integration with RCx**

Energy efficiency measures recommended in large target customer (LTC) reports comprise three categories defined by their relative cost for implementation – no cost, low cost and capital projects. IEA is a primary source of leads for potential RCx projects which assist customers with implementation of no cost and low cost EE measures. RCx contractors also share their findings with the LTC program and can recommend that customers pursue a full Integrated Energy Audit before embarking on RCx efforts. In the 2009 – 2011 IEA program, cross training and coordination between the two programs will be increased to encourage optimum effectiveness in achieving an integrated offering of non-residential retrofit (NRR) and RCx projects. To ease implementation of energy audit recommendations, SCE 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.

### **Universal Energy Audit Tool**

To implement the integrated audits for smaller than 200 kW customers, a web-based audit (do-it-yourself or auditor-performed) will be developed that includes education on various demand side management solutions. The Universal Energy Audit Tool (UEAT) will enable customers to conduct their own energy audits from the comfort of their home or office by logging onto the website. It will be the primary tool to

## **Industrial: Industrial Energy Audit Program**

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provide energy conservation, energy efficiency, demand response and solar/self-generation information and analyses to customers with less than 200 kW load. Customers will supply account information, zip code or a 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, the audit will extend integration concept to a broader audience.

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 building, hours of operation, number of inhabitants, etc.). Reports will be available to customers through e-mail or U.S. mail delivery, based on the customer's request. The UEAT will provide a portfolio of audits that are easily accessible to utility 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 customers via web-based tools.

All IOUs are discussing developing UEAT as a joint effort to ensure statewide consistency.

### **New Technologies**

The utilities will utilize new technologies (i.e., wireless and PDA-based checklists) to better enable more audits while targeting specific customer needs.

### **Engineering Support**

Third party energy engineering firms will be contracted to assist medium and large customers develop IDSM implementation plans. These customer types will benefit from an enterprise-wide plan for staged implementation of IDSM recommendations. 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 Integrated Energy Audit (IEA) is a core strategy of an overall integrated customer approach. It features a technical and comprehensive survey of energy utilization throughout the customer facility – it provides a system view of equipment and processes that consume energy. In this 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

## **Industrial: Industrial Energy Audit Program**

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benefits, and then presented to the customer in the recommendations section of the IEA final report.

The Integrated Energy 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 report's recommendations are designed 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, DG and Third Party programs to long-term cost-effective energy management. 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. Audit process, final report and follow up activities are designated to integrate services and minimize disruption of customer core business activities while maximizing effects of provided recommendations. During the integrated audit process an auditor analyzes and describes multiple energy efficiency, time-of-use management, demand response, self-generation measures and recommendations. Then an auditor will recommend a course of action to craft an integrated solution that is tailored to customer specific business needs and requirements.

The following examples illustrate how the integrated process will be implemented utilizing available programs and services:

- After an Integrated Energy Audit is completed, no-cost/low-cost energy conservation measures may be transferred to the retrocommissioning 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 response 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 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.

### **Supporting Market Sectors**

The IEA will support the Industrial market segment by developing sector experts among the engineering firms that conduct LTC and by embedding artificial intelligence into the UEAT that translates sector marketing and technical expertise. In Large Integrated Audits, Target Market Project Managers (TMPM s) within the

## **Industrial: Industrial Energy Audit Program**

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sectors will be an integral part of a team consisting of the TMPM, the assigned 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 Response and Self Generation.

SCE 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 SCE 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.

Both LTC and MM audits will provide leads to appropriate Third Party program vendors based on audit report recommendations. The Integration Desk will provide this service for the LTC and the UEAT will provide potential opportunities via automated selection based on survey input.

### **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 refer customers to relevant DSM programs. SCE will also 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.

The IEA program will serve as the foundation for integrated offerings by providing customers with comprehensive information and recommendations around energy efficiency, distributed-generation, demand response, green programs, such as ClimateSmart program, and other relevant programs. Customers will be referred to eligible SCE 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 SCE programs. Through additional market segmentation and feedback from customers, SCE will further adjust approaches based on the varied needs of targeted customers.

### **g) Pilots - N/A**

### **h) EM&V**

SCE plans to work with other utilities and the Energy Division to develop a complete plan for 2009-11 studies and budgets after the program plans are finalized and filed. This plan will be submitted to the CPUC in time for approval along with the Program Implementation Plans.

## **Industrial: Industrial Energy Audit Program**

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Detailed plans for process evaluations and other evaluation efforts specific to this program will be developed after the final program design is approved by the CPUC and program implementation has begun, since final plans will be based on identified program design and implementation issues and questions.

### **7. Diagram of Program**

Please see the core program diagram presented above.

### **8. Program Logic Model**

Please see the core program logic model presented above.



3b

## **Industrial: Industrial Calculated Energy Efficiency Program**

**1. Program Name:** Industrial Calculated Energy Efficiency Program  
**Program Type:** Core

**2. Projected Program Budget Table**

**Table 1** – reference the overarching program for budget details

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

**Table 2** - reference the overarching program for gross impact details

**4. Program Description**

**a) Describe program**

The purpose of the Statewide Industrial Calculated Energy Efficiency Program is to provide services to improve the energy efficiency of industrial facilities in California, including financial incentives based on calculated energy savings. The energy savings are calculated for measures installed as recommended by comprehensive technical and design assistance for customized projects. Integrated projects are encouraged to combine energy efficiency and demand response. Eligible projects include new construction, retrofit, and retrocommissioning.

The Calculated Energy Efficiency Program is part of a suite of programs within the Statewide Industrial Energy Efficiency Program. The Calculated Energy Efficiency Program is utilized for projects where:

- a rebate is not available through the statewide Deemed Energy Savings Program,
- customized calculations provide the most accurate savings estimates, or
- interactive effects between measures are best captured through whole building or whole system modeling.

Because it presents a calculation method that can consider system and resource interactions, the program will become the preferred approach for supporting the integrated, whole system, and multi-resource management strategies of the California Long Term Energy Efficiency Strategic Plan (Strategic Plan).

Key features in the process include:

- Energy audits of facilities and processes with recommendations for energy efficiency, demand response and greenhouse gas reductions
- Calculations of energy savings for exceeding Title 24 code or industry standard practice baselines
- Technical assistance from SCE in energy audits and calculated savings
- Submission of project proposal for SCE review and approval
- Pre-inspection by SCE for approved retrofit projects
- Post-inspections on approved and completed projects to verify performance
- Payment of incentives from SCE.



## **Industrial: Industrial Calculated Energy Efficiency Program**

Energy audits may be completed by customers directly or project sponsors. Sponsors may include contractors, design teams, vendors, and energy service companies. The completed audit may then be submitted for review and approval.

For the energy audit feature, statewide consistent calculators are publicly available. 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](http://www.energydesignresources.com).

(RCx) is also eligible in the program for 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 operations and maintenance, which deal with routine maintenance, 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 can 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.

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

### **b) List measures**

A broad range of measures is eligible for the Calculated Energy Savings Program, as seen in the following table. The incentives for these measures are standard across the utilities participating in the statewide Industrial Calculated Energy Efficiency Program.

## **Industrial: Industrial Calculated Energy Efficiency Program**

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

Financial incentives are calculated in several steps:

- Calculations of estimated energy savings above Title 24 or from a baseline energy use
- Calculation of incentives per unit of energy savings times the estimate of energy savings by measure
- Estimate of project costs for retrofit projects or incremental cost for added load projects
- For retrofit projects, incentives are capped at 50% of the total project costs, or the calculated incentive, whichever is less.
- For added load projects, incentives are capped at 50% of the incremental project cost, or the calculated incentive, whichever is less.

### **c) List non-incentive customer services**

The Industrial Calculated Incentives 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**

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

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

### **b) Market Transformation Information**

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

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

## **Industrial: Industrial Calculated Energy Efficiency Program**

### **c) Program Design to Overcome Barriers**

The Calculated Energy Efficiency Program includes numerous features designed to overcome these barriers, as identified and discussed below.

#### **Integrated Demand Side Management Approach**

The 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 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**

The Continuous Energy Improvement (CEI) program compliments the Calculated Energy Efficiency Program by helping customers implement energy efficiency measures that have been identified through energy efficiency audits or in-depth facility/process assessments. Such assessments 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

## **Industrial: Industrial Calculated Energy Efficiency Program**

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**

The targets provided herein are best estimates, but nonetheless are forecasts.

**Table 5**

Program Name	Program Target by 2009	Program Target by 2010	Program Target by 2011
Projects	190	230	270

### **e) Advancing Strategic Plan goals and objectives**

The Industrial Energy Efficiency Program supports all three goals in the Strategic Plan for the Industrial Sector. General advancement of the goals is presented in the program implementation plan for the Industrial Energy Efficiency Program. More specific support of the goals is presented here.

*Goal 1:* Support California Industry's adoption of energy efficiency by integrating energy efficiency savings with achievement of GHG goals and other resource goals.

*Strategy 1.1:* Develop coordinated energy and resource management program for CA's industrial sector, to enhance use of energy efficiency

*Near-term:* Establish CARB AB 32 Industry Team

The Calculated sub-program infrastructure is designed to facilitate the customer's implementation of large-scale projects that are supported by detailed energy calculations. There is an opportunity to augment the

## **Industrial: Industrial Calculated Energy Efficiency Program**

various tools used for preparing such calculations with GHG emission information that will allow customers to immediately quantify these benefits. This activity will be managed through the IOU CARB AB 32 Industry Team, which is proposed as part of the core Industrial Energy Efficiency Program.

*Goal 2:* Build market value and demand for continuous improvement in industrial efficiency through branding and certification.

*Strategy 2.2:* Implement certification

*Near-term:* Plan pilot and recruit host sites (8-10 facilities)

The program will seek out opportunities to recruit host sites for the certification program by surveying project submittals for potential candidates.

*Goal 3:* Provide centralized technical and public policy guidance for California industrial energy and resource efficiency.

*Strategy 3.1:* Compile technical and resource management regulatory materials into centralized assistance repository.

*Near-term:* 1) Identify and incorporate priority energy and other data; 2) Develop clearinghouse or integration system.

The Calculated Energy Efficiency Program will give support by providing information on results and experience in the program, including case studies of innovative projects.

### **5. Program Implementation**

#### **a) Statewide IOU coordination**

**i. Program name:** Industrial Calculated Energy Efficiency Program

#### **ii. Program delivery mechanisms**

Program delivery mechanisms for SCE will include account representatives, technical services personnel, incentives processing staff, and inspection officials. Also important to program delivery will be customer facility owners and managers; energy efficient equipment manufacturers, distributors, and service contractors; industry trade associations; and others in the energy efficiency equipment value chain.

Industrial Calculated Energy Efficiency Program 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 utility program interactions. The Industrial Calculated Energy Efficiency Program will coordinate with the core Industrial Energy Efficiency Program to provide mutual support.

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

## Industrial: Industrial Calculated Energy Efficiency Program

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 enabled.

SCE's account representatives support this activity within the statewide commercial sector, as well as third parties, government partnerships, and SCE local programs.

### iii. Incentive levels

Incentive levels are based on measure type as detailed below.

#	MeasureName	Per kWh Incentive	Per kW Incentive
1	Air Compressor System Replacement / Upgrade	\$0.09	\$100
2	ASD - HVAC Compressor Motors	\$0.15	\$100
3	ASD - Others	\$0.09	\$100
4	Building Shell Improvements	\$0.09	\$100
5	Carbon Monoxide Sensors	\$0.09	\$100
6	Controls - Non-Lighting	\$0.09	\$100
7	Equipment - Other not specified	\$0.09	\$100
8	Extruder System Replacement / Upgrade	\$0.09	\$100
9	Fan and Pump System Upgrades	\$0.09	\$100
10	Furnace / Energy Efficient	\$0.09	\$100
11	Heat Recovery Equipment (Process)	\$0.09	\$100
12	Heat Recovery Equipment (Space Conditioning)	\$0.15	\$100
13	HVAC - Chiller	\$0.15	\$100
14	HVAC - Complete Subsystem Replacement / Upgrade	\$0.15	\$100
15	HVAC - Heat Pump	\$0.15	\$100
16	HVAC - Other	\$0.09	\$100
17	HVAC - Package Unit	\$0.15	\$100
18	Injection Molding Machine Replacement / Upgrade	\$0.09	\$100
19	Insulation	\$0.09	\$100
20	Lighting	\$0.05	\$100
21	Lighting Controls	\$0.05	\$100
22	Motors Project (HVAC Compressor)	\$0.15	\$100
23	Motors Project (Non-HVAC Compressor)	\$0.09	\$100
24	Precooling Equipment	\$0.15	\$100
25	Process - Chiller	\$0.15	\$100
26	Process - Complete Subsystem Replacement / Upgrade	\$0.15	\$100
27	Professional Wet Cleaning	\$0.09	\$100
28	Pumping System Replacement / Upgrade	\$0.09	\$100
29	Rapid Closing Door	\$0.09	\$100
30	Refrigeration - Complete Subsystem Replacement / Upgrade	\$0.15	\$100
31	Refrigeration - Other	\$0.09	\$100
32	Series to Parallel Street Lighting	\$0.09	\$100
33	Special Window Glazing & Glazing Treatments	\$0.09	\$100
34	Vacuum Systems	\$0.09	\$100
35	Window Replacement	\$0.09	\$100

## **Industrial: Industrial Calculated Energy Efficiency Program**

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

The Calculated Energy Efficiency 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 Response 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 and DR 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 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, program management representatives, and field engineers will be available to provide additional expertise;
- 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;

## **Industrial: Industrial Calculated Energy Efficiency Program**

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

The Industrial Calculated Energy Efficiency Program will leverage 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 commercial 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.

With respect to water conservation, utility program managers will partner with the local water districts to co-brand marketing collateral, attend trade shows and release joint 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. Similar IOU and POU programs**

The IOUs will be delivering many third-party programs that utilize the Calculated Energy Savings Program infrastructure. This will ensure a consistent delivery of measure incentives to ensure that programs do not cannibalize each other and detract from achieving cost-effective energy savings.

## **b) Program delivery and coordination**

### **i. Emerging Technologies (ET) program**

The long-term energy efficiency 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 sub-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 from IOU or PIER-funded projects.



## **Industrial: Industrial Calculated Energy Efficiency 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., LEDs) made available as these technologies transition from research and development to mainstream program offerings.

### **iii. WE&T efforts**

Workforce Education & Training 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 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. These education and training offerings take place through utilities energy centers and technology centers.

### **iv. Program-specific marketing and outreach efforts**

Marketing and outreach initiatives 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.

### **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 energy efficiency program offerings, as well as complementary options available through other entities (e.g. water agencies) will

## **Industrial: Industrial Calculated Energy Efficiency Program**

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/electricity benefits through the Water Efficiency Pilot Programs.

With respect to water conservation, utility program managers will contact the local water districts to co-brand marketing collateral, attend trade shows and release joint 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.

In addition, the program will offer customers educational information about the non-energy benefits associated with energy efficiency measures, such as improved safety, indoor air quality, productivity, comfort, and appearance.

### **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 C&S**

Planned enhancements to Title 24 will be reflected in incentive levels and in eligible measures and services.

### **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.

## **Industrial: Industrial Calculated Energy Efficiency Program**

### **c) Best Practices**

The Calculated sub-program builds upon the more than 10 years of experience that utilities have offered such a program<sup>17</sup>. Deeper penetration into industrial process loads will be achieved by closely aligning the sub-program with the Industrial Energy Audits and Continuous Energy Improvement sub-programs to ensure that there is an avenue for implementing a variety of customer projects. The infrastructure developed by the Calculated sub-program will also be used as the core processing backbone for targeted third-party programs in order to reduce the program administrative and processing costs of those programs.

### **d) Innovation**

Innovative aspects of the program include improving 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 emphasizes peak demand reduction, addresses current economic downturn and better motivates customers to participate in energy efficiency incentive programs. During the 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. Changes will target 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 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.

Where possible, IOUs will use an integrated approach to addressing DSM opportunities. Innovative approaches will be used, such as merging energy efficiency and demand response analysis and converting recommendations to projects. In addition, streamlining programs through processing and reviewing energy efficiency and demand response measures in a single application, providing analytical

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<sup>17</sup> Before 2009-2011, the Calculated Energy Efficiency Program was commonly referred to as the Standard Performance Program or “SPC.”

## **Industrial: Industrial Calculated Energy Efficiency Program**

information about applicable distributed generation solutions will maximize customer adoption rates for most cost-effective energy management opportunities.

IOUs are planning to consolidate various calculating software such as SPC Software, Engage and other measure specific calculating tools to standardize our calculating methodology. This will ensure that calculations will be more uniformed and consistent amongst all stakeholders. This will not limit the use of nationally recognized standard DOE toolsets for certain measures.

IOUs are planning to continue and expand its core RCx program in multiple target markets. 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 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**

Energy audits will include recommendations for not only energy efficiency, but also for demand response and other demand-side management opportunities. Participating customers will be encouraged to participate in other demand-side management opportunities, including demand response and distributed generation. Participating customers will also be encouraged to take a more comprehensive approach to demand-side management and strive for continuous improvement.

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

California's industrial sector faces a multitude of environmental and regulatory challenges that affect their competitiveness and, in some cases, survival. 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.

To help deal with these challenges, the industrial program will coordinate with the 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.

## **Industrial: Industrial Calculated Energy Efficiency Program**

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Utilities will pursue opportunities to partner with water agencies to offer joint energy and water conservation incentives to support projects that would reduce both resources. Partnering with other utilities will help 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 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 energy demand 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 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 response) 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**

SCE plans to work with other utilities and the Energy Division to develop a complete plan for 2009-11 studies and budgets after the program plans are finalized and filed. This plan will be submitted to the CPUC in time for approval along with the Program Implementation Plans.

Detailed plans for process evaluations and other evaluation efforts specific to this program will be developed after the final program design is approved by the CPUC and program implementation has begun, since final plans will be based on identified program design and implementation issues and questions.

## **Industrial: Industrial Calculated Energy Efficiency Program**

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### **7. Diagram of Program**

Please see the core program diagram presented above.

### **8. Program Logic Model**

Please see the core program logic model presented above.

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## **Industrial: Industrial Deemed Energy Efficiency Program**

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**1. Program Name:** Industrial Deemed Energy Efficiency Program  
**Program Type:** Core

**2. Projected Program Budget Table**

**Table 1** – reference the overarching program for budget details

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

**Table 2** - reference the overarching program for gross impact details

**4. Program Description**

**a) Describe program**

The purpose of the Statewide Industrial Deemed Energy Efficiency Program is to provide services to improve the energy efficiency of industrial facilities in California, including financial incentives based on deemed energy savings. The energy savings are deemed for measures installed. Integrated projects are encouraged to combine energy efficiency and demand response.

The Industrial Deemed Energy Efficiency Program is part of a suite of programs within the Statewide Industrial Energy Efficiency Program.

Key features of the program include:

- Information and technical assistance from SCE on energy efficiency measures and savings potential
- Application via mail, fax, internet and phone by customer for eligible measures
- Reservation of financial incentives by SCE, if requested by customer
- Pre- and post-installation inspection by SCE, as determined by SCE based on prior participation and other factors
- Payment of incentives from SCE.

**b) List measures**

Itemized retrofit measures have prescribed energy savings and incentive amounts. These measures are categorized under the following end uses:

- Lighting
- Air conditioning
- Food service
- Refrigeration
- Industrial
- Motors
- Plug loads

**c) List non-incentive customer services – Not applicable**



## **Industrial: Industrial Deemed Energy Efficiency Program**

### **5. Program Rationale and Expected Outcome**

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

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

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

#### **b) Market Transformation Information**

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

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

#### **c) Program Design to Overcome Barriers**

The Industrial Deemed Energy Efficiency Program is designed to overcome several barriers. The 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.

#### **d) Quantitative Program Targets**

The targets provided herein are best estimates, but nonetheless are forecasts.

**Table 5**

Program Name	Program Target by 2009	Program Target by 2010	Program Target by 2011
Projects	315	390	415

## **Industrial: Industrial Deemed Energy Efficiency Program**

### **e) Advancing Strategic Plan goals and objectives**

The Industrial Energy Efficiency Program supports all three goals in the Strategic Plan for the Industrial Sector. The Industrial Deemed Energy Efficiency Program supports at least two goals.

*Goal 2:* Build market value and demand for continuous improvement in industrial efficiency through branding and certification.

*Strategy 2.5:* Implement ME&O program to educate industry and consumers

*Near-term:* Form industrial collaboration mechanisms

The Deemed Energy Efficiency Program facilitates participation by allowing customers to apply in many ways, including mail, fax, internet and phone. SCE will implement marketing and outreach activities through account executives, trade associations, and in numerous other ways to stimulate participation. It will encourage participants to adopt a policy of continuous improvement.

*Goal 3:* Provide centralized technical and public policy guidance for California industrial energy and resource efficiency.

*Strategy 3.2:* Conduct statewide marketing and education effort to create demand for industrial information clearinghouse.

*Near-term:* 1) Develop ME&O Plan; 2) Implement Plan

SCE will participate in the development of the plan and then encourage industrial customers to use the clearinghouse as part of the implementation of the plan.

## **6. Program Implementation**

### **a) Statewide IOU coordination**

**i. Program name:** Industrial Deemed Energy Efficiency Program

#### **ii. Program delivery mechanisms**

Program delivery mechanisms for SCE will include account representatives, technical services personnel, incentives processing staff, and inspection officials. Also important to program delivery will be customer facility owners and managers; energy efficient equipment manufacturers, distributors, and services contractors; industry trade associations; and others in the energy efficiency equipment value chain.

At the statewide level, the Industrial Deemed Energy Efficiency Program will be coordinated to unify the implementation of program aspects such as program name, program delivery mechanisms, incentive levels, marketing and outreach plans, and utility program interactions. The Industrial Deemed Energy Efficiency Program will coordinate with the core Industrial Energy Efficiency Program to provide mutual support.

## **Industrial: Industrial Deemed Energy Efficiency Program**

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 enabled.

### **iii. Incentive levels**

Incentive levels are based on measure type and will be set at uniform amounts across the state.

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

The Industrial Deemed Energy Efficiency 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, phone and e-mail support will be provided.

Marketing efforts will incorporate a variety of marketing tactics/activities to promote the 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 energy efficiency 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, program management representatives, and field engineers will be available to provide additional expertise;
- 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;

## **Industrial: Industrial Deemed Energy Efficiency Program**

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

The Industrial Deemed Energy Efficiency Program will leverage 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 commercial 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.

With respect to water conservation, utility program managers will partner with the local water districts to co-brand marketing collateral, attend trade shows and release joint notices for programs with interactive water and energy effects. Similarly, with ARB and Air Quality Management Districts, IOUs will offer customers program incentives for energy efficient equipment that may also reduce air and GHG emissions.

### **vi. Similar IOU and POU programs**

The IOUs will be delivering many third-party programs that are permitted to use the Industrial Deemed Energy Savings Program infrastructure. This will ensure a consistent delivery of measure incentives to ensure that programs do not cannibalize each other and detract from achieving cost-effective energy savings.

## **b) Program delivery and coordination**

### **i. Emerging Technologies (ET) program**

The long-term energy efficiency vision of California may 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 from IOU or PIER-funded projects.

## **Industrial: Industrial Deemed Energy Efficiency 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., LEDs) made available as these technologies transition from research and development to mainstream program offerings.

### **iii. WE&T efforts**

Workforce Education & Training 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 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. These education and training offerings take place through utilities energy centers and technology centers.

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

Marketing and outreach initiatives will include:

- Participation and membership in key trade associations affiliated with each high priority sub-segment within the industrial sector;
- Attendance at key trade shows within the industrial sector;
- Building awareness and training of vendors of energy equipment and systems about the program eligibility requirements and participation procedures
- Educating community based organizations (CBOs), faith based organizations (FBOs), other non-profit organizations, and other non-government organizations (NGOs) with unique access to certain industry segments.
- Informing enabling partners, such as financial institutions, law firms, environmental organizations
- Approaching other organizations with complementary value propositions from the customers’ perspective, such as energy, water, materials management, recyclables, and corporate citizenry
- 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

## **Industrial: Industrial Deemed Energy Efficiency Program**

- Development of case studies, web pages, and marketing material that provide an overview of the utilities' energy efficiency programs.

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

The program will offer customers educational information about the non-energy benefits associated with energy efficiency measures, such as improved safety, indoor air quality, productivity, comfort, and appearance.

### **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**

Planned enhancements to Title 24 will be reflected in incentive levels and in eligible measures and services.

### **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**

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.

## **Industrial: Industrial Deemed Energy Efficiency Program**

- 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.

### **d) Innovation**

Innovative aspects of the program include improving 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 emphasizes peak demand reduction, addresses current economic downturn and better motivates customers to participate in energy efficiency incentive programs. During the 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. Changes will target 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.

Where possible, IOUs will use an integrated approach to addressing DSM opportunities. Innovative approaches will be used, such as merging energy efficiency and demand response analysis and converting recommendations to projects under Retrocommissioning and/or Calculated program. In addition, streamlining programs through processing and reviewing energy efficiency and demand response measures in a single application, providing analytical information about applicable distributed generation solutions will maximize customer adoption rates for most cost-effective energy management opportunities.

## **Industrial: Industrial Deemed Energy Efficiency Program**

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### **e) Integrated/coordinated Demand Side Management**

Once enrolled, participating customers will be encouraged to participate in other demand-side management opportunities, including demand response and distributed generation. Participating customers will also be encouraged to take a more comprehensive approach to demand-side management and strive for continuous improvement.

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

California's industrial sector faces a multitude of environmental and regulatory challenges that affect their competitiveness and, in some cases, survival. 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.

To help deal with these challenges, the industrial program will coordinate with the 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.

Utilities will pursue opportunities to partner with water agencies to offer joint energy and water conservation incentives to support projects that would reduce both resources. Partnering with other utilities will help 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 N/A**

### **h) EM&V**

SCE plans to work with other utilities and the Energy Division to develop a complete plan for 2009-11 studies and budgets after the program plans are finalized and filed. This plan will be submitted to the CPUC in time for approval along with the Program Implementation Plans.

Detailed plans for process evaluations and other evaluation efforts specific to this program will be developed after the final program design is approved by the CPUC



## **Industrial: Industrial Deemed Energy Efficiency Program**

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and program implementation has begun, since final plans will be based on identified program design and implementation issues and questions.

### **7. Diagram of Program**

Please see the core program diagram presented above.

### **8. Program Logic Model**

Please see the core program logic model presented above.



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## **Industrial: Industrial Continuous Energy Improvement Program**

- 1. Program Name:** Industrial Continuous Energy Improvement Program  
**Program Type:** Core

- 2. Projected Program Budget Table**

**Table 1** – reference the overarching program for budget details

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

**Table 2** - reference the overarching program for gross impact details

- 4. Program Description**

- a) Describe program**

Continuous Energy Improvement (CEI) is a consultative service that is aimed at helping large industrial 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

## **Industrial: Industrial Continuous Energy Improvement Program**

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, CO<sub>2</sub>, and emissions.

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### **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 Strategic Plan 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 its 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;

## **Industrial: Industrial Continuous Energy Improvement Program**

- 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**

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

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

### **b) Market Transformation Information**

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

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

### **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:

## **Industrial: Industrial Continuous Energy Improvement Program**

- 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**

The targets provided herein are best estimates, but nonetheless are forecasts.

**Table 5**

Program Name	Program Target by 2009	Program Target by 2010	Program Target by 2011
Square Footage Benchmarked	1,291,000	1,780,000	3,985,000

### **e) Advancing Strategic Plan goals and objectives**

The Industrial Energy Efficiency Program supports all three goals in the Strategic Plan for the Industrial Sector. General advancement of the goals is presented in the program implementation plan for the Industrial Energy Efficiency Program. More specific support of the goals in the Industrial CEI Program is presented here.

*Goal 1:* Support California Industry’s adoption of energy efficiency by integrating energy efficiency savings with achievement of GHG goals and other resource goals.

*Strategy 1.1:* Develop coordinated energy and resource management program for CA’s industrial sector, to enhance use of energy efficiency

The core deliverable through CEI is the development of a comprehensive energy management plan that customers can adopt as an operating strategy. This plan will allow customers to quantify and manage their GHG emissions in a responsible manner.

*Goal 2:* Build market value and demand for continuous improvement in industrial efficiency through branding and certification.

*Strategy 2.2:* Implement certification

*Near-term:* Plan pilot and recruit host sites (8-10 facilities)

The Continuous Energy Improvement sub-program will manage the statewide participation in the development of an industrial certification program. This certification program will be piloted in 2009-2011 and leverage the various industrial sub-program tactics described throughout this program implementation plan to identify the best potential host sites.



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The lessons learned from this pilot will be used to expand the certification in the next program cycle.

*Goal 3:* Provide centralized technical and public policy guidance for California industrial energy and resource efficiency.

*Strategy 3.1:* Compile technical and resource management regulatory materials into centralized assistance repository.

*Near-term:* 1) Identify and incorporate priority energy and other data; 2) Develop clearinghouse or integration system.

The Continuous Energy Improvement sub-program will support the development of an industrial clearinghouse by providing information on results and experience in the program, including case studies of innovative projects and best practices about implementing comprehensive energy management plans at industrial facilities.

### **6. Program Implementation**

#### **a) Statewide IOU coordination**

**i. Program name:** Industrial Continuous Energy Improvement Program

#### **ii. Program delivery mechanisms**

CEI will be coordinated to unify the implementation of program aspects such as program name, program delivery mechanisms, marketing and outreach plans, and utility program interactions. The Industrial CEI Program will coordinate with the core Industrial Energy Efficiency Program to provide mutual support.

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 enabled.

SCE's account representatives support this activity within the statewide commercial sector, as well as third parties, government partnerships, and SCE local programs.

**iii. Incentive levels - N/A.** This is a non-resource program.

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

As with other information and education 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.

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

The program will leverage 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 industrial customers.

**vi. Similar IOU and POU programs**

Over the next three years, the IOUs will seek to increase their interactions with the POUs to promote the CEI concept throughout the state. This may involve the creation of periodic California energy efficiency program summits that seek to increase awareness of the Strategic Plan and how programs could/should be designed to help meet its aggressive targets.

**b) Program delivery and coordination**

**i. Emerging Technologies (ET) program**

The CEI program management team will stay abreast of and incorporate relevant emerging technologies into audit recommendations. In addition, IOU field engineers, who play a large role in the delivery of CEI to industrial customers, 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**

The program will work with 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 recommended 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., LEDs) made available as these technologies transition from research and development to mainstream program offerings.

**iii. WE&T efforts**

CEI’s interaction with Statewide Workforce Education & Training efforts will be centered on the offering of a national certification curriculum that supports the pilot program described in Section 5.e. Development of this curriculum will be conducted in partnership with established industry efforts currently sponsored by the Department of Energy and others and will ultimately be offered to customers in order to provide them with knowledge and tools required to implement and validate energy efficiency improvements.

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

A broad range of marketing activities will be used to promote audits and elevate customer engagement. The Industrial CEI program 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, Demand Response and Distributed Generation departments within SCE.

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

Integrated energy audits are a key tool for identifying non-energy opportunities for specific customers. The energy audits can identify non-energy benefits associated with recommended measures, such as improved safety, productivity, indoor air quality, comfort and appearance.

### **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**

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.

### **viii. CEC work on C&S**

See Section 6.b.ii.

### **ix. Non-utility market initiatives**

Education about federal tax incentives for energy efficiency investments is an example of non-utility information and guidance that CEI will provide customers. In addition, the IOUs will participate in national efforts to develop and/or improve benchmarking tools and services that can be used by customers to better facilitate their adoption of sustainable energy management practices.

### **c) Best Practices**

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: Commitment, Assessment, Planning, Implementation, Evaluation and Modification in order to achieve widespread adoption of long-lasting sustainable energy management practices in the commercial market sector. This approach can now be successfully implemented given the three-year programs cycle allowing longer term and deeper project development engagements with customers. In addition, PG&E will continue to lead the utility's efforts in the industrial customer

## **Industrial: Industrial Continuous Energy Improvement Program**

area by participating in a national effort to develop an ANSI recognized standard for industrial energy efficiency. By participating in the development of such a standard, the utilities are in a unique position to integrate aspects of the standard into current programs prior to ANSI recognition.

### **d) Innovation**

CEI 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 Statewide 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 siloing 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 response 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 response 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 response when customers enroll, or are already enrolled, in demand response 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 response programs is that communications of both types of DSM program are often non-coordinated, since energy efficiency is typically technology based and demand response is often focused on behavior. Also, demand response 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 consolidated applications, collateral, web sites, and events, where applicable.

## **Industrial: Industrial Continuous Energy Improvement Program**

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 sub-program will focus on several tactics:

- Promotion and incentives for demand response in such a way as to stimulate energy efficiency first
- 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

During the 2009-11 program cycle, funding for energy efficiency and demand response must not be commingled; therefore payments will be split between the two programs as appropriate.

### **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 partner with 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 partner with the local water districts to produce co-branded marketing collateral, attend trade shows and release joint notices for programs with interactive water and energy effects.

### **g) Pilots**

Based on Energy Division feedback, a potential pilot that will be explored in the 2009-11 program cycle is that of a “Resource Energy Manager” (REM). REMs are essentially energy managers who are placed at the customer’s facility to be a project champion and shepherd energy efficiency projects through to completion. Their

## **Industrial: Industrial Continuous Energy Improvement Program**

salary is typically paid for through the energy savings they generate. REMs have been successfully used by IOUs in the government sector (typically military bases) in past program cycles and a similar program has been available for commercial customers in the Pacific Northwest. The concept of using REMs in the commercial segment will be explored to determine the viability and cost effectiveness of such an approach. An appropriate EM&V plan will also be required prior to launching an REM pilot such that the affects of the pilot on achieving higher levels of energy efficiency can easily be determined.

### **h) EM&V**

SCE plans to work with other utilities and the Energy Division to develop a complete plan for 2009-11 studies and budgets after the program plans are finalized and filed. This plan will be submitted to the CPUC in time for approval along with the Program Implementation Plans.

Detailed plans for process evaluations and other evaluation efforts specific to this program will be developed after the final program design is approved by the CPUC and program implementation has begun, since final plans will be based on identified program design and implementation issues and questions.

### **7. Diagram of Program**

Please see the core program diagram presented above.

### **8. Program Logic Model**

Please see the core program logic model presented above.

# 4

# Agriculture Energy Efficiency Program

- 1. Program Name:** Agriculture Energy Efficiency Program  
**Program ID#:** SCE-SW-004  
**Program Type:** Core Program

## 2. Projected Program Budget Table

**Table 1<sup>1</sup>**

SCE-SW-004	Main Program Name / Sub-Program	Total Administrative Cost (Actual)	Total Marketing & Outreach (Actual)	Total Direct Implementation (Actual)	Integration Budget Allocated to other Programs (If Applicable)	Total Budget By Program (Actual)
<b>NONRESIDENTIAL</b>						
	Agriculture Energy Efficiency Program					
	Agriculture Energy Audit Program	\$ 103,504	\$ 195,836	\$ 407,660		\$ 707,000
	Agriculture Calculated Energy Efficiency Program	\$ 1,872,980	\$ 1,164,293	\$ 13,694,727		\$ 16,732,000
	Agriculture Deemed Energy Efficiency Program	\$ 907,484	\$ 905,874	\$ 2,300,642		\$ 4,114,000
	Agriculture Continuous Energy Improvement Program	\$ 16,000	\$ -	\$ 65,000		\$ 81,000
	Pump Test Services Program	\$ 2,876,100	\$ 116,900	\$ 4,951,000		\$ 7,944,000
	<b>TOTAL:</b>	<b>\$ 5,776,068</b>	<b>\$ 2,382,903</b>	<b>\$ 21,419,029</b>	<b>\$ -</b>	<b>\$ 29,578,000</b>

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

**Table 2**

SCE-SW-004	Agriculture Energy Efficiency Program	2009-13 EE Program Gross kWh Savings	2009-13 EE Program Gross kW Savings	2009-13 EE Program Gross Therm Savings
	Agriculture Energy Audit Program	5,560,596	998	-
	Agriculture Calculated Energy Efficiency Program	95,766,084	17,447	-
	Agriculture Deemed Energy Efficiency Program	24,937,145	7,749	-
	Agriculture Continuous Energy Improvement Program	-	-	-
	Pump Test Services Program	46,712,091	15,538	-
	<b>TOTAL</b>	<b>172,975,916</b>	<b>41,731</b>	<b>-</b>

SCE is forecasting installations beyond 2011 to capture those projects committed (funds reserved) in the 2009-2011 program cycle, however are not installed until after 2011.

<sup>1</sup> Definition of Table 1 Column Headings:

Total Administrative Cost includes all Managerial and Clerical Labor, Human Resource Support and Development, Travel and Conference Fees, and General and Administrative Overhead (labor and materials).

Total Direct Implementation – includes all financial incentives used to promote participation in a program and the cost of all direct labor, installation and service labor, hardware and materials, and rebate processing and inspection used to promote participation in a program.

Total Marketing & Outreach includes all media buy costs and labor associated with marketing production.

Integrated Budget Allocated to Other Programs includes budget utilized to coordinate with other EE, DR, or DG programs.

Total Budget is the sum of all other columns presented here

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.



## Agriculture Energy Efficiency Program

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### 4. Program Description

#### a) Describe program

The Agriculture Energy Efficiency Program facilitates the delivery of integrated energy management solutions—including energy efficiency, demand response, and distributed generation—to California’s agriculture customers. The Program offers a suite of products and services (for example, through strategic energy planning support, technical support services, facility audits, pump tests, calculation/design assistance, and financial support through rebates and incentives). In addition, 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).

The Agriculture Energy Efficiency Program targets end-users such as irrigated agriculture growers (crops, fruits, vegetable, and nuts), greenhouses, post-harvest processors (ginners, nut hullers, and associated refrigerated warehouses), and dairies. The program may also target food processors such as fruit and vegetable processors (canners, dryers, and freezers), prepared food manufacturers, wineries, and water distribution customers.

To address the potential in these markets, the Statewide Agriculture Program offers five sub-programs:

1. Energy Audit Program, provides basic remote audits, integrated energy audits, and retrocommissioning (RCx) audits. The Program provides an inventory of technical project opportunities and financial analysis information for a customer’s short- or long-term energy plan, and overcomes both informational and technical customer barriers.
2. Calculated Energy Efficiency Program offers customers a standardized incentive approach for customized and integrated energy efficiency/DR retrofit and RCx projects, with comprehensive technical and design assistance. 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.
3. Deemed Energy Efficiency Program provides utility representatives, equipment vendors, and customers with 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.
4. Continuous Energy Improvement (CEI) is a non-resource sub-program that includes a collection of strategic planning tools and resources for long-term integrated energy planning. CEI serves as a launching platform for other utility and non-utility programs and services. CEI offers analysis, benchmarking, long-

## Agriculture Energy Efficiency Program

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term goal setting, project implementation support, performance monitoring, and potential 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.

5. Pump Test Services Program reduces energy used for water pumping by offering pump tests, incentives, and targeted education, training and technical support for agriculture, industrial and commercial 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 improvements as a means to capture savings. However in the mid-term, pump performance data, aggregated at the statewide level, will contribute to the development of metrics and targets for long-term pumping efficiency improvements.

In addition to these five sub-programs, each of the four investor-owned utilities in the state also offers local programs that complement and enhance the core offerings in their region. The local portfolio mix of SCE is specifically designed to enhance energy efficiency and DSM opportunities for agriculture customers. The local portfolio mix includes the AB 32 Carbon Emissions Reduction (CER) Program.

Market Characterization: California’s agriculture customer base consists primarily of a broad mix of smaller accounts and consumes approximately 7%<sup>2</sup> of total statewide electricity. The business models and energy efficiency needs for these market segments vary widely and thus require targeted marketing and program delivery strategies. A review of the primary segments addressed by this Program is included below.

Irrigated Agriculture: Irrigated agriculture represents an estimated 80% of the total electricity used by the agriculture segment. This 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% towards the technical potential for 68 -70% 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.

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<sup>2</sup> 1980-2005 California Electricity Consumption by Sector - California Energy Commission, [http://www.energy.ca.gov/electricity/consumption\\_by\\_sector.html](http://www.energy.ca.gov/electricity/consumption_by_sector.html)

## **Agriculture Energy Efficiency Program**

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**Greenhouses:** This specialty segment is in transition from the cut flowers industry to ornamental plants and vegetable transplants. Increased mechanization and consolidation in this segment presents opportunities for energy efficiency. Top opportunities for energy savings are in boiler improvements, building envelope improvements, and temperature control enhancements (for example, heat curtains).

**Post-Harvest Processing Facilities:** Post-harvest facilities associated with or near agriculture growing facilities process, package and store agriculture commodities, such as cotton ginneries, nut harvesters and bag-houses, and fruit and vegetable packing plants. Their operations are typically seasonal and 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.

**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 have drawn 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.

**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, compressed air and motors. Distributed generation and demand response opportunities include using waste heat/steam for production processes such as pasteurization, cooking and heating.

## **Agriculture Energy Efficiency Program**

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**Food Processing, Wineries:** California's more than 2000 wineries produce 90% 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 agriculture segments to follow. These efforts have been led by the California Sustainable Winegrowing Alliance (CSWA), which is eager to continue working with interested IOUs on outreach, education, training, and benchmarking. These efforts will promote 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. Interest in emerging technologies 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 retrocommissioning and improved new facility design, as captured in the Agriculture Strategic Plan. Activities identified in the Agriculture 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 float refrigeration loads through peak periods with controls software has shown great initial success in the 2006-2008 program cycle for demand response.

### **b) List measures**

Technologies addressed through this program effort include pumping, refrigeration, process loads, process heating and lighting. Incentive levels will be offered through the Calculated Energy Efficiency Program and the Deemed Energy Efficiency Program, described in full in their respective Program Implementation Plans.

The Deemed Energy Efficiency Program offers itemized retrofit measures with prescribed energy savings and incentive amounts. These measures are categorized under the following end uses:

- Lighting
- Air conditioning
- Food service
- Refrigeration
- Industrial

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- Motors
- Plug Loads
- Irrigation
- Process

The 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.

In brief, statewide incentive levels for the Calculated Energy Efficiency 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

### c) List of non-incentive customer services

The Agriculture Energy Efficiency Program includes a wide variety of non-incentive program services. These services are 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:

- Energy Audits
  - Remote energy audits
  - Integrated energy audits
  - RCx audits
- Continuous Energy Improvement (CEI)
  - Energy management assessments
  - Energy planning
  - Baselineing 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 pumps, motors, compressed air, and steam
  - Other industrial process systems training
  - Agriculture pumping efficiency seminars
  - Workshops merging regulatory compliance with energy efficiency opportunities (such as with NO<sub>x</sub> compliance and boiler retrofits)

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- Integrated industry-focused workshops, such as for wineries, dairies, greenhouses, and food processors
- Workforce Education and Training
  - The Statewide WE&T crosscutting program effort will be leveraged to deliver targeted training to the agriculture sector to support Superior Energy Performance (SEP) ANSI and ISO energy management certification.
  - 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**

#### **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.”<sup>3</sup> 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<sup>4</sup>.

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<sup>5</sup>. Markets are social institutions<sup>6</sup>, and transformation requires the coordinated effort of many stakeholders at the national

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<sup>3</sup> California Public Utilities Commission Decision, D.98-04-063, Appendix A.

<sup>4</sup> California Public Utilities Commission (2008) *California Long Term Energy Efficiency Strategic Plan*, p. 5. Available at <http://www.californiaenergyefficiency.com/docs/EEStrategicPlan.pdf>

<sup>5</sup> 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>

<sup>6</sup> 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.ecee.org/conference\\_proceedings/ecee/2001/Panel\\_2/p2\\_7/Paper/](http://www.ecee.org/conference_proceedings/ecee/2001/Panel_2/p2_7/Paper/)

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level, directed to not immediate energy savings but rather to intermediary steps such as changing behavior, attitudes, and market supply chains<sup>7</sup> 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<sup>8</sup>. According to York<sup>9</sup>, “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<sup>10</sup>. 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<sup>11</sup>, 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<sup>12</sup>. 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<sup>13</sup>. The ability to make causal connections between these

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<sup>7</sup> 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](http://www.calmac.org).

<sup>8</sup> 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*.

<sup>9</sup> York, D., (1999). “A Discussion and Critique of Market Transformation”, Energy Center of Wisconsin. Available at <http://www.ecw.org/ecwresults/186-1.pdf>.

<sup>10</sup> 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>

<sup>11</sup> Rogers (1995) *Diffusion of Innovations*, 5<sup>th</sup> Ed.

<sup>12</sup> 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>

<sup>13</sup> Sebold et al (2001) p. 6-5,

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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.)"<sup>14</sup> The Strategic Plan recognizes that regulatory policies are not yet in place to support the success of market transformation efforts<sup>15</sup>, 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<sup>16</sup>. 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<sup>17</sup> 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

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<sup>14</sup> 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>.

<sup>15</sup> CPUC (2008) Strategic Plan, p. 5.

<sup>16</sup> Nadel, Thorne, Saches, Prindle & Elliot (2003).

<sup>17</sup> Peloza & York, (1999).



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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 Agricultural sector, the following approach to quantitative baseline and market transformation information is as follows.

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.

<b>OVERALL PLANT EFFICIENCY RANGES WIRE TO WATER</b>					
<b>Motor HP</b>	<b>Low</b>	<b>Fair</b>	<b>Good</b>	<b>Excellent</b>	<b>Booster</b>
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%

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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 Agricultural sector, the following approach to quantitative baseline and market transformation information is as follows.

**Table 3**

	<b>Baseline Metric</b>		
	<b>Metric A</b>	<b>Metric B</b>	<b>Metric C</b>
Measure-based metric	Ratio of pump efficiency measured in terms of overall pumping efficiency (OPE) over time to a base case		

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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**

	<b>Internal Market Transformation Planning Estimates</b>		
	<b>2009</b>	<b>2010</b>	<b>2011</b>
Ratio of pump efficiency measured in terms of overall pumping efficiency (OPE) over time to 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

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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
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### **c) Program Design to Overcome Barriers**

The 2009-2011 Statewide Agriculture Program builds on past program successes and best practices to overcome both market wide and segment specific barriers to efficiency, including:

- Market-wide barriers:
  - Agriculture 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 Energy Efficiency Program takes these barriers into account with the features described below for continuous improvement, trade ally workforce education and training, and technical support.

### **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

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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. These customers ask 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, Incentives Calculation 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. In the future, utilities will be exploring providing regulatory benefits and opportunities for CO<sub>2</sub> 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.

A comprehensive retrocommissioning effort will be developed with an agriculture focus to help identify sub-optimal systems and improve operating performance. By being more of a maintenance-based offering, Agriculture Commissioning (ACx), allows customers to complete projects with short paybacks through their operations budget rather than their capital budget. This overcomes a common financial barrier related to capital budget approvals. Incentives sweeten the project opportunity, while ACx also requires a customer to complete any project with less than a one-year payback, improving the uptake of projects.

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### d) Quantitative Program Targets

**Table 5** - Program targets are provided at the sub-program level.

### e) Advancing Strategic Plan Goals and Objectives

The teams of statewide agriculture program supported the development of the California Long Term Energy Efficiency Strategic Plan (Strategic Plan), and the 2009-2011 program design integrates the goals and strategies of the Strategic Plan. Specifically, the following actions will be advanced during the 2009-2011 program cycle.

*Goal 1:* Establish and maintain a knowledge base sufficient to support development of all available, cost-effective, reliable, and feasible energy efficiency, demand reduction (and renewable) energy resources.

*Strategy 1.1:* Develop knowledge base of efficiency solutions.

Near term: Conduct an energy use characterization and efficiency potential study for the statewide agriculture market. Include potential for waste streams to offset energy consumption. Study plan (6/2009) and study completed (12/2010).

*Near term:* Collect data on key programs and measures, best practices for energy efficiency in the agriculture sector. Study complete (6/10)

Utilities will continue to coordinate with the California Energy Commission (CEC), Commission, and other resources to identify a study plan, scope, and deliverables for a statewide agriculture market characterization that considers integrated energy opportunities in the segment. If possible, the plan will be coordinated with other agriculture 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 Commission 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.

To develop a "one stop shopping" clearinghouse of energy management and related information for the agriculture segment, the utilities will organize and post all relevant existing technical information on the statewide Energy Design Resources website. This information includes best practices, continuous energy improvement resources, emerging technologies data, tools, programs, and other information.

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*Strategy 1.2:* Ensure workforce has information and training necessary to apply efficiency solutions.

*Near term:* Conduct workforce training needs assessment and next steps (12/2010)

Develop training curricula and modules identified by needs assessment. (12/2011)

Utilities will assemble technical sub-groups, including utility and industry experts, to focus on the key technical areas identified in the Strategic Plan, such as pumping, refrigeration and process heating. Coordinating with Statewide WE&T Program, the Statewide Agriculture Energy Efficiency 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 be included in the agriculture market characterization study, and results 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 program specific marketing and outreach efforts. Such efforts, pending timely completion of the characterization study, are targeted for completion by the close of the 2009-2011 program cycle.

*Strategy 1.3:* Conduct research & development of new technologies and practices for agriculture efficiency.

*Near term:* Conduct an Energy Technologies/RD&D gap analysis. Identify and prioritize needed RD&D/ET projects. (12/2011).

*Near term:* Coordinate research activities across government, utilities, agriculture extension and university programs, and equipment manufacturer proprietary efforts.

The IOU's ET teams will continue to closely coordinate with the CEC, universities and industry associations to identify key potential areas for emerging technologies development and research needs, such as, for agriculture, in irrigation pumping, refrigeration, and process heating applications. 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.

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*Goal 2:* California regulations, financing mechanisms, and incentive programs affecting the management of energy, air and water resources, solid waste, and climate change will be coordinated to mutual advantage.

*Strategy 2.1:* Set objectives and framework for agriculture to attain multi-resource management goals.

*Near term:* Establish a task force to coordinate resource management policies, action goals, and program designs targeting California's agriculture sector.

*Near term:* Identify where goal conflicts arise and resolve these conflicts.

*Near term:* Assess potential for integrated approaches.

In support of statewide regulatory coordination, the IOUs will establish a task force with the California Department of Food and Agriculture (CDFA), CEC, Environmental Protection Agency (EPA), and the California Air Resources Board (CARB). The task force will be 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 Agriculture Energy Efficiency Program (for example, the pilot project for Integrated Demand Side Management for Food Processing) will allow California's IOUs and regulatory agencies to assess the potential for integrated approaches.

*Strategy 2.2:* Coordinate technical assistance, funding, and incentive mechanisms.

*Near term:* Identify the programs and major funding sources affecting the management of energy, air and water resources, and climate change.

*Near term:* Create a collaborative forum to facilitate sharing of information and coordination of programs.

As challenges to the national and state economies arise, deploying financial resources in support of energy efficiency and other resource efficiency 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. This list will support energy and other resource management objectives, 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.



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*Goal 3:* Achieve significant increases in the efficiency of electricity and natural gas use and on-site renewable energy utilization, including setting a specific target for irrigation efficiency.

*Strategy 3.1:* Make information on efficiency solutions readily available to motivate efficiency improvements.

*Near term:* Develop benchmarking resources, tools and methods for the agriculture sub-sectors.

*Near term:* Design and launch focused program for irrigation efficiency, refrigeration, and process heating

The IOUs will post relevant market data, technical information, education and training resources, and benchmarking tools, other than proprietary material or information, on the planned Energy Design Resources clearinghouse website. This information will cover relevant technologies in agriculture and food processing segments, but will have a focus on irrigation efficiency, refrigeration, and process heating. The Continuous Energy Improvement Program will also support this strategy. On benchmarking, the IOUs will continue to work with industry associations (for example, 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.

*Strategy 3.2:* Conduct marketing & outreach to stimulate efficiency actions.

*Near term:* Develop ME&O strategy, addressing communication channels, partners, and effective messaging.

*Near term:* Begin pilot implementation

For details on marketing and outreach planned to stimulate energy efficiency actions, please refer to Section 6.b.iv.

*Strategy 3.3:* Resolve metrics for embedded energy in water savings.

*Near term:* Update evaluation measurement & verification protocols to define energy impacts of water efficiency actions.

*Near term:* 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 Commission, 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 one utility's territory will be shared with the other IOUs. The IOUs are willing and available to work with the Commission to advance these important multi-resource efforts through studies, pilots and partnerships with water agencies as appropriate.

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### 6. Program Implementation

#### a) Statewide IOU coordination

i. **Program name:** Agriculture Energy Efficiency Program

#### ii. **Program delivery mechanisms**

The Agriculture Energy Efficiency Program will ensure the program is continuously updated and enhanced throughout the three-year implementation cycle. This also includes coordination with crosscutting program elements, 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 programs will be coordinated statewide to unify program implementation including delivery mechanisms, incentive levels, marketing and outreach plans, and IOU program interactions. The two coordination systems (one for the broad core program and one designed for the five sub-programs) will interact with and support one another. The broad, high-level coordination effort is described below, focusing on how the IOUs will work together to effect the continuous improvement of the Statewide Agriculture Energy Efficiency 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 Energy Efficiency 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 may impact the Statewide Agriculture 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.
- **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 be comprised of all designated IOU leads (including at least

## **Agriculture Energy Efficiency Program**

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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 shared with 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** – After 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 help ensure achievement of statewide targets across IOU service territories.

### **iii. Incentive levels**

Incentives for industrial customers will be provided through both the deemed prescriptive and customized calculated approaches.

### **iv. Marketing and outreach plans**

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. These partnerships engage in a multi-faceted approach to marketing energy efficiency practices and programs to targeted users. These strategies leverage both past program successes as well as best practices

## **Agriculture Energy Efficiency Program**

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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. The partnerships will 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 agriculture 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.

The utilities will also inventory and coordinate relevant agriculture and food processing technical and programmatic resources into a centralized one-stop shopping clearinghouse. The clearinghouse will be part of the enhanced statewide Energy Design Resources website with specific market segment portals to assist customers with project design and implementation. For more discussion about the enhance Energy Design Resources website, *see* the Workforce Education and Training Program Plan.

**v. IOU program interactions with CEC, ARB, Air Quality Management Districts, local government programs, other government programs as applicable.** The Statewide Agriculture Energy Efficiency Program will support integrated marketing opportunities for distributed generation from biogas, biomass, solar, fuel cells, and wind, as well as agriculture-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 or through the California Climate Action Registry). 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.

**vi. Similar IOU and POU programs**

Program activities will be coordinated with the Sacramento Municipal Utility District (SMUD) and the Imperial Irrigation District (IID), territories with a substantial agriculture base. This will ensure that California's agriculture customers receive a consistent message and program approach and removes a common barrier to program participation (i.e. processing or transaction costs).

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### **b) Program Delivery and Coordination**

#### **i. Emerging Technologies (ET) program**

The long-term energy efficiency vision of California can 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. The programs coordinate specifically with the CEC's PIER program, and universities to supply market-ready and viable technologies into the ET portfolio.

The Agriculture Program is currently working to support a diverse list of emerging technologies including winery electro dialysis, wastewater treatment technologies, forklift battery chargers, dairy refrigeration advancements, industrial refrigeration design enhancements, field pre-cooling advancements, and solar thermal applications.

The utilities will use a formal technology integration process for incorporating emerging technologies into the program. This process will be designed to 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 statewide program management team will work with other partners to update and execute the technology integration process, based on developments in technology, the program, and the market context. This process will be updated regularly to reflect current conditions.

#### **ii. Codes & Standards program**

The Agriculture Energy Efficiency Program relies on the Codes and Standards Program to maintain an updated and relevant list of measures that will support agriculture savings. As Codes and Standards evolve, 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 Agriculture Energy Efficiency 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, Agriculture Energy Efficiency Program will continue to coordinate closely with crosscutting Codes and Standards, Workforce Education and Training, and industry partners and associations, and will utilize the Statewide Agriculture Steering Committee to enhance the coordination effort.

#### **iii. WE&T efforts**

Workforce Education & Training efforts support the education and training of a robust network of industry trade allies, vendors, engineers, design teams and

## **Agriculture Energy Efficiency Program**

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others supporting the market transformation strategies of the Strategic Plan. In general, the Agriculture Energy Efficiency Program will interface with the Workforce Education and Training Program Implementation Plan to serve the goals of the Strategic Plan.

WE&T efforts will include specific activities to support the various sub-programs. In addition, training on Title 24 code changes, industrial refrigeration best practices, and ANSI Superior Energy Performance certification will also be provided. 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 (pumps, motors, steam, and 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 agriculture program managers will also expand training opportunities to local universities and academic institutions that have agriculture-based programs (e.g. Cal Poly Pomona and San Luis Obispo).

#### **iv. Program-specific marketing and outreach efforts**

The IOUs are currently engaged in in-depth market segmentation analyses. The results of this work will be shared among the IOUs and 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 and personal goals, unique needs, and specific environmental considerations.

The results of this strategic planning effort will help define successful program outreach efforts to address the diverse agriculture, food processing and related water customers segments. Such efforts are customized to suit the unique needs of each segment and customer profile. *See* the marketing section of 5C, Program Design to Overcome Market Barriers.

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For example, utilities will continue to foster strategic partnerships with industry and commodity groups, and 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 meetings and providing 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 the American Council for an Energy Efficient Economy (ACEEE) comparative analysis of national agriculture 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**

Refer to Section 6.f on “integration across resource types.”

## **Agriculture Energy Efficiency Program**

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### **vi. Non-IOU programs**

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.
- AB32 support 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 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**

The program will not be implemented with a direct linkage to PIER.

### **viii. CEC Work on C&S**

The program will not be implemented with a direct linkage to codes and standards efforts.

### **ix. Non-utility market initiatives**

The Agriculture Energy Efficiency 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 energy planning.
- Wine Industry – CSWA Program initiative.
- ASHRAE / ARI efforts to develop refrigeration best practices.
- National dairy sustainability effort.

### **c) Best Practices**

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



## **Agriculture Energy Efficiency Program**

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- Leveraging Local Agricultural Resources – i.e., industry associations and farm bureaus.
- Continuous Energy Improvement: an approach to transform the market and reduce energy intensity through addressing technical and management opportunities.
- Technical Assistance: Recognizes the need for personalized assistance for commercial, industrial and agriculture 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.

### **d) Innovation**

A bundled and integrated product and service offering will 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 Agriculture Energy Efficiency Program include:

### **Integration**

The Statewide Agriculture Program integrates demand side management strategies, and develops methods and pilots to promote integration of interlinked environmental and resource management issues. 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 Energy Audits will provide targeted customers with integrated solutions in efficiency, DR, and DG, and may advise customers on other sustainability practices (for example, water conservation opportunities, CO2 reduction potential, and other programs references).
- IOU's will link customers with the California Climate Registry to identify the carbon footprint of a customer's plant.

## **Agriculture Energy Efficiency Program**

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- Utilities will promote innovative agriculture opportunities such as dairy biogas to energy, biogas injection, waste stream utilization, 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, precisely 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 agriculture 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 eQUEST and Energy Pro.
- Non-utility financing tools and resources will be coordinated and communicated to help customers leverage 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. 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 Commission direction and with the Strategic Plan, the Agriculture Energy Efficiency Program includes integration of energy efficiency, demand response and distributed generation programs in integrated audits, marketing materials and industry-specific workshops. To this end, the statewide utilities and the Statewide Agriculture Energy Efficiency Program has made progress in advancing integrated solutions.

## **Agriculture Energy Efficiency Program**

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The IOUs are placing major emphasis on marketing to get 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, particularly workshops organized around a customer segment, provides an ideal situation to integrate customer energy solutions. Utilities will provide integrated workshops to dairies, wineries, and food processors. These workshops will cover topics, such as resources analysis and methods, conservation, efficiency, demand response, and 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 be increasingly important as Critical Peak Pricing matures. The Agriculture 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.

Integrated Energy Audits combine funds and resources of energy efficiency and demand response 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 500 kW and all integrated audits will focus on EE, DR and DG options. In addition, the utilities are developing an enhanced web-based audit tool for customers and internal utility personnel. The audit tool will be the principal tool to provide IDSM information to customers with loads less than 200 kW and will be used by the CSI program for determining EE opportunities prior to installation of solar equipment. 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 day lighting, lighting, HVAC, controls, and building envelope improvements.

## **Agriculture Energy Efficiency Program**

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

California's agriculture and related food processing sectors face a multitude of environmental and regulatory challenges that threaten their survival and competitiveness. In 2009, a severe drought is impacting California's farmers and increasing water pumping costs. 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. Both these are impacting energy use and compliance.

The Agriculture 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. For example, the IOUs will continue to offer targeted trainings to customers who are sharing common regulatory challenges. In 2008 PG&E hosted three very successful workshops called NO<sub>x</sub> – Comply and Save, which educated customers on impending regulations, requirements for their boilers, and the most efficient project options to consider for compliance. This workshop will be expanded statewide and offered at the other IOU energy centers. In addition, additional workshops will look at wastewater treatment options, refrigeration upgrades, and energy efficiency to meet AB32 targets.

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

An IOU is currently conducting a study to evaluate emerging water quality requirements in the state, and address best practices in comprehensive water related energy management in seven agriculture/food processing sub segments. The study will reflect statewide practice as much as possible. The results will be shared with the other IOUs, as well as posted on Energy Design Resources.

The Integrated Demand-Side Management Pilot with Food Processors is still under development, but aims to coordinate air, energy, and water/waste streams management. Ideally, learning from the current Commission 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.

## **Agriculture Energy Efficiency Program**

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### **g) Pilots**

The Agriculture Program will support the pilot proposed by the California League of Food Processors tentatively titled the Integrated Demand Side Management Pilot for Food Processing Program. The pilot forms an alliance between the food industry, the Commission, 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 that food processors 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 personal development. The reward will be energy efficiently made products with the lowest level possible of impacts on natural resources and the environment.

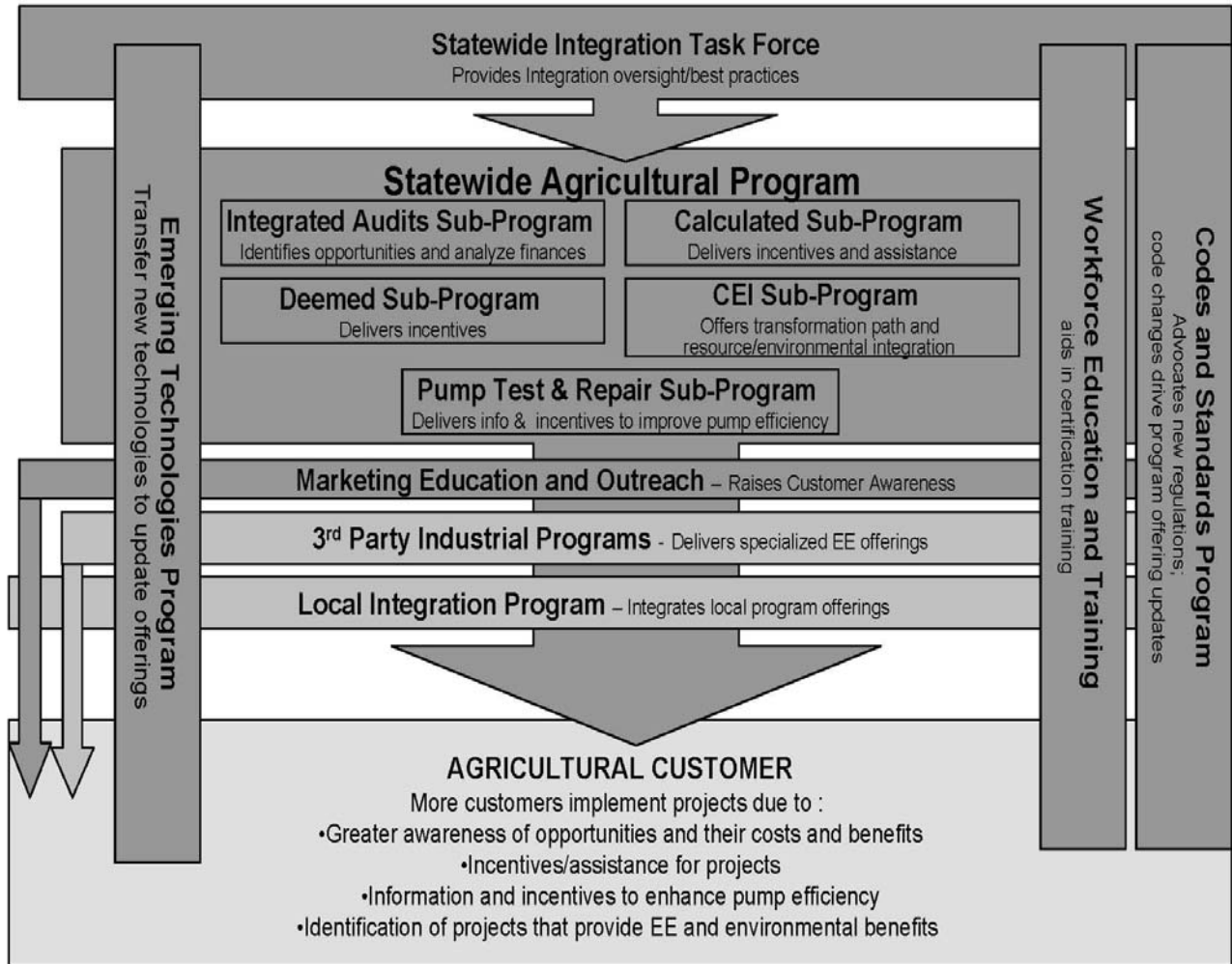
The scope of the pilot is still under development. In 2009, utilities will coordinate with the California League of Food Processors, Commission, CEC, ANSI and the International Standardization Organization to clarify and refine pilot design, budget, timelines, partners, and goals. Candidates will ultimately 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 2009-2011 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.

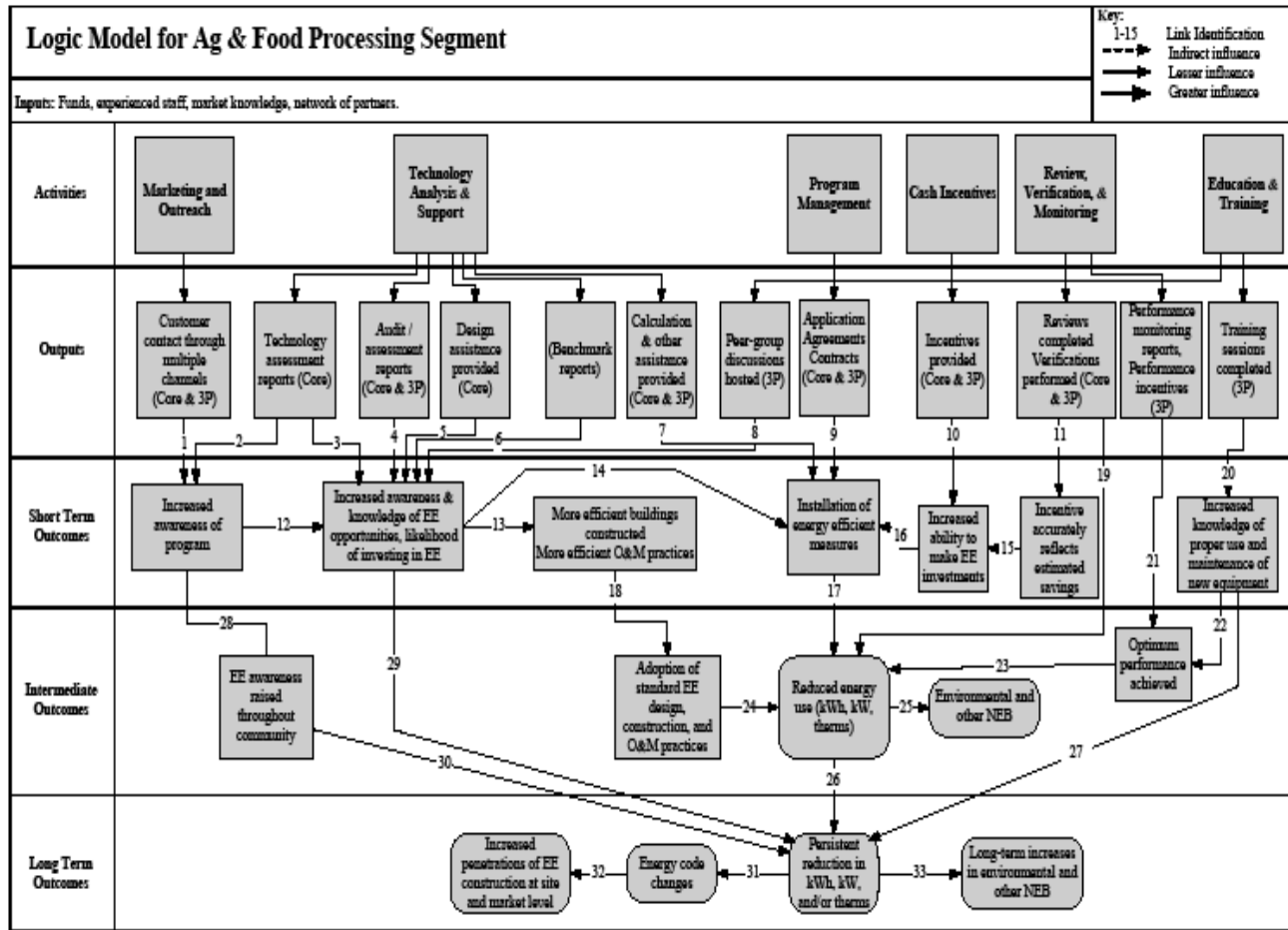
# Agriculture Energy Efficiency Program

## 7. Diagram of Program



# Agriculture Energy Efficiency Program

## 8. Program Logic Model







# 4a

## **Agriculture: Agriculture Energy Audit Program**

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- 1. Program Name:** Agriculture Energy Audit Program  
**Program Type:** Core

- 2. Projected Program Budget Table**

**Table 1** – reference the core program for budget details

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

**Table 2** - reference the core program for gross impact details

- 4. Program Description**

- a) Describe program**

The purpose of the Statewide Agriculture Energy Audit Program is to provide energy audit and analysis services to improving the energy efficiency of industrial facilities in California. The energy audit will recommend measures for energy efficiency, but will also include demand response and distributed generation. The audit will recommend emerging technologies and greenhouse gas reductions.

The Agriculture Energy Audit Program is part of a suite of programs within the Statewide Agriculture Energy Efficiency Program. The Agriculture Energy Audit Program will be designed to lead customers to the incentive and long-term programs, namely:

- Agriculture Deemed Energy Efficiency Program
- Agriculture Calculated Energy Efficiency Program
- Agriculture Continuous Energy Improvement Program

Several types of energy audits will be available from SCE and standardized under the statewide program.

### **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. Target customers will be those under 200 kW in maximum demand.

### **Integrated Energy Audits**

The Integrated Energy Audit (IEA) 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 (IDSMD) portfolio. In addition,

## **Agriculture: Agriculture Energy Audit Program**

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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 SCE engineers or through contracted third-party energy engineering firms. They will provide technical assistance by helping participating customers prepare and submit accurate, technically complete retrofit project applications to the incentive programs. This technical assistance will expedite the process and reduce expensive and time consuming rework later in the process.

### **Retrocommissioning**

The retrocommissioning (RCx) audit 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 document from the initial assessment, identifying 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 programs for completion (for example, Calculated Energy Savings and Deemed Energy Savings).

Features in the audit will include the following:

- Recommendations on no-cost, low-cost measures
- Recommendations on capital intensive measures
- Guidance on participating in other industrial energy efficiency and demand response programs
- Guidance on available incentives from SCE

Energy audits will be fully underwritten by SCE.

### **b) List measures**

Energy audits will include the full range of applicable end-uses and measures for those end-uses, including process changes. The energy audit provides a tool that will lead customers to the measures and incentives offered in the other industrial programs.

- Lighting
- Air conditioning
- Food service
- Refrigeration
- Industrial
- Motors
- Plug loads
- Irrigation
- Process

## **Agriculture: Agriculture Energy Audit Program**

### **c) List of non-incentive customer services**

Activities conducted under the Agriculture Energy Audit Program are non-resource activities with no direct incentives. These activities include: marketing and outreach, savings calculation assistance, retrofit project scoping, technical assistance, and incentive application assistance.

## **5. Program Rationale and Expected Outcome**

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

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

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

### **b) Market Transformation Information**

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

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

### **c) Program Design to Overcome Barrier**

The Agriculture Energy Audit 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 processing or transaction costs that prevent customers from acting upon the audit recommendation. This barrier is reduced through the Savings Calculation Assistance, which facilitates the customer's completion of an incentive program application for their project(s).

### **d) Quantitative Program Targets**

The targets provided herein are best estimates, but nonetheless are forecasts.

**Table 5**

Program Name	Program Target by 2009	Program Target by 2010	Program Target by 2011
No. of audits	25	25	25
Square Footage Benchmarked	864,000	1,192,000	2,667,000

## **Agriculture: Agriculture Energy Audit Program**

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### **e) Advancing Strategic Plan goals and objectives**

The Agriculture Energy Efficiency Program supports all three goals in the Strategic Plan for the Agriculture Sector. General advancement of the goals is presented in the program implementation plan for the Agriculture Energy Efficiency Program. More specific support of the goals in the Agriculture Energy Audit Program is presented here.

*Goal 1:* Establish and maintain a knowledge base sufficient to support development of all available, cost-effective, reliable, and feasible energy efficiency, demand reduction (and renewable) energy resources.

The energy audits support strategies to develop a knowledge base of efficiency solutions, foster workforce education and training, and encourage applications of new technologies.

*Goal 2:* California regulations, financing mechanisms, and incentives programs affecting the management of energy, air and water resources, solid waste, and climate change will be coordinated to mutual advantage.

The energy audits support strategies to attain multi-resource management goals and to coordinate technical assistance, funding and incentive mechanisms.

*Goal 3:* Achieve significant increases in the efficiency of electricity and natural gas use and on-site renewable energy utilization, including setting a specific target for irrigation efficiency.

The energy audits support strategies to make information on efficiency solutions readily available, including irrigation solutions, as well as conduct marketing and outreach to stimulate efficiency actions.

## **6. Program Implementation**

### **a) Statewide IOU coordination**

**i. Program name:** Agriculture Energy Audit Program

#### **ii. Program delivery mechanisms**

The Agriculture Energy Audit Program will be coordinated statewide to unify the implementation of program aspects such as program name, program delivery mechanisms, marketing and outreach plans, and utility program interactions. The Agriculture Energy Audit Program will coordinate with the core Agriculture Energy Efficiency Program to provide mutual support.

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,

## **Agriculture: Agriculture Energy Audit Program**

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statewide focus on program unity and continuous program improvement over the course of the 2009-2011 program cycle will be assured.

**iii. Incentive levels - N/A.** This is a non-resource program.

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

A comprehensive marketing plan for the audit program will be aligned and coordinated with each IOU marketing plan to maximize effectiveness, integrate offerings, and refer customers to relevant DSM programs. The IOUs will look for partnerships with interested public and governmental bodies to promote energy efficiency and environmental green actions in local government partnerships and green communities.

The audit program's evaluation studies conducted for the 2002, 2003, and 2004-2005 program cycles 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 facilities 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.

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

The program will review 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 industrial customers.

**vi. Similar IOU and POU programs**

During the 2009-2011 program cycle, 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

## **Agriculture: Agriculture Energy Audit Program**

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program summits that seek to increase awareness of the Strategic Plan and how programs could/should be designed to help meet its aggressive targets.

### **b) Program delivery and coordination**

#### **i. Emerging Technologies (ET) program**

The audit program management team will stay abreast of and incorporate relevant emerging technologies into audit recommendations. In addition, IOU field engineers, who deliver IEAs, actively contribute to the Emerging Technology process by participating in ET Roundtable/Information meetings and offering new technologies to customers.

#### **ii. Codes & Standards program**

The program will work with 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 recommended 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 (for example, LEDs) are made available. These technologies will begin as R&D, transition to Emerging Technologies, then to Incubation and finally to Mainstream.

#### **iii. WE&T efforts**

Energy audits can support Statewide Workforce Education & Training efforts by including educational information about Certified Energy Manager (CEM) programs and requirements in the audit reports. These materials could suggest to customers that passing the CEM exam will allow them to conduct facility audits at their other facilities. In addition, increased retrocommissioning activities will create opportunities for third-party providers who deliver commissioning services (for example, project scoping, investigations and assessments, air balancing, and HVAC quality maintenance).

#### **iv. Program-specific marketing and outreach efforts**

A broad range of marketing activities will promote audits and elevate customer engagement. Marketing plans will utilize EM&V studies for statewide and local utility programs which specify necessary steps to be taken to enhance program performance. Audits will be promoted through direct communication between customers and utility account executives with support of managers from individual programs. Audits will also be promoted through traditional advertising activities, such as internet, bill inserts, brochures, and trade shows. Marketing activities will be coordinated between IOUs, Demand Response, and the Distributed Generation departments within SCE.

## **Agriculture: Agriculture Energy Audit Program**

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

Integrated energy audits are a key tool for identifying non-energy opportunities for specific customers. The energy audits can identify non-energy benefits associated with recommended measures, such as improved safety, productivity, indoor air quality, comfort and appearance.

### **vi. Non-IOU programs**

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

### **vii. CEC work on PIER**

The program will not be implemented with a direct linkage to PIER.

### **viii. CEC work on C&S**

The program will not be implemented with a direct linkage to codes and standards efforts.

### **ix. Non-utility market initiatives**

Education about federal tax incentives for energy efficiency investments is an example of non-utility information and guidance that will be provided to customers. In addition, the IOUs will participate in national efforts to develop and/or improve benchmarking tools and services that can be used by customers to better facilitate their adoption of sustainable energy management practices.

### **c) Best Practices**

To maximize customer outreach, the Agriculture Energy Audits Program will sponsor training to interested third party personnel to develop a workforce that will implement energy efficiency products and practices. 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, SCE can increase the workforce available to California by increasing its training efforts.

One focus of the Agriculture Energy Audits Program will be to improve the adoption rate of energy efficiency audit recommendations. As such, staff will provide comprehensive support and establish an extended follow-up plan.

Customers who complete a basic online remote audit are targeted for follow up. Based on the customer's online audit, mailings and call scripts will be tailored for each customer and reference specific audit recommendations. Following on-site audits, 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.



## **Agriculture: Agriculture Energy Audit Program**

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The RCx program builds upon the initial feedback from the current RCx program and expands its reach into the industrial segment. Additionally, the audit program will improve existing tools and practices for building retrocommissioning to reduce energy consumption in industrial facilities.

### **d) Innovation**

SCE and the other IOUs will discuss and consider various innovations for customer engagement in energy audits and implementation of energy efficiency, demand response and distributed generation recommendations. Several innovations will be pursued.

### **Integration with RCx**

Energy efficiency measures recommended in large target customer (LTC) reports comprise three categories defined by their relative cost for implementation: no cost, low cost, and capital projects. IEA is a primary source of leads for potential RCx projects which assist customers with implementation of no cost and low cost EE measures. RCx contractors also share their findings with the LTC program and can recommend that customers pursue a full Integrated Energy Audit before embarking on RCx efforts. In the 2009 – 2011 IEA program, cross training and coordination between the two programs will be increased to encourage optimum effectiveness in achieving an integrated offering of NRR (non-residential retrofit) and RCx projects. To ease implementation of energy audit recommendations, SCE 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.

### **Universal Energy Audit Tool**

To implement the integrated audits for smaller than 200 kW customers, a web-based audit (do-it-yourself or auditor-performed) will be developed that includes education on various demand side management solutions. The Universal Energy Audit Tool (UEAT) will enable customers to conduct their own energy audits from the comfort of their home or office by logging onto the website. It will be the primary tool to provide energy conservation, energy efficiency, demand response and solar/self-generation information and analyses to customers with less than 200 kW load. Customers will supply account information, zip code or a telephone number to calibrate the UEAT 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, the audit will extend integration concept to a broader audience.

Additional questions, presented through the latest online graphic interface, will provide robust customization of their end energy use (for example, type of business, type of building, hours of operation, number of inhabitants). Reports will be available to customers through e-mail or U.S. mail delivery, based on the customer's request.

## **Agriculture: Agriculture Energy Audit Program**

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The UEAT will provide a portfolio of audits that are easily accessible to utility 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 customers via web-based tools.

All IOUs are discussing developing UEAT as a joint effort to ensure statewide consistency.

### **New Technologies**

The utilities will utilize new technologies (for example, wireless and PDA-based checklists) to better enable more audits while targeting specific customer needs.

### **Engineering Support**

Third party energy engineering firms will be contracted to assist medium and large customers develop IDSM implementation plans. These customers will benefit from an enterprise-wide plan for staged implementation of IDSM recommendations. Specialized engineering firms will supplement the customer's site and business specific knowledge with IDSM specific know-how. The consultant and client will together 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 IOU's have identified integrated Demand Side Management (IDSM) as an important priority. As a result they have proposed the establishment of a Statewide Integration Task Force (Task Force). The program plans to work closely with the Task Force to identify comprehensive integration approaches that feed into the overall statewide strategy and to implement best practices as rapidly as practical.

The Integrated Energy Audit (IEA) is a core strategy of an overall integrated customer approach. It features a technical and comprehensive survey of energy utilization throughout the customer facility – it provides a system view of equipment and processes that consume energy. In this 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 Energy Audit includes a site survey, customer input regarding their needs and the guidance provided by the Strategic Plan to produce a final energy audit report. The report's recommendations are designed to achieve reduced energy

## **Agriculture: Agriculture Energy Audit Program**

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, DG and third party programs to help achieve long-term cost-effective energy management. 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. Audit process, final report and follow up activities are designated to integrate services and minimize disruption of customer core business activities while maximizing effects of provided recommendations. During the integrated audit process, an auditor analyzes and describes multiple energy efficiency, time-of-use management, demand response, self-generation measures and recommendations. Then an auditor will recommend a course of action to craft an integrated solution that is tailored to customer specific business needs and requirements.

The following examples illustrate how the integrated process will be implemented utilizing available programs and services:

- After an Integrated Energy Audit is completed, no-cost/low-cost energy conservation measures may be transferred to the retrocommissioning 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 response 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 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 the Technology Incentive program.
- Distributed generation opportunities and benefits will be presented to the customer with particular references to respective incentive programs.

### **Supporting Market Sectors**

The IEA will support the Industrial and Agriculture sectors by developing sector experts among the engineering firms that conduct LTC and add artificial intelligence into the UEAT to translate sector marketing and technical expertise. In Large Integrated Audits, Target Market Project Managers (TMPM s) within the sectors will be an integral part of a team. The team will consist of the TMPM, the assigned PG&E 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 Response and Self Generation.

## **Agriculture: Agriculture Energy Audit Program**

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SCE 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 SCE will reduce inefficient and annoying multiple visits to the customer. 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.

Both LTC and mass market audits will provide leads to appropriate third party program vendors based on audit report recommendations. The Integration Desk will provide this service for the LTC and the UEAT will provide potential opportunities via automated selection based on survey input.

### **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 refer customers to relevant DSM programs. SCE will also 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.

The IEA program will serve as the foundation for integrated offerings by providing customers with comprehensive information and recommendations around energy efficiency, distributed-generation, demand response, green programs, such as ClimateSmart program, and other relevant programs. Customers will be referred to eligible SCE 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 SCE programs. Through additional market segmentation and feedback from customers, SCE will further adjust approaches based on the varied needs of targeted customers.

### **g) Pilots** N/A

### **h) EM&V**

Refer to the overarching PIP section

## **7. Diagram of Program**

Please see the diagram presented earlier for the core program.

## **8. Program Logic Model**

Please see the logic model presented earlier for the core program.

4b

## **Agriculture: Agriculture Calculated Energy Efficiency Program**

**1. Program Name:** Agriculture Calculated Energy Efficiency Program  
**Program Type:** Sub-Program

**2. Projected Program Budget Table**

**Table 1** – reference the core program for budget details

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

**Table 2** - reference the core program for gross impact details

**4. Program Description**

**a) Describe program**

The purpose of the Statewide Agriculture Calculated Energy Efficiency Program is to provide services to improve the energy efficiency of agriculture facilities in California, including financial incentives based on calculated energy savings. The energy savings are calculated for measures installed as recommended by comprehensive technical and design assistance for customized projects. Integrated projects are encouraged to combine energy efficiency and demand response. Eligible projects include new construction, retrofit, and retrocommissioning.

The Calculated Energy Efficiency Program is part of a suite of programs within the Statewide Agriculture Energy Efficiency Program.

The Calculated Energy Efficiency Program is utilized for projects where: a rebate is not available through the statewide Deemed Energy Savings Program, customized calculations provide the most accurate savings estimates, or interactive effects between measures are best captured through whole building or whole system modeling.

Because it presents a calculation method that can consider system and resource interactions, the program will become the preferred approach for supporting the integrated, whole system, and multi-resource management strategies of the Strategic Plan.

Key features in the process include:

- Energy audits of facilities and processes which recommend efficient design alternatives and detailing energy savings and CO<sub>2</sub> reductions
- Calculations of energy savings for exceeding Title 24 code or industry standard practice baselines
- Technical assistance from SCE in energy audits and calculated savings
- Submission of project proposal for SCE review and approval
- Pre-inspection by SCE for approved retrofit projects
- Post-inspections on approved and completed projects to verify performance
- Payment of incentives from SCE.

## **Agriculture: Agriculture Calculated Energy Efficiency Program**

Energy audits may be completed by customers directly or project sponsors. Sponsors may include contractors, design teams, vendors, and energy service companies. The completed audit may then be submitted for review and approval.

For the energy audit feature, statewide consistent calculators are publicly available. 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 at [www.energydesignresources.com](http://www.energydesignresources.com).

Retrocommissioning (RCx) is also eligible in the program for 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 operations and maintenance, which deal with routine maintenance, retrocommissioning 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 can 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.

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

### **b) List measures**

The broad range of measures eligible for incentives is summarized in the table below along with incentive levels. For detailed measure incentives, *see* Section 6.a.iii below.

## **Agriculture: Agriculture Calculated Energy Efficiency Program**

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

Financial incentives are calculated in several steps:

- Calculations of estimated energy savings above Title 24 or from a baseline energy use
- Calculation of incentives per unit of energy savings times the estimate of energy savings by measure
- Estimate of project costs for retrofit projects or incremental cost for added load projects
- For retrofit projects, incentives are capped at 50% of the total project costs, or the calculated incentive, whichever is less.
- For added load projects, incentives are capped at 50% of the incremental project cost, or the calculated incentive, whichever is less.

### **c) List non-incentive customer services**

The Agriculture Calculated Incentives 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**

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

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

### **b) Market Transformation Information**

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

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



## **Agriculture: Agriculture Calculated Energy Efficiency Program**

### **c) Program Design to Overcome Barriers**

The Calculated Energy Efficiency Program includes numerous features designed to overcome these barriers, as identified and discussed below.

#### **Integrated Demand Side Management Approach**

The program offers California's agriculture 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 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**

The Continuous Energy Improvement (CEI) program compliments the Calculated Energy Efficiency Program by helping customers 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, through industry organizations, 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

## **Agriculture: Agriculture Calculated Energy Efficiency Program**

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**

The targets provided herein are best estimates, but nonetheless are forecasts.

**Table 5**

Program Name	Program Target by 2009	Program Target by 2010	Program Target by 2011
Projects	75	90	105

### **e) Advancing Strategic Plan Goals and Objectives**

The Agriculture Energy Efficiency Program supports all three goals in the Strategic Plan for the Agriculture Sector. General advancement of the goals is presented in the program implementation plan for the Agriculture Energy Efficiency Program. More specific support of the goals in the Agriculture Calculated Energy Efficiency Program is presented here.

*Goal 1:* Establish and maintain a knowledge base sufficient to support development of all available, cost-effective, reliable, and feasible energy efficiency, demand reduction (and renewable) energy resources.

The Agriculture Calculated Energy Efficiency Program supports strategies to develop a knowledge base of efficiency solutions, foster workforce education and training, and encourage applications of new technologies.

## **Agriculture: Agriculture Calculated Energy Efficiency Program**

*Goal 2:* California regulations, financing mechanisms, and incentives programs affecting the management of energy, air and water resources, solid waste, and climate change will be coordinated to mutual advantage.

The program supports strategies to attain multi-resource management goals and to coordinate technical assistance, funding and incentive mechanisms.

*Goal 3:* Achieve significant increases in the efficiency of electricity and natural gas use and on-site renewable energy utilization, including setting a specific target for irrigation efficiency.

The program supports strategies to make information on efficiency solutions readily available as well as conduct marketing and outreach to stimulate efficiency actions.

### **6. Program Implementation**

#### **a) Statewide IOU coordination**

**i. Program name:** Agriculture Calculated Energy Efficiency Program.

#### **ii. Program delivery mechanisms**

Agriculture Calculated Energy Efficiency Program 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 utility program interactions. The Agriculture Calculated Energy Efficiency Program will coordinate with the core Agriculture Energy Efficiency Program to provide mutual support.

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 enabled.

#### **iii. Incentive levels**

A broad range of measures is eligible for the Calculated Energy Savings Program, as seen in the following table. The incentives for these measures are standard across the utilities participating in the statewide Agriculture Calculated Energy Efficiency Program.

## Agriculture: Agriculture Calculated Energy Efficiency Program

#	MeasureName	Per kWh Incentive	Per kW Incentive
1	Air Compressor System Replacement / Upgrade	\$0.09	\$100
2	ASD - HVAC Compressor Motors	\$0.15	\$100
3	ASD - Others	\$0.09	\$100
4	Building Shell Improvements	\$0.09	\$100
5	Carbon Monoxide Sensors	\$0.09	\$100
6	Controls - Non-Lighting	\$0.09	\$100
7	Equipment - Other not specified	\$0.09	\$100
8	Extruder System Replacement / Upgrade	\$0.09	\$100
9	Fan and Pump System Upgrades	\$0.09	\$100
10	Furnace / Energy Efficient	\$0.09	\$100
11	Heat Recovery Equipment (Process)	\$0.09	\$100
12	Heat Recovery Equipment (Space Conditioning)	\$0.15	\$100
13	HVAC - Chiller	\$0.15	\$100
14	HVAC - Complete Subsystem Replacement / Upgrade	\$0.15	\$100
15	HVAC - Heat Pump	\$0.15	\$100
16	HVAC - Other	\$0.09	\$100
17	HVAC - Package Unit	\$0.15	\$100
18	Injection Molding Machine Replacement / Upgrade	\$0.09	\$100
19	Insulation	\$0.09	\$100
20	Lighting	\$0.05	\$100
21	Lighting Controls	\$0.05	\$100
22	Motors Project (HVAC Compressor)	\$0.15	\$100
23	Motors Project (Non-HVAC Compressor)	\$0.09	\$100
24	Precooling Equipment	\$0.15	\$100
25	Process - Chiller	\$0.15	\$100
26	Process - Complete Subsystem Replacement / Upgrade	\$0.15	\$100
27	Professional Wet Cleaning	\$0.09	\$100
28	Pumping System Replacement / Upgrade	\$0.09	\$100
29	Rapid Closing Door	\$0.09	\$100
30	Refrigeration - Complete Subsystem Replacement / Upgrade	\$0.15	\$100
31	Refrigeration - Other	\$0.09	\$100
32	Series to Parallel Street Lighting	\$0.09	\$100
33	Special Window Glazing & Glazing Treatments	\$0.09	\$100
34	Vacuum Systems	\$0.09	\$100
35	Window Replacement	\$0.09	\$100

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

The Calculated Energy Efficiency 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. The Program will also provide direct customer contact by account executives, demand response program outreach, phone and e-mail support.

## **Agriculture: Agriculture Calculated Energy Efficiency Program**

Marketing campaigns will provide a wide range of pro-active solutions targeted by segmentation research. In addition, marketing efforts will be bundled in a menu of demand response, energy efficiency and conservation programs. This menu will provide customers a full array of EE and DR options. By providing packaged energy management solutions for each industry segment, utilities will better communicate with and serve customers.

Marketing efforts will incorporate a variety of marketing tactics/activities to promote the program. Education, awareness and outreach efforts will use mass media communication and targeted communication channels. This will 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. The strategy will also include 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, program management representatives, and field engineers will be available to provide additional expertise;
- Participation and membership in one or two key trade associations affiliated with each high priority sub-segment within the agriculture market sector;
- Attendance at the key trade shows for each high priority sub-segment within the agriculture 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. IOU program interactions with CEC, ARB, Air Quality Management Districts, local government programs, other government programs as applicable**

The Agriculture Calculated Energy Efficiency Program will scan the programs offered by CEC, ARB, Air Quality Management Districts, and other government

## **Agriculture: Agriculture Calculated Energy Efficiency Program**

agencies to capitalize on opportunities to share program information and marketing collateral with commercial customers. In the past, each government agency and utility has operated natural resource and energy programs independently, missing opportunities to serve customers who manage more than one resource type.

Regarding 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 and GHG emissions.

### **vi. Similar IOU and POU programs**

The IOUs will be delivering many third-party programs that utilize the Calculated Energy Savings Program infrastructure. This will ensure a consistent delivery of measure incentives to ensure that programs do not cannibalize each other and detract from achieving cost-effective energy savings.

### **b) Program Delivery and Coordination**

#### **i. Emerging Technologies (ET) program**

California's long-term energy efficiency vision can be attained through 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 energy efficiency benefits of cutting edge technologies. In recognition of the importance of emerging technologies, the Calculated sub-program is poised to adopt the efficiency potential of new technologies. In addition, portfolio staff actively work to incorporate promising emerging technologies from IOU or PIER-funded projects.

#### **ii. Codes & Standards program**

The Calculated sub-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., LEDs) are made available. These technologies will begin as R&D, transition to Emerging Technologies, then to Incubation and finally to Mainstream.

## **Agriculture: Agriculture Calculated Energy Efficiency Program**

### **iii. WE&T efforts**

Workforce Education & Training 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 Agriculture 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. These education and training offerings take place through utilities energy centers and technology centers.

### **iv. Program-specific marketing and outreach efforts**

Marketing and outreach initiatives will include:

- Participation and membership in one or two key trade associations affiliated with each high priority sub-segment within the agriculture sector;
- Attendance at key trade shows within the agriculture 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.

### **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 across the various energy efficiency program offerings, with complementary options available through other entities (for example, water agencies) will identify the opportunities to be recommended to the specific commercial customer.

The Water Efficiency Pilot Program provides 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 Program.

Concerning water conservation, utility program managers will contact the local water districts to share marketing collateral, attend trade shows, and mutually release notices for programs with interactive water and energy effects. IOUs will also offer Calculated sub-program incentives to ARB and Air Quality

## **Agriculture: Agriculture Calculated Energy Efficiency Program**

Management District customers. These incentives include energy efficient equipment that may also reduce both air and GHG emissions.

In addition, the program will offer customers educational information about the non-energy benefits associated with energy efficiency measures, such as improved safety, indoor air quality, productivity, comfort, and appearance.

### **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 C&S**

Planned enhancements to Title 24 will be reflected in incentive levels and in eligible measures and services.

### **ix. Non-utility market initiatives**

The program will support and educate customers. It will also enforce initiatives (for example, AB32, renewables, ANSI certification, facility benchmarking, Continuous Energy Improvement, and California Green Building Initiative). The IOUs will remain engaged in these efforts and work to influence the development of increasingly higher standards.

### **c) Best Practices**

The RCx program builds upon the initial feedback from the current RCx program and expands its reach into the Agriculture segment.

### **d) Innovation**

Innovative aspects of the program include improving 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 emphasizes peak demand reduction, addresses current economic downturn and better motivates customers to participate in energy efficiency incentive programs. During the 2009-2011 program cycle, new incentive structures will be



## **Agriculture: Agriculture Calculated Energy Efficiency Program**

periodically evaluated and necessary changes may be made in order to enhance program benefits and performance.

IOUs will continue working collaboratively to modify program policies and procedures to address ongoing changes in customer expectations, market conditions and program flexibility. These changes will improve program understanding and participation, promote measures eligibility, increase customer economical benefits, and reduce policy restrictions identified as barriers to participation. IOUs are implementing such processes based on market studies and policy discussions conducted on the subject. Among modifications that would be potentially discussed and implemented are incentive caps and redesign of early retirement measures and equipment in conformance with Commission guidelines.

IOUs are planning to elaborate and utilize positive experience obtained using the SBD Simplified tool to include energy efficiency retrofit projects. Such tools substantially reduce application processing and review time and minimize number of hand-offs without sacrificing accuracy of energy saving calculations.

IOUs will use an integrated approach to addressing DSM opportunities (for example, merging energy efficiency and demand response analysis, and converting recommendations to Retrocommissioning and/or Calculated programs). In addition, streamlining programs through processing and reviewing energy efficiency and demand response 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.

IOUs will consolidate various calculating software such as SPC Software, Engage and other measure specific calculating tools to standardize calculating methodologies. This will ensure that calculations will be more uniformed and consistent amongst all stakeholders. This will not limit the use of nationally recognized standard DOE toolsets for certain measures.

IOUs are planning to continue and expand their core RCx program in multiple target markets.

### **e) Integrated/Coordinated Demand Side Management**

The IOU's have identified integrated Demand Side Management (IDSMD) as an important priority. As a result they have proposed the establishment of a Statewide Integration Task Force (Task Force). The program plans to work closely with the Task Force to identify comprehensive integration approaches that feed into the overall statewide strategy and to implement best practices as rapidly as practical.

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

California's agriculture sector faces a multitude of environmental and regulatory challenges that affect their survival and competitiveness. New regulations aimed at improving air quality, water quality and reducing toxic environmental pollutants are

## **Agriculture: Agriculture Calculated Energy Efficiency Program**

proving to be expensive and disruptive to conventional businesses, and complying with these regulations may actually cause increased energy use.

To help deal with these challenges, the program will coordinate with the regulating agencies and their programs to support common 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 targets.

Utilities will partner with water agencies to offer joint energy and water conservation incentives to support projects that reduce both energy and water consumption. This partnering will reduce administrative costs and increase the program's societal benefits and impacts. The utilities currently participate in the Commission water/energy pilots with several water agencies. The results may spur more partnerships between the utilities.

The Program will integrate applicable topics such as GHG reduction and water conservation into targeted customer workshops, marketing efforts, and communications to build on efforts from the previous program cycle.

### **g) Pilots**

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) with strategies to help customers manage and reduce their energy demand during peak afternoon periods, especially during the summer season. By combining these two approaches, customers manages energy costs and enables their facilities to respond to periods of high energy use and costs. While the primary program focus is energy efficiency, the program emphasizes integrated solutions in proper sequence (first energy efficiency, then demand response) 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 agriculture: 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.

## **Agriculture: Agriculture Calculated Energy Efficiency Program**

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### **h) EM&V**

Refer to the overarching PIP section

## **Agriculture: Agriculture Calculated Energy Efficiency Program**

### **7. Diagram of Program**

Please see the diagram presented earlier for the core program.

### **8. Program Logic Model**

Please see the logic model presented earlier for the core program.

4c

## **Agriculture: Agriculture Deemed Energy Efficiency Program**

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**1. Program Name:** Agriculture Deemed Energy Efficiency Program  
**Program Type:** Core

**2. Projected Program Budget Table**

**Table 1** – reference the core program for budget details

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

**Table 2** - reference the core program for gross impact details

**4. Program Description**

**a) Describe program**

The purpose of the Statewide Agriculture Deemed Energy Efficiency Program is to provide services to improve the energy efficiency of agriculture facilities in California, including financial incentives based on deemed energy savings. The energy savings are deemed for installed measures. Integrated projects are encouraged to combine energy efficiency and demand response.

The Agriculture Deemed Energy Efficiency Program is part of a suite of programs within the Statewide Agriculture Energy Efficiency Program.

Key features of the program include:

- Information and technical assistance from SCE on energy efficiency measures and savings potential
- Application via mail, fax, internet and phone by customer for eligible measures
- Reservation of financial incentives by SCE, if requested by customer
- Pre- and post-installation inspection by SCE, as determined by SCE based on prior participation and other factors
- Payment of incentives from SCE.

**b) List measures**

Itemized retrofit measures have prescribed energy savings and incentive amounts.

These measures are categorized under the following end uses:

- Lighting
- Air conditioning
- Food service
- Refrigeration
- Industrial
- Motors
- Plug loads

## Agriculture: Agriculture Deemed Energy Efficiency Program

### 5. Program Rationale and Expected Outcome

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

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

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

#### b) Market Transformation Information

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

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

#### c) Program Design to Overcome Barriers

The Agriculture Deemed Energy Efficiency Program is designed to overcome several barriers. The 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 inhibit many agriculture 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.

#### d) Quantitative Program Targets

The targets provided herein are best estimates, but nonetheless are forecasts.

**Table 5**

Program Name	Program Target by 2009	Program Target by 2010	Program Target by 2011
Projects	115	140	150

## **Agriculture: Agriculture Deemed Energy Efficiency Program**

### **e) Advancing Strategic Plan Goals and Objectives**

The Agriculture Energy Efficiency Program supports all three goals in the Strategic Plan for the Agriculture Sector. General advancement of the goals is presented in the program implementation plan for the Agriculture Energy Efficiency Program. More specific support of the goals in the Agriculture Deemed Energy Efficiency Program is presented here.

*Goal 1:* Establish and maintain a knowledge base sufficient to support development of all available, cost-effective, reliable, and feasible energy efficiency, demand reduction (and renewable) energy resources.

The Agriculture Deemed Energy Efficiency Program supports strategies to develop a knowledge base of efficiency solutions, foster workforce education and training, and encourage applications of new technologies.

*Goal 2:* California regulations, financing mechanisms, and incentives programs affecting the management of energy, air and water resources, solid waste, and climate change will be coordinated to mutual advantage.

The program supports strategies to attain multi-resource management goals and to coordinate technical assistance, funding and incentive mechanisms.

*Goal 3:* Achieve significant increases in the efficiency of electricity and natural gas use and on-site renewable energy utilization, including setting a specific target for irrigation efficiency.

The program supports strategies to make information on efficiency solutions readily available as well as conduct marketing and outreach to stimulate efficiency actions.

## **6. Program Implementation**

### **a) Statewide IOU coordination**

**i. Program name:** Agriculture Deemed Energy Efficiency Program

#### **ii. Program delivery mechanisms**

Agriculture Deemed Energy Efficiency Program 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 utility program interactions. The Agriculture Deemed Energy Efficiency Program will coordinate with the core Agriculture Energy Efficiency Program to provide mutual support.

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,



## **Agriculture: Agriculture Deemed Energy Efficiency Program**

statewide focus on program unity and continuous program improvement over the course of the three year implementation cycle will be enabled.

### **iii. Incentive levels**

Incentive levels are based on measure type and will be set at uniform amounts across the state.

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

The Agriculture Deemed Energy Efficiency Program will be marketed through IOUs account executives, as well as through educational, outreach and other marketing activities. Marketing activities will target agriculture customers, ESCOs, trade associations, local business groups and government entities to generate interest and program participation. In addition, direct customer contact by account executives, phone and e-mail support will be provided.

Marketing efforts will incorporate a variety of marketing tactics/activities to promote the 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 energy efficiency 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, program management representatives, and field engineers will be available to provide additional expertise;
- Participation and membership in key trade associations affiliated with each high priority sub-segment within the agriculture market sector;
- Attendance at the key trade shows for each high priority sub-segment within the agriculture 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.

## **Agriculture: Agriculture Deemed Energy Efficiency Program**

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

The Agriculture Deemed Energy Efficiency Program 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 commercial 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.

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 program incentives for energy efficient equipment that may also reduce air and GHG emissions.

### **vi. Similar IOU and POU programs**

The IOUs will be delivering many third-party programs that are permitted to use the Agriculture Deemed Energy Savings Program infrastructure. This will ensure a consistent delivery of measure incentives to ensure that programs do not cannibalize each other and detract from achieving cost-effective energy savings.

## **b) Program Delivery and Coordination**

### **i. Emerging Technologies (ET) program**

The long-term energy efficiency vision of California may 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 from IOU or PIER-funded projects.

### **ii. Codes & 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

## **Agriculture: Agriculture Deemed Energy Efficiency Program**

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 ensure the latest cost effective technologies/services (e.g., LEDs) are available. These technologies will begin as R&D, transition to Emerging Technologies, then to Incubation and finally to Mainstream.

### **iii. WE&T efforts**

Workforce Education & Training 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 near term, WE&T efforts will focus 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 training to lay the groundwork for certification level trainings. These education and training offerings take place through utilities energy centers and technology centers.

### **iv. Program-specific marketing and outreach efforts**

Marketing and outreach initiatives will include:

- 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 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 are expected to be emphasized as a delivery channel.
- 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 (for example, energy, water, materials management, recyclables, and corporate citizenry).
- 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.
- Development of case studies, web pages, and marketing material that provide an overview of the utilities’ energy efficiency programs.

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

The program will offer customers educational information about the non-energy benefits associated with energy efficiency measures, such as improved safety, indoor air quality, productivity, comfort, and appearance.

### **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 C&S**

Planned Title 24 enhancements will be reflected in incentive levels and in eligible measures and services.

### **ix. Non-utility market initiatives**

The program will educate and support 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**

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 among 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.
- Industry participation increases program volume and speeds market transformation.

Best practices in program implementation:

## **Agriculture: Agriculture Deemed Energy Efficiency Program**

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- 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 the program. Make certain outreach efforts make the program visible to customers and the market catering to 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 program messaging.

### **d) Innovation**

Innovative aspects of the program include improving major program performance indicators (for example, increasing the accuracy of energy saving calculations, higher realization rates, overcoming energy efficiency barriers, reducing application processing times and administrative costs, and integrated energy management).

For the new program cycle California IOUs have implemented a new incentive structure that emphasizes peak demand reduction, addresses current economic downturn and better motivates customers to participate in energy efficiency incentive programs. During the 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. These modifications 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 identified as barriers to participation. IOUs are implementing such processes based on market studies conducted on the subject and after discussion of the policy change. Among potential modifications are incentive caps, and redesign of early retirement measures and equipment.

Where possible, IOUs will use an integrated approach to addressing DSM opportunities. These approaches include merging energy efficiency and demand response analysis and converting recommendations to Retrocommissioning and/or Calculated program projects. In addition, streamlining programs through processing and reviewing energy efficiency and demand response measures in a single application, providing analytical information about applicable distributed generation solutions will maximize customer adoption rates for most cost-effective energy management opportunities.

### **e) Integrated/Coordinated Demand Side Management**

The program will integrate the portfolio of utility offerings to include energy efficiency, demand response and distributed generation and other resources, such as air and water as they connect to energy. This supports not only cost effectiveness of

## **Agriculture: Agriculture Deemed Energy Efficiency Program**

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the portfolio and the CA Loading order, but also customer requirements. It also advances significantly the Strategic Plan's goals. On a broader scale, IDSM also includes the integration of third party programs and Local Government Partnerships (LGP) delivery channel with the statewide agriculture program.

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

California's agriculture sector faces a multitude of environmental and regulatory challenges that threaten its 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. Both these are impacting energy use and compliance.

To help deal with these challenges, the agriculture program will coordinate with the regulating agencies and their programs 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 to educate customers on impending regulatory requirements for their business operations, and the most efficient solution options for their compliance. Future workshops may look at wastewater treatment options, steam system upgrades, and energy efficiency to meet AB32 targets.

Utilities will pursue opportunities to partner with water agencies to offer joint energy and water conservation incentives to support projects that would reduce both resources. Partnering with other utilities will help reduce administrative cost and has a greater impact on societal benefits. Currently the utilities are participating in the Commission water/energy pilots with several water agencies. The results from this pilot may spur more partnerships among the utilities.

The Program will integrate applicable topics (for example, GHG reduction and water conservation) into targeted customer workshops, and marketing communications, based on work done in the earlier program cycle.

### **g) Pilots** N/A

### **h) EM&V**

Refer to the overarching PIP section

## **7. Diagram of Program**

Please see the diagram presented earlier for the core program.

## **8. Program Logic Model**

Please see the logic model presented earlier for the core program.

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## **Agriculture: Agriculture Continuous Energy Improvement Program**

**1. Program Name:** Agriculture Continuous Energy Improvement Program  
**Program Type:** Core

**2. Projected Program Budget Table**

**Table 1** – reference the overarching program for budget details

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

**Table 2** - reference the overarching program for gross impact details

**4. Program Description**

**a) Describe program**

The purpose of the Statewide Agriculture Continuous Energy Improvement (CEI) Program is to help agriculture customers engage in long-term, strategic energy planning. Target agriculture customers will be identified and approached selectively.

The program features:

- Management assessment of energy priorities
- Integrated energy audits with recommendations on energy efficiency, demand response, and self-generation
- Benchmarking of energy usage and other resources
- Development of a strategic plan with actions for implementation
- Implementation including incentives from SCE
- Evaluation of performance leading to modifications for continuous improvement

The CEI Program is part of a suite of programs within the Statewide Agriculture Energy Efficiency Program. The CEI will be designed to complement statewide agriculture energy audit and incentive programs, namely:

- Agriculture Energy Efficiency Program
- Agriculture Deemed Energy Efficiency Program
- Agriculture Calculated Energy Efficiency Program
- Pump Testing Services Program

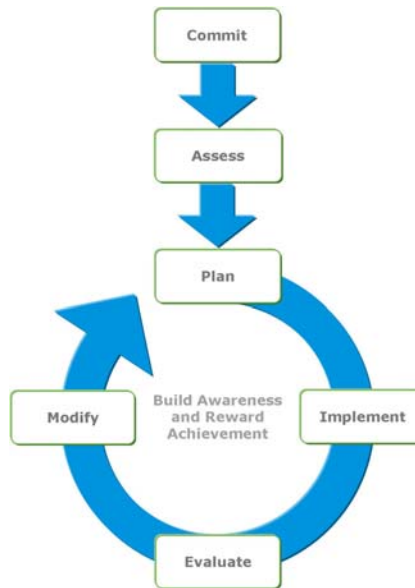
The audit and planning services of SCE will be provided at no charge to the participating customer. Costs for capital investments by the customer will be shared by SCE to the extent they are tied to measures installed under the agriculture programs.

The program seeks to help transform energy markets and reduce energy intensity. The program represents a comprehensive approach that addresses both technical and management opportunities. Background information on continuous improvement and details on implementation are provided below.



## Agriculture: Agriculture Continuous Energy Improvement Program

A CEI approach applies the six 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 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-specific.

### **CEI Commitment**

CEI begins with a high level management commitment by the customer to improving energy performance, combined with other environmental and regulatory commitments being developed by large energy users 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. The message also paves the way for establishing the company resources required to implement the steps of CEI. These resources can include capital, personnel, i.e., 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

## **Agriculture: Agriculture Continuous Energy Improvement Program**

customers through a CEI participation agreement, which outlines the utility CEI services being offered as well as minimum customer expectations.

### **CEI Assessment**

After the CEI Commitment, a comprehensive assessment identifies not only technical opportunities, but also systemic energy management practices and cultural shifts. This can improve overall facility management practices and sustain continuous improvements towards long-term company targets.

There are many tools and resources, both 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 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**

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, 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](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. The assessment 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

### **Integrated Energy Audits**

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 Integrated Energy Audits 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

## **Agriculture: Agriculture Continuous Energy Improvement Program**

benchmarking useful to prioritize efficiency projects, track progress toward energy or green house gas 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 agriculture or agriculture facilities, however, 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 and CO2 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 CO2/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 SME 2000-2008
- DOE sponsored ISO Plant Certification
- LBNL Superior Energy Performance

In implementation, the statewide agriculture program teams will continue to partner with energy industry peers, industry associations and DOE/Commission 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 Strategic Plan and in the PIP Integration Section, strategic planning can also include complementary non-energy considerations as well, such as greenhouse gas reductions, water

## **Agriculture: Agriculture Continuous Energy Improvement Program**

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 its overall energy intensity by 3% over the 2009-2011 program cycle”), 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 assistance with planning for 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 retrocommissioning/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**

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.

## **Agriculture: Agriculture Continuous Energy Improvement Program**

CEI shall be available to all Non-Residential customers meeting certain eligibility criteria to justify the cost of the offering. Criteria will include but not be limited to customer energy use, complexity, number of facilities, energy decision making structure, environmental commitment and 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, and Power Point slides will be produced and distributed during sales calls, public events or trade shows.

### **b) List measures**

Integrated energy audits under the CEI program will include the full range of applicable end-uses and measures for those end-uses. This will include process changes. The energy audit provides a tool that will lead customers to the measures and incentives offered in the other agriculture programs.

### **c) List non-incentive customer services**

Activities conducted under the CEI Program are non-resource activities with no associated incentives. These activities include: marketing and outreach, savings calculation assistance, retrofit project scoping, technical assistance, and incentive application assistance.

## **5. Program Rationale and Expected Outcome**

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

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

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

### **b) Market Transformation Information**

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

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

### **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.

## Agriculture: Agriculture Continuous Energy Improvement Program

- 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**

The targets provided herein are best estimates, but nonetheless are forecasts.

**Table 5**

Program Name	Program Target by 2009	Program Target by 2010	Program Target by 2011
Square Footage Benchmarked	864,000	1,192,000	2,667,000

### **e) Advancing Strategic Plan Goals and Objectives**

The Agriculture Energy Efficiency Program supports all three goals in the Strategic Plan for the Agriculture Sector. General advancement of the goals is presented in the program implementation plan for the Agriculture Energy Efficiency Program. More specific support of the goals in the Agriculture Deemed Energy Efficiency Program is presented here.

*Goal 1:* Establish and maintain a knowledge base sufficient to support development of all available, cost-effective, reliable, and feasible energy efficiency, demand reduction (and renewable) energy resources.

The Agriculture CEI Program supports strategies to develop a knowledge base of efficiency solutions, foster workforce education and training, and encourage applications of new technologies.

*Goal 2:* California regulations, financing mechanisms, and incentives programs affecting the management of energy, air and water resources, solid waste, and climate change will be coordinated to mutual advantage.

The program supports strategies to attain multi-resource management goals and to coordinate technical assistance, funding and incentive mechanisms.

*Goal 3:* Achieve significant increases in the efficiency of electricity and natural gas use and on-site renewable energy utilization, including setting a specific target for irrigation efficiency.

The program supports strategies to make information on efficiency solutions readily available as well as conduct marketing and outreach to stimulate efficiency actions.

## **Agriculture: Agriculture Continuous Energy Improvement Program**

### **6. Program Implementation**

#### **a) Statewide IOU coordination**

**i. Program name:** Agriculture Comprehensive Energy Improvement Program

**ii. Program delivery mechanisms**

The Agriculture CEI Program will be coordinated on a statewide level to unify the implementation of program aspects such as program name, program delivery mechanisms, marketing and outreach plans, and utility program interactions. The Agriculture CEI Program will coordinate with the core Agriculture Energy Efficiency Program to provide mutual support.

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 - N/A.** This is a non-resource program.

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

As with other information and education 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.

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

The program 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 customers.

**vi. Similar IOU and POU programs**

Over the next three years, the IOUs will seek to increase their interactions with the POUs to promote the CEI concept throughout the state. This may involve the creation of periodic California energy efficiency program summits that seek to increase awareness of the STRATEGIC PLAN and how programs could/should be designed to help meet its aggressive targets.

#### **b) Program Delivery and Coordination**

**i. Emerging Technologies (ET) Program**

The audit program management team will stay abreast of and incorporate relevant emerging technologies into audit recommendations. In addition, IOU field

## **Agriculture: Agriculture Continuous Energy Improvement Program**

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 & Standards Program**

The program will work with 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 recommended 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., LEDs) made available as these technologies transition from 1) R&D to 2) Emerging technologies to 3) Incubation to 4) Mainstream.

### **iii. WE&T efforts**

CEI can support Statewide Workforce Education & Training 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 retrocommissioning 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**

A broad range of marketing activities will be used to promote audits and elevate customer engagement. The Agriculture CEI program 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, Demand Response and Distributed Generation departments within SCE.

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

Integrated energy audits are a key tool for identifying non-energy opportunities for specific customers. The energy audits can identify non-energy benefits associated with recommended measures, such as improved safety, productivity, indoor air quality, comfort and appearance.

### **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



## **Agriculture: Agriculture Continuous Energy Improvement Program**

for regulating the various aspects and operations of customer facilities participating in the programs.

### **vii. CEC work on PIER**

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.

### **viii. CEC work on C&S**

The program will not be implemented with a direct linkage to codes and standards efforts

### **ix. Non-utility market initiatives**

Education about federal tax incentives for energy efficiency investments is an example of non-utility information and guidance that CEI will provide customers. In addition, the IOUs will participate in national efforts to develop and/or improve benchmarking tools and services that can be used by customers to better facilitate their adoption of sustainable energy management practices.

### **c) Best Practices**

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.

### **d) Innovation**

The program seeks to help transform energy markets and reduce energy intensity. The program represents a comprehensive approach that addresses both technical and management opportunities.

### **e) Integrated/Coordinated Demand Side Management**

The IOU's have identified integrated Demand Side Management (IDSMD) as an important priority. As a result they have proposed the establishment of a Statewide Integration Task Force (Task Force). The program plans to work closely with the Task Force to identify comprehensive integration approaches that feed into the overall statewide strategy and to implement best practices as rapidly as practical.

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

CEI implementation shall include information on non-IOU Programs to expose customers to available funding, such as from air or water agencies to support efforts. IOU CEI sub-program managers will partner with 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

## **Agriculture: Agriculture Continuous Energy Improvement Program**

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 the customer about the mutual benefit of combining complementary resource programs.

To promote the CEI, IOUs will seek out customers interested in complementary resource programs such as provided by water and air quality agencies. Concerning water conservation, utility program managers will partner with the local water districts to produce co-branded marketing collateral, attend trade shows, and co-release notices for programs with interactive water and energy effects.

### **g) Pilots**

Based on Energy Division feedback, a potential pilot that will be explored in the 2009-2011 program cycle is that of a Resource Energy Manager (REM). REMs are essentially energy managers who are placed at the customer's facility to be a project champion and shepherd energy efficiency projects through to completion. Their salary is typically paid for through the energy savings they generate. REMs have been successfully used by IOUs in the government sector (typically military bases) in past program cycles. A similar program has been available for commercial customers in the Pacific Northwest. The concept of using REMs in the commercial segment will be explored to determine the viability and cost effectiveness of such an approach. An appropriate EM&V plan will also be required prior to launching an REM pilot such that the affects of the pilot on achieving higher levels of energy efficiency can easily be determined.

### **h) EM&V**

Refer to the overarching PIP section

## **7. Diagram of Program**

Please see the diagram presented earlier for the core program.

## **8. Program Logic Model**

Please see the logic model presented earlier for the core program.

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## **Agriculture: Pump Test Services Program**

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- 1. Program Name:** Pump Test Services Program  
**Program Type:** Core

- 2. Projected Program Budget Table**

**Table 1** – reference the core program for budget details

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

**Table 2** - reference the core program for gross impact details

- 4. Program Description**

- a) Describe program**

The purpose of the Pump Test Services Program is to help commercial, industrial and agriculture customers make informed decisions about improving inefficient pumping systems. Pumping is estimated to account for more than 80% of the electric load in California's agriculture segment, and this load is growing as the state's drought increases reliance on water pumping systems. All California investor-owned utilities (IOUs) will offer pump testing services and workshops at no or low cost through in-house or contracted resources during the 2009–2011 program cycle.

The program's target customers are agricultural growers, including commercial and industrial customers (for example, water agencies, oil industries, and potentially large refrigeration and commercial chiller systems). For further information on commercial and industrial applications, *see* the respective program implementation plans for those sectors.

The program features:

- Testing of pumps on site
- Customized report on energy use and operational efficiency
- Technical assistance in upgrading and improving pumping operations
- Financial incentives for capital items

The report will assist customers in making decisions among many potential options including:

- Replacing the pump
- Renovating the pump
- Changing pump motors to premium efficiency motors
- Adjusting operating parameters of motors
- Making system design improvements
- Installing a variable speed drive

The Pump Testing Services Program is part of a suite of programs within the Statewide Agriculture Energy Efficiency Program.

## **Agriculture: Pump Test Services Program**

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### **b) List measures**

The list of measures includes:

- Full-service pump efficiency improvement (receiving incentives)
- Full-service pump efficiency improvement (not receiving incentives)
- Low-pressure sprinkler nozzles
- Sprinkler to drip irrigation
- Commercial customized pumping
- Variable speed drives
- Variable frequency drives – HVAC fans
- Well pump – variable speed drives
- Commercial chillers
- Commercial - premium efficiency motors (by horsepower)
- Industrial pumping controls
- Industrial adjustable speed drives
- Industrial cooling towers
- Process chillers
- Industrial – premium efficiency motors (by horsepower)

The program will be designed to compliment statewide programs with calculated energy efficiency incentives and deemed energy efficiency incentives.

### **c) List non-incentive customer services**

Non-incentive customer services include:

- Energy analysis
- Technical assistance
- Greenhouse gas reduction potential
- Water savings potential

## **5. Program Rationale and Expected Outcome**

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

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

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

### **b) Market Transformation Information**

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

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

## Agriculture: Pump Test Services Program

### **c) Program Design to Overcome Barriers**

Agriculture 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 costs are a much smaller concern to agriculture and water supply customers compared to overall business 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, agriculture customers remain largely unaware of potential energy savings in other areas of their activities.

This program will seek to overcome such barriers through these actions:

- Expanding activities beyond 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 agriculture and water trade allies.
- Leveraging the infrastructure and experience of other programs offered by utilities to the Non-Residential customer segment.

### **d) Quantitative Program Targets**

The targets provided herein are best estimates, but nonetheless are forecasts.

**Table 5**

Program Name	Program Target by 2009	Program Target by 2010	Program Target by 2011
# of Pump Tests (Agricultural and Industrial)	5,450	5,500	5,500

### **e) Advancing Strategic Plan Goals and Objectives**

The Agriculture Energy Efficiency Program supports all three goals in the Strategic Plan for the Agriculture Sector. General advancement of the goals is presented in the program implementation plan for the Agriculture Energy Efficiency Program. More specific support of the goals in the Agriculture Pump Test Program is presented here.

*Goal 1:* Establish and maintain a knowledge base sufficient to support development of all available, cost-effective, reliable, and feasible energy efficiency, demand reduction (and renewable) energy resources.

## **Agriculture: Pump Test Services Program**

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The Pump Test Program supports strategies to develop a knowledge base of efficiency solutions, foster workforce education and training, and encourage applications of new technologies.

*Goal 2:* California regulations, financing mechanisms, and incentives programs affecting the management of energy, air and water resources, solid waste, and climate change will be coordinated to mutual advantage.

The program supports strategies to attain multi-resource management goals and to coordinate technical assistance, funding and incentive mechanisms.

*Goal 3:* Achieve significant increases in the efficiency of electricity and natural gas use and on-site renewable energy utilization, including setting a specific target for irrigation efficiency.

The program supports strategies to make information on efficiency solutions readily available as well as conduct marketing and outreach to stimulate efficiency actions. Irrigation efficiency is a key benefit of the program.

### **6. Program Implementation**

#### **a) Statewide IOU coordination**

**i. Program name** - Agriculture Pump Test Services.

#### **ii. Program delivery mechanisms**

SCE has in-house pump testers and may supplement their services utilizing independent pump testers. Most tests will be delivered by SCE staff and contractors.

The program will be coordinated on a statewide level to unify the implementation of program aspects such as program name, program delivery mechanisms, marketing and outreach plans, and utility program interactions. The program will coordinate with the core Agriculture Energy Efficiency Program for mutual support.

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 2009-2011 program cycle will be assured.

#### **iii. Incentive levels**

All participating utilities will pay the same calculated process incentive rate of 0.09/kWh of annual energy savings for pump improvement energy savings. The calculation will be based on pump tests done before and after improvements.

## **Agriculture: Pump Test Services Program**

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

The program will be marketed through SCE account executives, as well as through educational, outreach and other marketing activities. Marketing activities will target agriculture, commercial and industrial customers, trade associations, local business groups and government entities to generate interest and program participation. In addition, direct customer contact by other programs, including energy efficiency and demand response programs, will be encouraged.

Education, awareness and outreach efforts will rely on a combination of mass media and targeted communication channels to ensure the messages reach the intended audiences often enough to motivate attitude and behavior changes. The marketing strategies may include, but are not limited to, print, radio, TV, direct mail, e-mail, personal contact, trade shows, trade association meetings, customer workshops and seminars. Strategies can also include 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 participating utilities via the statewide coordination process described above.

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

The program 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 target customers.

### **vi. Similar IOU and POU programs**

Over the next three years, the IOUs will seek to increase their interactions with the POUs to promote the pump testing throughout the state.

## **b) Program Delivery and Coordination**

### **i. Emerging Technologies (ET) Program**

Through the Pump Test Services program, participating utilities will be supporting efforts to improve California's average pump efficiency (currently estimated at 53%) as directed in the Strategic Plan. The utilities will develop 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.



## **Agriculture: Pump Test Services Program**

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### **ii. Codes & Standards Program**

The program will work with 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.

### **iii. WE&T efforts**

Pump efficiency education and training offered through utility-sponsored seminars and workshops for agriculture, industrial, municipal, and pumping trade allies and customers, complement the pump testing services and 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 systems. Such workshops will be offered by each utility, 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 a wide variety of downloadable technical resource materials on the utilities' website.

### **iv. Program-specific marketing and outreach efforts**

Market outreach will use a number of strategies and tactics, including:

- Account representatives will make a regular and consistent customer calling effort to key customers within this sector;
- Utility representatives, program management representatives, and field engineers will be available to provide additional expertise;
- Participation and membership in key trade associations ;
- Attendance at the key trade shows for each high priority sub-segment within the agriculture 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;
- Written collateral pieces that provide an overview of the utilities energy efficiency programs will be linked into the appropriate utility DSM web page
- Direct marketing through mail and telephone contact; and
- Mass media placements.

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

The program will help customers address water use efficiency and air quality issues.

### **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

## **Agriculture: Pump Test Services Program**

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for regulating the various aspects and operations of customer facilities participating in the programs.

### **vii. CEC work on PIER**

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.

### **viii. CEC work on C&S**

See Section 6.b. ii.

### **ix. Non-utility market initiatives**

Education about federal tax incentives for energy efficiency investments is an example of non-utility information and guidance that the program will provide customers.

### **c) Best Practices**

By providing multi-level design with technical and financial assistance to influence all aspects of the design of a customer's pumping system, the program reduces lost opportunities from situations where a pumping system's energy performance is not a high customer priority. The program will incorporate other existing offerings to assist projects in reflecting a cohesive sense of energy efficiency and sustainability beyond the traditional aspects of electric energy efficiency. Such offerings may include:

- connecting with demand-response, self-generation, and water conservation programs;
- partnering with industry organizations to promote acceptance of new program approaches by design professionals, and
- coordination with utility Codes and Standards Programs to ensure that the impacts of any code changes are incorporated into program design and implementation.

### **d) Innovation**

Program innovations include:

- 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 proven utility offerings (for example, water pump testing), and innovative new activities (for example, design assistance, investigating additional financing options, and aligning with agriculture and water trade allies).
- Leveraging the infrastructure and experience of other programs offered by utilities to the Non-Residential customer segment.

## **Agriculture: Pump Test Services Program**

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### **e) Integrated/Coordinated Demand Side Management**

Pump testing services personnel will advise customers of services and offerings from the Agriculture Energy Efficiency program, Industrial Energy Efficiency Program, On Bill Financing, Demand Response, Renewable Generation/California Solar Initiative, and AB32 Carbon Emissions Reduction Program, and water conservation programs.

The IOU's have identified integrated Demand Side Management (IDSM) as an important priority. As a result they have proposed the establishment of a Statewide Integration Task Force (Task Force). The program plans to work closely with the Task Force to identify comprehensive integration approaches that feed into the overall statewide strategy and to implement best practices as rapidly as practical.

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

California's serious air quality issues in agriculture regions are requiring the EPA and other entities to support agriculture pump conversions from diesel to electric. In conformance with the Strategic Plan, and as part of the interagency coordination, utilities will partner with the EPA and air districts. They will market program services, such as pump tests, and encourage energy efficiency considerations when installing new electric pumps.

Certain irrigation efficiency measures, such as sprinkler to drip, have water conservation benefits on top of saving the energy required to pressurize 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 on customer energy savings workshops and measures designed and developed 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**

Please see the diagram presented earlier for the core program.

## **Agriculture: Pump Test Services Program**

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### **8. Program Logic Model**

Please see the logic model presented earlier for the core program

# 5

## New Construction Program

- 1. Program Name:** Statewide New Construction Program  
**Program ID#:** SCE-SW-005  
**Program Type:** Core

### 2. Projected Program Budget Table

**Table 1<sup>1</sup>**

SCE-SW-005	Main Program Name / Sub-Program	Total Administrative Cost (Actual)	Total Marketing & Outreach (Actual)	Total Direct Implementation (Actual)	Integration Budget Allocated to other Programs (If Applicable)	Total Budget By Program (Actual)
	CROSSCUTTING					
	New Construction Program					
	Savings By Design	\$ 4,860,761	\$ 9,842,100	\$ 34,542,139		\$ 49,245,000
	California Advanced Homes	\$ 4,287,101	\$ 1,559,706	\$ 19,047,193		\$ 24,894,000
	Energy Star Manufactured Homes	\$ 718,639	\$ 127,367	\$ 2,669,994		\$ 3,516,000
	<b>TOTAL:</b>	\$ 9,866,501	\$ 11,529,173	\$ 56,259,326	\$ -	\$ 77,655,000

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

**Table 2**

SCE-SW-005	New Construction Program	2009-15 EE Program Gross kWh Savings	2009-15 EE Program Gross kW Savings	2009-15 EE Program Gross Therm Savings
	Savings by Design	224,330,122	46,739	-
	California Advanced Homes	14,517,212	13,583	-
	Energy Star Manufactured Housing	2,827,100	1,807	-
	<b>TOTAL</b>	<b>241,674,434</b>	<b>62,128</b>	<b>-</b>

SCE is forecasting installations beyond 2011 to capture those projects committed (funds reserved) in the 2009-2011 program cycle, however are not installed until after 2011.

<sup>1</sup> 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.

## **New Construction Program**

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### **4. Program Description**

#### **a) Describe program**

The New Construction Program is a statewide program that will continue the transformation process of California's Residential and Non-Residential New Construction markets consistent with the vision of the California Long Term Energy Efficiency Strategic Plan<sup>2</sup> (Strategic Plan) and toward 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 "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; and
- Non-Residential New Construction will be progressively more efficient and include clean, on-site distributed generation, moving towards 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, and 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 Strategic Plan.

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.

#### **Savings By Design (SBD) Sub-program**

This sub-program aims for significant energy efficiency improvements in the Non-Residential 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

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<sup>2</sup> California Energy Efficiency Strategic Plan, September 2008, <http://www.californiaenergyefficiency.com/index.shtml>

## **New Construction Program**

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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” or familiar 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 strategy (the whole building approach) that encourages performance significantly better than Title 24 code, as well as a strategy (the 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, including: feasibility studies and pilot projects, training and education, conferences and workshops, scholarships, and program marketing activities. In the 2009-2011 portfolio, SBD will broaden its palette of technical and financial resources for designing new facilities to the highest energy- and resource-efficient standards. SBD will incorporate several new approaches promoting integrated design and green building certification in support of the Strategic Plan.

### **California Advanced Homes Program (CAHP) Sub-program**

The California Advanced Home Program 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%. This goal will be achieved through a combination of incentives, technical education, design assistance and verification. With respect to the Strategic Plan (Section 2, Strategy 1-1), the CAHP targets an interim goal of 50% of Residential New Construction to Tier II (2005) level by 2011, and a final goal of 100% of Residential New Construction to “net zero” by 2020.

Through a pay-for-performance sliding scale incentive structure that is based on the SBD 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, use of 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, economic modeling, measure-selection support, marketing support, and integrated demand-side management (DSM) to maximize Residential energy reductions. CAHP will be closely coordinated with the Zero Net Energy Homes (ZNEH), described below.

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- **ZNEH Program Element:** ZNEH is a program element of CAHP. The purpose of this ZNEH is to examine a wide array of energy-saving technologies, accelerate market acceptance of new and emerging technologies, explore integrated solutions, and encourage distinctive approaches in demonstration projects. Participating builders will be encouraged to design homes that live lightly on the earth, building homes that delight as much as they deliver energy performance. Each being distinctive, these case studies will be positioned to

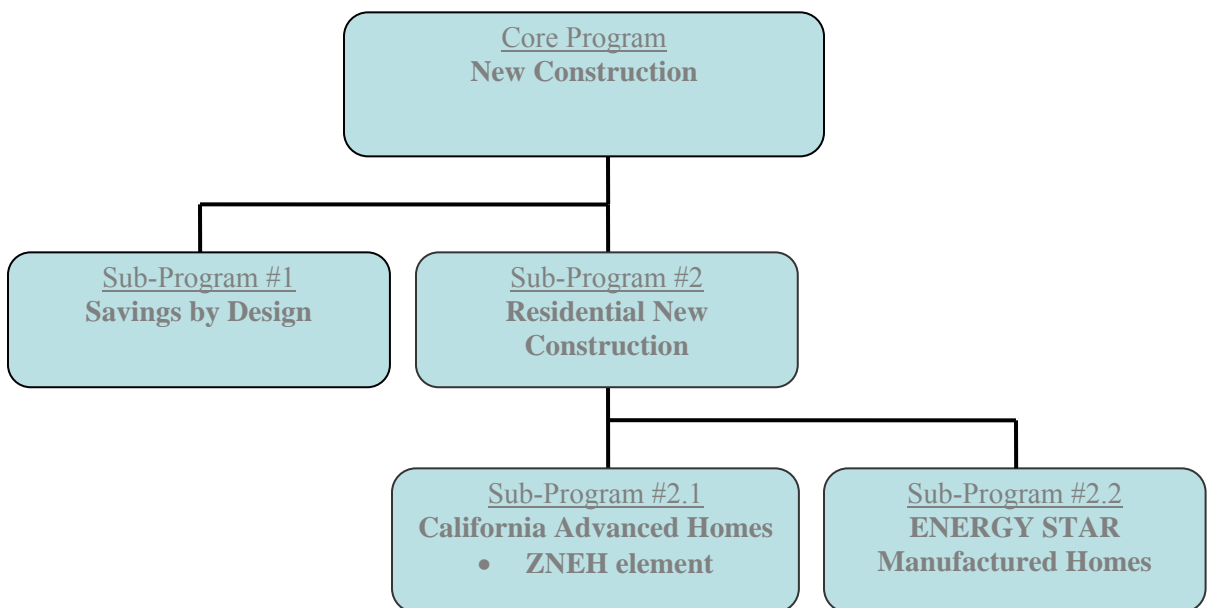


## New Construction Program

highlight the underutilized potential of sustainability in Residential New Construction. IOUs will seek to integrate R&D ideas from Emerging Technologies, PIER, Lawrence Berkeley National Laboratory (LBNL) and other avenues to further assist the projects in advancing sustainability and achieving higher levels of energy efficiency.

### **ENERGY STAR® Manufactured Homes Sub-program**

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 “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 to customers through their local retailer.



### **b) List of Measures**

The list of measures eligible for each of the sub-programs is provided in the respective sub-program PIPs. Incentives for each sub-program are described below.

## **New Construction Program**

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### **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, CAHP will adopt a pay-for-performance approach on a sliding scale from 15% 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 the highest rewards to builders with the highest levels of energy performance.

- **ZNEH Element:** The ZNEH program element goes further by providing additional technical support, integrated design workshops, design studies, and engineering analyses to builders constructing homes working on projects that go beyond business as usual. Homes considered for the ZNEH case studies must be at least 45% better than Title 24 and must include on-site renewable power.

### **ENERGY STAR® Manufactured Homes**

The ENERGY STAR® Manufactured Homes 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 home retailer after successful construction, assembly, and inspection.

#### **c) List non-incentive services**

The New Construction Program will include 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;

## **New Construction Program**

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- 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; and
- 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**

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.”<sup>3</sup> 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<sup>4</sup>.

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<sup>5</sup>. Markets are social institutions<sup>6</sup>, 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

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<sup>3</sup> California Public Utilities Commission Decision, D.98-04-063, Appendix A.

<sup>4</sup> California Public Utilities Commission (2008) *California Long Term Energy Efficiency Strategic Plan*, p. 5. Available at <http://www.californiaenergyefficiency.com/docs/EEStrategicPlan.pdf>

<sup>5</sup> 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>

<sup>6</sup> 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/](http://www.eceee.org/conference_proceedings/eceee/2001/Panel_2/p2_7/Paper/)

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as changing behavior, attitudes, and market supply chains<sup>7</sup> 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<sup>8</sup>. According to York<sup>9</sup>, “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<sup>10</sup>. 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<sup>11</sup>, 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<sup>12</sup>. 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<sup>13</sup>. 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.

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<sup>7</sup> 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](http://www.calmac.org).

<sup>8</sup> 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*.

<sup>9</sup> York, D., (1999). “A Discussion and Critique of Market Transformation”, Energy Center of Wisconsin. Available at <http://www.ecw.org/ecwresults/186-1.pdf>.

<sup>10</sup> 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>

<sup>11</sup> Rogers (1995) *Diffusion of Innovations*, 5<sup>th</sup> Ed.

<sup>12</sup> 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>

<sup>13</sup> Sebold et al (2001) p. 6-5,

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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.)<sup>14</sup>” The Strategic Plan recognizes that regulatory policies are not yet in place to support the success of market transformation efforts<sup>15</sup>, 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<sup>16</sup>. 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<sup>17</sup> 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

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<sup>14</sup> 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>.

<sup>15</sup> CPUC (2008) Strategic Plan, p. 5.

<sup>16</sup> Nadel, Thorne, Saches, Prindle & Elliot (2003).

<sup>17</sup> Pelozo & York, (1999).

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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 New Construction sector, the following approach to quantitative baseline and market transformation information is presented as follows.

The IOUs are proposing a metric that is believed to reliably indicate a trend toward market transformation for Energy Efficiency 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

In addition, the IOUs are proposing a metric that is believed to reliably indicate a trend toward market transformation for Energy Efficiency in Nonresidential 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.

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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.

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

**Table 3**

	<b>Baseline Metric</b>			
	<b>Metric A</b>	<b>Metric B</b>	<b>Metric C</b>	<b>Metric D</b>
Measure-based metric (Residential)	Percent of participants with projects exceeding Title 24 (2005) standard by specific percentages			
Compliance-based metric (Residential)		Average compliance margin of the Residential New Construction sector		
Measure-based metric (Nonresidential)			Percent of participants with projects exceeding Title 24 (2005) standards by specific percentages	
Compliance-based metric (Nonresidential)				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

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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**

	<b>Internal Market Transformation Planning Estimates</b>		
	<b>2009</b>	<b>2010</b>	<b>2011</b>
Percent of participants with projects exceeding Title 24 (2005) standard by specific percentages	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)
Average compliance margin of the Residential New Construction sector	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
Percent of participants with projects exceeding Title 24 (2005) standards by specific percentages	Improvement over baseline, over time	Improvement over baseline, over time	Improvement over baseline, over time
Average compliance margin of the Nonresidential New Construction sector	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**

The New Construction Program will address the following barriers, some of which are common across the different market segments:



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- **Building Code Changes:** Effective August 1, 2009, California's Title 24 standards will be revised and updated. As an example, Residential baseline energy performance for heating, cooling, and hot water will be increased by approximately 15%. This will increase production costs for builders at a time when the industry is experiencing significant challenges;
- **Homebuyer 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. There is scant evidence that energy efficiency drives decision-making among homebuyers. Moreover, homebuyers' access to capital is more restricted in the current capital market environment;
- **Commercial Financing:** Financing of energy efficiency upgrades continues to be a barrier to achieving full savings potential. This is critically important for the small and medium size commercial developers who have limited access to capital. To this end, SBD will evaluate the development of innovative financing tools in the commercial markets;
- **Small-Commercial Market Penetration:** SBD has historically achieved very high penetration rates in medium and large new construction projects. However, barriers exist to deeply penetrating the small-project market due primarily to the extensive level of design assistance required for SBD projects. To help the utilities overcome this, SBD has developed a simplified approach for projects below a certain size;
- **Integrated Business Marketing:** Gaining a full understanding of program offerings can be difficult for busy commercial customers. SBD will collaborate with the demand response and distributed generation programs to create a customer-friendly and easy-to-navigate suite of materials; and

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 greenhouse gas emissions and utility source demand.

### **d) Quantitative Program Targets**

The New Construction Program aims to achieve the following broad targets over the 2009-2011 program cycle. Note, however that the proposed targets may be modified due to funding restrictions, especially for the 2009 bridge-funded year.

**Table 5** – See sub-programs for targets.

### **e) Advancing Strategic Plan goals and objectives**

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The New Construction Program is designed to achieve several goals and strategies identified in the Strategic Plan. 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<sup>18</sup>.

- **Residential New Construction:** The Strategic Plan envisions a transformation of the core Residential sector to ultra-high levels of energy efficiency, resulting in 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 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%; and
- By 2011, 10% will surpass 2005 Title 24 standards by 55% (Strategy 1-1)

**Goal #2:** Homebuyers (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.

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 the Strategic Plan, and works in close coordination with the ZNEH sub-element. Together these offerings will work 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 will also integrate delivery with demand response programs, Emerging Technology, and the New Solar Homes Partnership (NSHP). In alignment with the Strategic Plan, the CAHP targets an interim goal of 50% of RNC to Tier II (2005) by 2011, 10 per cent of RNC to 55% by 2011, and a final goal of 100% of Residential New Construction to be net zero by 2020.

The ZNEH program element is designed primarily with the focus of accelerating the achievement of the ZNE goals envisioned by the Strategic Plan. ZNEH will, in concert with the Emerging Technologies program, examine a wide array of energy saving technologies, accelerate the market acceptance of new and emerging technologies, explore new solutions, and encourage distinctive

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<sup>18</sup> Per Executive order S-20-04, dated December 14, 2004,  
[http://www.energy.ca.gov/greenbuilding/documents/executive\\_order\\_s-20-04.html](http://www.energy.ca.gov/greenbuilding/documents/executive_order_s-20-04.html)

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approaches in demonstration projects. Each being distinctive, the case studies will be positioned to highlight the underutilized potential of sustainability in Residential New Construction, in a range of market segments and climate zones. The utilities will seek to integrate R&D ideas from Emerging Technologies, PIER, LBNL and other agencies to further assist the projects in advancing sustainability and achieving very high levels of energy efficiency.

The minimum threshold for acceptance in the ZNEH Case Study program will be a whole building performance of at least 45% over Title 24 standards. Projects must commit to pursuing an advanced level of green building certification. Technical support and design-team collaboration will be significantly higher than those offered under CAHP. By providing strong encouragement for builders to operate at the “state of the shelf” levels of energy efficiency, the ZNEH offering is uniquely positioned to support the Strategic Plan goal of ZNE by 2020.

- Commercial New Construction: With respect to commercial new buildings, the Strategic Plan calls for laying out a path to ZNE by 2030. The Strategic Plan envisions dramatic growth in 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, the Strategic Plan lays out the following goal for commercial new construction:
  - Goal #1: Commercial new construction will increasingly embrace ZNE performance (including clean, on-site distributed generation), reaching 100% penetration of new starts in 2030.

The SBD sub-program is designed to advance the Strategic Plan’s comprehensive energy efficiency goals. SBD combines financial incentives to buy down first costs, and to provide technical expertise, dedicated staff with long-standing ties to the design and development communities, and ongoing training to permanently improve the way the industry does business. By offering increased design assistance to innovative buildings that demonstrate ZNE targets, SBD will establish a “Path To Zero” for the highest efficiency buildings. These strategies and the IOU action plans are further elaborated in the PIP for Savings By Design (Appendix A: Zero Net Energy Goals and Strategies).

- The State of California’s Green Building Initiative<sup>19</sup> 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% by 2015, through cost-effective efficiency measures and distributed generation technologies.

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<sup>19</sup> Per Executive order S-20-04, dated December 14, 2004,  
[http://www.energy.ca.gov/greenbuilding/documents/executive\\_order\\_s-20-04.html](http://www.energy.ca.gov/greenbuilding/documents/executive_order_s-20-04.html)

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Commercial building owners are also encouraged to take aggressive action to reduce electricity usage by building and operating the most energy- and resource-efficient buildings. SBD supports the voluntary portions of the Green Building Initiative through improved new construction.

- 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 promote the success of AB 32 by reporting the carbon reduction effects of energy efficiency programs to program participants.

### **6. Program Implementation**

#### **a) Statewide IOU coordination**

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 for each program sector, Residential and Non-Residential. The leads will investigate new innovations, special accomplishments and challenges faced by the sub-programs and present their findings at quarterly statewide team meetings;
- Ongoing New Construction Meetings by Program: At quarterly meetings, best practices can be shared with all participants and will track the New Construction Program's progress toward statewide goals;
- Adopt Program Enhancements: Each Program Lead will communicate best practices from the statewide teams to their sub-program/element managers for adoption; and
- Continuous Improvement: The program management team will continue to monitor the program's success and make future course corrections as needed.

#### **i. Program names**

The following names: Savings By Design (Non-Residential), California Advanced Homes Program (Residential core), and ZNEH (Residential demonstrations), have been adopted by all the utility partners. This will maintain consistent messaging across utility service territories and helps ensure uniformity and continuity of program offerings.

## **New Construction Program**

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### **ii. Program delivery mechanisms**

The New Construction Program is the umbrella that encompasses the sub-program activities summarized above in Section 4.a. Each sub-program is discussed in greater detail in its own dedicated PIP, below. The utility partners will deliver these sub-programs through a combination of delivery channels including account executives, third-party vendors and internal program management staff.

### **iii. Incentive levels**

The New Construction Program aims to achieve the deep levels of market transformation desired by the Strategic Plan, 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. To the extent possible, the IOUs will retain uniformity in the incentive structure of the sub-programs. See Section 4: {Program Description, item b, List Measures, above, and sub-program PIPs for more details on specific incentive levels.

### **iv. Marketing and outreach plans**

Each utility will develop marketing and outreach plans for each industry segment and with attention to local market needs. The New Construction Program management team will explore opportunities for common branding and cost savings in developing common collateral materials, statewide program websites, shared project leads, and joint presentations at trade shows and other industry events.

### **v. IOU program interactions**

Strategy [1-2] outlined in the Strategic Plan is to create a better linkage between the CEC's Title 24 compliance efforts and the IOUs' energy efficiency programs. In order to achieve the market transformation goals of the Strategic Plan, program management is working with the CEC and its Codes and Standards team to pursue a variety of compliance enhancement reviews for commercial projects. The new construction programs will continue to work closely with the CEC to pilot tools, measures, and approaches that meet their common goals.

### **vi. Similar IOU and POU Program**

The Sacramento Municipal Utility District (SMUD) has joined the four IOUs in delivering SBD. The CAHP team looks in many ways to SMUD for leadership in the ZNEH area.

### **b) Program delivery and coordination**

The New Construction Program will be coordinated with the following statewide and local activities. The statewide team will ensure regular communication from a statewide perspective.

## **New Construction Program**

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### **i. Emerging Technologies (ET) program**

Integration of New Construction Program with Emerging Technologies activities will be handled at the statewide level through the New Construction Program management team addressing coordinated implementation. Locally, SCE program management will work with Emerging Technology in a ZNEH working group to incorporate emerging technologies into ZNEH demonstrations.

### **ii. Codes and Standards program**

Codes and Standards activities will be coordinated through the Program management team. Codes and Standards 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. See the Codes and Standards PIP for more information.

### **iii. Workforce Education & Training program**

The WE&T program is critical to the success of the New Construction Program. The statewide team will work closely with WE&T on Energy Center training, local college curricula and the Energy Design Resources (EDR) website.

EDR is an energy efficiency website featuring dedicated to the new construction design professional. It offers design briefs and reports on effective integration of energy-efficient designs into Non-Residential facilities. EDR has begun developing the structure to expand the materials and tools offerings to include Residential design strategies. Although EDR currently supports Non-Residential New Construction activities, the future of this offering involves becoming the portal for energy efficiency information for several statewide programs.

EDR was developed under the aegis of the SBD program to meet its specific needs, but as EDR expands beyond Non-Residential offerings, it is anticipated EDR will be managed and led by the WE&T team.

### **iv. Inter-utility coordination**

In an effort towards integrated delivery of energy savings on the Residential side, SCE and SCG have recently concluded a joint agreement to reimburse Therm saving and kWh incentives from one another. A similar agreement has long existed on the Non-Residential side. Implementation of this agreement will require close coordination of the CAHP sub-programs between the two utilities. The New Construction Program Leads will meet on a quarterly basis to ensure the savings are claimed and compensated appropriately.

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

Where applicable, the ZNEH program element will seek to identify new types of water savings technologies opportunities in new construction; CAHP will leverage local water agency incentives to promote savings of cold and hot water.

## **New Construction Program**

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### **vi. Non-IOU programs**

See item v., Non-Energy Activities of Program, above, for non-energy water-agency partnering efforts. There may also be opportunities to partner with local Air Quality Management Districts (AQMD) and County Integrated Waste Management Boards to encourage material recycling in ZNEH program element and green incentives.

### **vii. CEC work on PIER**

As described above (in item i., Emerging Technologies), the ZNEH program element will work closely with ET. Through its work with ET, ZNEH will also attempt to create program pull in the PIER program for technology research that meets the future needs of program participants.

### **viii. CEC work on C&S**

See Section 6: Program Implementation, .item b, Program Delivery and Coordination, item i, Emerging Technologies Program.

### **ix. Non-utility market initiatives**

California utilities have established relationships with a number of 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:

- NSHP;
- Environmental Protection Agency (EPA), through the ENERGY STAR® programs;
- 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 providers)
- Urban Land Institute;
- US Green Building Council;
- Major banks and financial institutions; and
- Commercial real estate investment trusts and holding companies.

The 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 has incorporated several best practices.

## **New Construction Program**

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The SBD team recently completed process evaluations of the 2006-2008 programs. Based on evaluation feedback, several enhancements have been added to the SBD sub-program for 2009-2011.

- Early integrated design workshops to explore “out-of-the-box” ideas;
- Incentivizing green building standards -LEED (Leadership in Energy and Environmental Design) certification;
- Expanding energy credits for unconventional measures;
- Establishing tracks for cutting edge projects;
- Providing early design team incentives; and
- Expanding the incentives for commissioning and M&E projects.

Additionally, a customized approach will focus on market segments such as hospitals and clean room facilities that have traditionally not participated in SBD.

Likewise, several recommendations were made in the 2006-2008 Residential New Construction Process Evaluation. These recommendations include:

- Institute more continuity in program offerings statewide;
- Leverage ENERGY STAR®;
- Leverage LEED/Green Building Rating Systems ;
- Continue to offer prescriptive options; and
- Enhance demonstration component through ZNEH to serve as the “model homes of the future.”

Each of these items is described and addressed in greater detail below in the relevant sub-program PIP.

### **d) Innovation**

The Statewide New Construction Program features a number of new program elements. These innovative features originated from the IOUs’ desire to extend their resources in order to achieve the ambitious goals of the program. Some examples include:

- SBD’s “Path To Zero” campaign, which aims to create demand in the marketplace for efficient, green, renewable-powered, high-performance buildings;
- Simplified SBD for smaller projects;
- Sustainability incentives: additional financial incentives beyond direct energy and demand reduction incentives for SBD’s systems approach and whole building approach projects that meet qualifying criteria;
- 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;
- Program implementation that will emphasize fuel neutrality: a whole house, performance based incentive approach that focuses on overall building efficiency rather than individual measures. The therm – kWh buy-back agreement recently executed by SCE and SCG which enables the two utilities to avoid a competitive environment in their joint territory; and



## **New Construction Program**

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- ZNEH case studies and demonstrations that will be showcased and marketed through company websites, recognition awards, trade show participation, on-site promotions, and the like.

### **e) Integrated/coordinated Demand Side Management**

New Construction will promote renewable generation, demand response capability, as well as promote SmartConnect™/AMI and plug-load/conservation strategies to all CAHP projects. In addition, CAHP is working with the low-income group to promote integrated EE/DSM approaches in identified low-income new construction projects. These initiatives are described in more detail in the relevant sub-program PIPs.

### **f) Integration across resource types**

The New Construction Program will be fuel neutral. Wherever possible, program management staff will highlight potential water efficiency and work with local water utilities to incorporate water savings. SCE and SCG have signed a joint agreement to exchange therms and electricity savings to minimize lost opportunities. The ZNEH program element will emphasize savings from all sources, including mitigation of carbon footprints associated with energy saving measures.

### **g) Pilots**

The ZNEH program element will serve as the proving ground for piloting technologies and approaches, and will actively engage Emerging Technologies to incorporate new measures in the initial design of pilot projects.

### **h) EM&V**

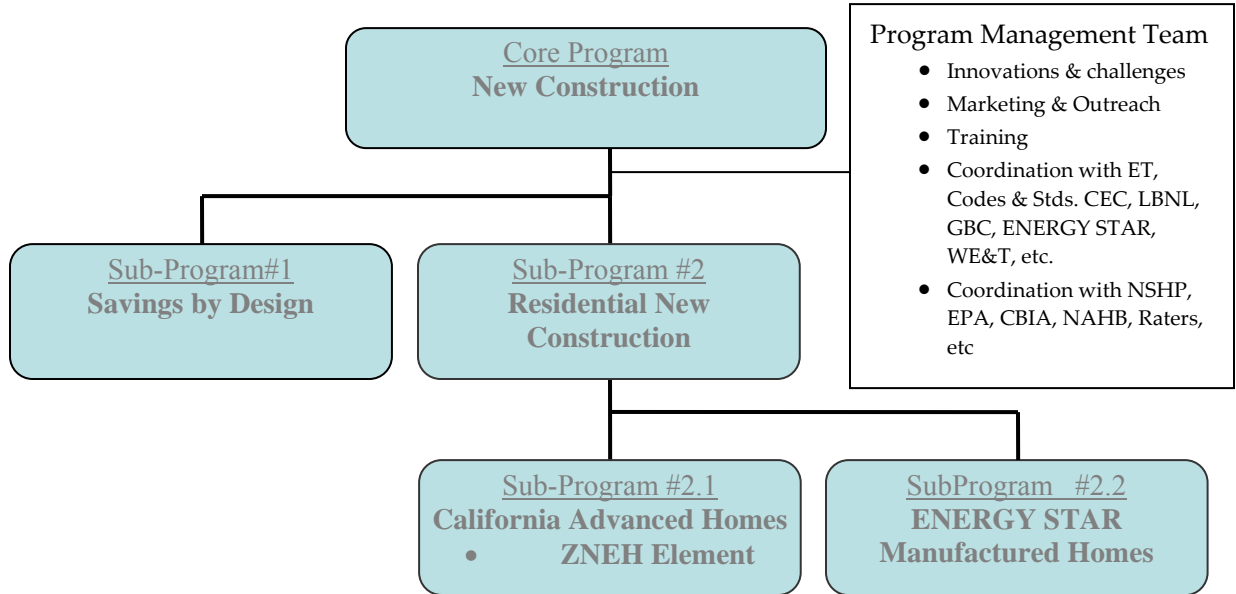
The IOUs will work with CPUC staff to establish a continuous EM&V approach that will provide the IOUs (and CPUC) timely feedback on the effectiveness of programs in the field. The New Construction Program management team will evaluate for effectiveness and make modifications as needed.

# New Construction Program

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## 7. Diagram of Program

The overall structure of the statewide New Construction Program is depicted in the following diagram. 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.

5a

## New Construction: Savings By Design

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**1. Program Name:** Savings By Design (SBD)  
**Program Type:** Core

**2. Projected Program Budget**

**Table 1-** reference the core program for budget details

**3. Projected Program Gross Impacts**

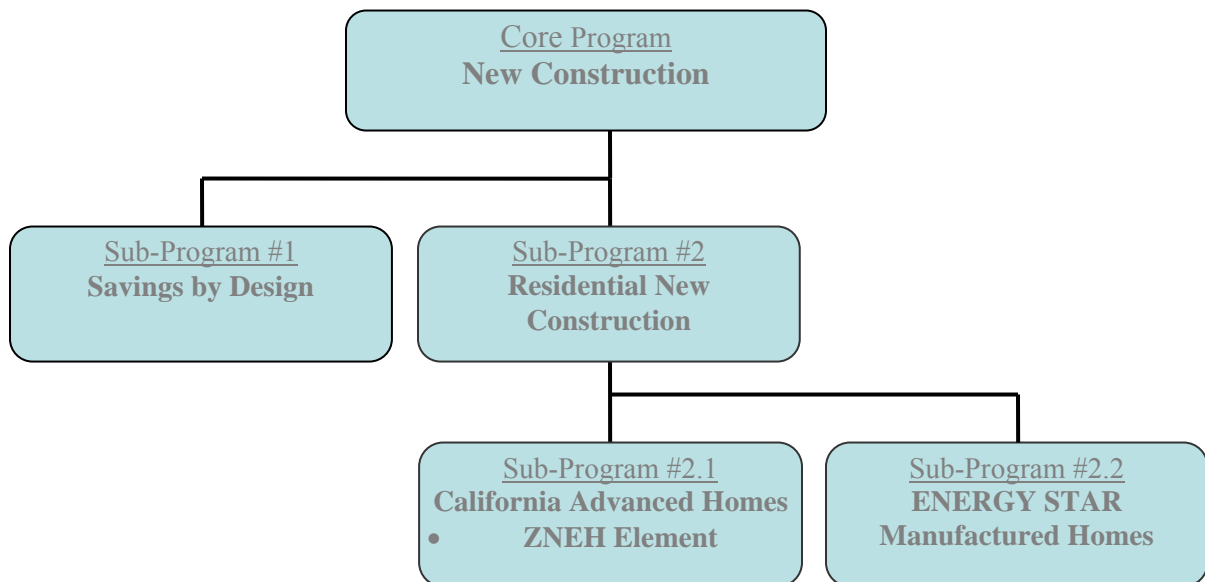
**Table 2** – reference the core program for projected gross impacts detail.

**4. Program Description**

**a) Describe program**

SBD is an energy-efficiency program developed for the Non-Residential New Construction industry. Since 1999, SBD has provided statewide consistency, program stability, and savings to the IOU customers of California. 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.

In the 2009-2011 portfolio, SBD will broaden its palette of technical and financial resources for designing new facilities to the highest energy- and resource-efficient standards. SBD will incorporate several new approaches promoting integrated design and green building certification in support of the Strategic Plan.



**b)**

## **New Construction: Savings By Design**

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### **Measures**

The measures provided in SBD are kWh, kW, and therms in all of SCE's climate zones. For systems projects, those categories are further divided by end use: HVAC, lighting, daylighting, pumps and motors, hot water, and other processes. Appendix A is attached with the complete breakdown of measures.

#### **c) Non-incentive customer services**

**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 can also be very confusing. SBD provides the assistance, tools and expertise necessary to help customers exceed compliance with the requirements and achieve long-term energy and cost savings.

**Focus on 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:** Energy Design Resources offers a variety of tools 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 approaches that contribute to energy-efficient Non-Residential New Construction. Additionally, design tools that reduce the time spent evaluating the energy use impact of design decisions are provided at no cost.

**Comprehensive Integrated Building Design Training:** In conjunction with the WE&T program, SBD will proactively offer integrated building design training to architects, engineers and other design professionals. Training may 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.

## **5. Program Rationale and Expected Outcome**

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

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

## New Construction: Savings By Design

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

### **b) Market Transformation Information**

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

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

### **c) Program Design to Overcome Barriers**

#### **Priority Barrier: Financing**

The first cost of energy efficiency upgrades continues to be a barrier in achieving full savings potential. To this end, the program will explore the development of the following innovative financing tools:

- Expanding On-Bill Financing offerings to new construction (for more information, see Section 6: Program Implementation, item d, Innovation, below);
- Leveraging external funding for ZNE new buildings and major efficiency upgrades of existing buildings; and
- Establishing relationships with other entities to identify alternative sources of funding for energy efficiency upgrades.

#### **Priority Barrier: Limited Segment Participation**

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 (for more information, see Section 6: Program Implementation, item d, Innovation, below).

Similarly, hospitals, prisons, clean rooms and data centers, among other building types, have traditionally not participated in SBD; program staff is making efforts to reach out to these project teams to meet their needs.

#### **Priority Barrier: Integrated Program Marketing**

Gaining a full understanding of the SBD 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 on the benefits of their adoption in new construction.

### **d) Quantitative Program Targets**

The targets provided herein are best estimates, but nonetheless are forecasts.

**Table 5**

Savings By Design	Program Target 2009	Program Target	Program Target 2011
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## New Construction: Savings By Design

		2010	
No. of Installed Projects	83	83	83

### e) Advancing Strategic Plan goals and objectives

SBD's Non-Residential New Construction program will play an increased role in reducing the electric energy needs of new and expanding commercial, industrial, and agricultural facilities. SBD will offer a full spectrum of support to building owners, architects, engineers, and other specialized consultants, providing the tools and information necessary to achieve optimum energy and resource efficiency in their projects.

The Strategic Plan spells out a variety of strategies to address energy reduction in California for new commercial buildings.

**Strategy 1-1:** SBD will work with the Codes & Standards Program to ensure that the impacts of any code changes are incorporated into program design and implementation in support of the ZNE goals

SBD has also aligned its marketing and incentive structure with LEED certification and ENERGY STAR®.

**Strategy 1-2:** SBD will work with Codes and Standards and the CEC to pilot innovative incentives to address plug loads and appliances.

SBD is offering incentives for whole building design approaches, commissioning, and ongoing monitoring of building performance.

SBD will continue to support innovative lighting design on a performance basis.

**Strategy 1-3:** SBD will work collaboratively with stakeholders on the “path to net zero” campaign to create demand for ZNE buildings. SBD will continue to pilot with ET ZNE technologies in commercial new construction.

SBD will also continue to participate in forums to exchange best practices, and technologies for achieving ZNE buildings.

**Strategy 1-4:** As discussed above in priority barriers (see Section 5, Program Rationale and Expected Outcome, item c), Design to Overcome Barriers) SBD will explore various financing models to overcome first cost barriers to realizing energy-efficient buildings. These included on-bill financing, identifying other resources such as banking institutions that recognize a decreased default risk in green buildings.

## **New Construction: Savings By Design**

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SBD will work with ENERGY STAR® benchmarking, and other metrics to define standards for performance-based lending standards.

SCE is also working with internal and external stakeholders to make building performance data in ways that do not violate tenant confidentiality.

**Strategy 1-5:** SBD will be an important part of the Finance Task Force exploring other sources of financial support, including carbon trading credits, “fee-bates,” federal loan guarantees, state bond incentives, and various tax-credit options.

**Strategy 1-6:** SBD will continue to support the advance the practice of integrated design (ID), through its code training and market activities.

SBD is incorporating best practices from commissioning and monitoring and verification to enable ID to be successfully deployed.

SBD will continue to support local design professionals through industry associations to advance the practice of ID. Similarly, SBD will continue to provide curriculum, scholarships, design competitions, and guest lecturers to advance the education of the next generation of professionals in ID.

SBD has added a design team integrated design stipend to fund the ID process among participating teams.

The Strategic Plan calls for government to lead by example in its own new building procurement. 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 State of California’s Green Building Initiative 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% 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.

Similarly, the Strategic Plan calls for efforts to leverage the impacts of California’s nation-leading climate action efforts through AB32.



## **New Construction: Savings By Design**

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The California Global Warming Solutions Act of 2006 (AB 32) created a state-mandated program to reduce greenhouse gas 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 will work to support AB 32 by relating the carbon reduction effects of energy efficiency programs to program participants.

### **6. Program Implementation**

#### **a) Statewide IOU coordination**

##### **i. Program name: Savings By Design**

##### **ii. Program delivery mechanisms**

The SBD program will continue to offer two existing program components to its customers with new construction or major remodel/renovation projects, and will add a simplified approach for smaller projects:

- Whole Building Approach – existing;
- Systems Approach – existing;
- Simplified Approach – new;
- Sustainability Incentives – new; and
- Calculated Retrofit Approach, formerly Standard Performance Contract (SPC) – newly aligned

The SBD program will be delivered by a combination of in-house field staff and account executives, public affairs managers, and government partners in collaboration with building and design industry allies. This delivery team is augmented by outside consultants for building modeling and targeted segment delivery.

##### **iii. Incentive levels**

##### **Whole Building Approach**

The whole building approach 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 leads to much more efficient design decisions. The key to maximizing energy choices is intervention at the earliest phase of building design.

For 2009 – 2011, the statewide owner's incentives for electrical energy savings offered by the whole building approach will start at \$0.10 per kWh at 10% better than Title 24 code and increase in a straight line to \$0.30 per kWh at 30% better than code. For projects that exceed 30% 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.

## **New Construction: Savings By Design**

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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 whole building approach project initially meets the 10% threshold for eligibility to participate, but later experiences project changes that reduce the building's performance to less than 10% - but are at least 5% 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% better than code.

### **Design Team Incentives (DTI)**

SBD offers design team incentives for whole building approach 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 whole building approach. 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 whole building approach. SBD will support the long-range vision of the Strategic Plan by encouraging the design community to consider energy efficiency as an important component of every building's programming.

For 2009-2011, design team incentives will equal one-third of the owner's incentive. The threshold for design teams to begin earning design team incentives is the same as that of the owner: 10% better than code. Additionally, 50% of the design team incentives 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 design team incentives will be capped at \$50,000.

If a design team elects not to perform energy modeling for the design team incentives on a whole building approach 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

## New Construction: Savings By Design

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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 to optimize efficiency choices. The SA is used for projects that do not present sufficient opportunities to warrant the labor intensive assistance services offered through the whole building approach. The SA is designed to make it easy for designers to look at the interaction of systems within their project, rather than individual equipment or fixtures. This approach is used for simple facilities where integrated opportunities are limited, or for projects where program intervention has come too late in the design phase to effect sweeping programmatic changes to the design.

The incentives for the systems approach are designed to align with the Calculated Retrofit Incentives/SPC:

- Ventilation and AC: \$0.15/kWh
- Lighting: \$0.05/kWh
- Daylighting: \$0.05/kWh
- All Therm savings \$1.00/Therm
- Other systems: \$0.09/kWh

### Peak Reduction Incentives

In addition to the traditional kWh and Therm incentives offered by SBD, an incentive of \$100/kW 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:

**1. Adding a direct demand incentive will encourage measures that may have little or no energy savings, but significant demand reductions.**

It has been argued that Title 24 values permanent demand reductions along with usage reductions through the mechanism of Time Dependent Valuation (TDV), which values kWhs more highly if they occur on-peak. However, the TDV demand reduction incentive does not offer sufficient visibility to the importance of achieving peak demand reduction. The peak kW reduction incentive is an attempt to draw attention to this vital aspect of energy efficiency and to align the interests of developers with those of the California utilities and system operators.

**2. A flat incentive for peak demand reductions, in addition to the energy incentive, addresses two industry concerns.**

## **New Construction: Savings By Design**

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As Title 24 becomes progressively more stringent, it is increasingly difficult to achieve the same magnitude of energy savings than the previous version of code. There is also widespread recognition in the Strategic Plan that achieving the state's aggressive goals will require increased incentive levels to offset the effects of diminishing returns.

### **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 large new construction projects. However, numerous barriers exist in the small-project market. 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 whole building approach 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 standard packages of elements with limited customization. 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 Automated Energy Review for Schools (see program SCE-TP-33) program as applicable.

### **Sustainability Incentives**

New for 2009 - 11, SBD will offer additional financial incentives beyond direct energy and demand reduction incentives. For SA and whole building approach projects these are:

- Design Team Design Integration Stipend;
- Green Building Certification;
- Building Commissioning;
- Measurement and Verification Plan; and
- Innovative Financing.

These sustainability incentives are designed to encourage new buildings to be as well designed, built, and operated as possible.

**Design Team Design Integration Stipend.** SBD will provide for an incentive of \$5,000/design team, whose design team incentives application has previously

## **New Construction: Savings By Design**

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been accepted, to offset costs associated with hosting Integrated Design workshops. This overcomes the barrier that many design teams favorable to the collaborative design process lack additional money in previously negotiated contracts to support the extra time of key design team members.

**Green Building Certification.** The US Green Building Council's LEED program and CHPS are the two rating systems for which certification can earn the customer the green building certification incentive (other systems may be used subject to utility consideration and approval). For Commissioning (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 Strategic Plan. Points-based green building certification systems award credit 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.

**Building Commissioning.** 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 helps ensure that the facility is operated in a manner consistent with achieving the maximum benefit from the installed energy efficiency measures. This, in turn, helps to ensure that the state will receive the full benefit of the installed measures.

**Measurement and Verification plan.** An incentive for M&V helps ensure that the building continues to operate as intended for years after installation. Without proper monitoring of building systems, performance will degrade over time. An M&V plan establishes operational parameters and expectations against which building performance can be tracked.

**Project Financing.** 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.

**Incentive Structure.** 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 whole building approach. For the commissioning and building M&V incentives, the project can participate in either the whole building approach or the SA.

## **New Construction: Savings By Design**

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Projects participating in the simplified approach method are not eligible for sustainability incentives.

### **Calculated Retrofit Program (Formerly SPC)**

For 2009 - 2011, 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 Contract 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 Strategic Plan.

#### **iv. Marketing and Outreach Plans**

The target audience for SBD is development professionals and the design teams with whom they contract. SBD is a mid-stream program, which attempts to intervene in the design stages of the relevant projects. As such, its marketing approach is well targeted to the periodicals, conferences, and events frequented by these two audiences.

Ongoing research and process evaluations will refine this process and identify additional opportunities to reach these key decision makers.

For 2009 - 11, SBD collateral will be integrated with the marketing materials of other programs/services as appropriate, such as CSI, DR, and SPC. This will extend the reach of the program and reduce customer confusion as to program availability.

#### **v. IOU program interactions**

Strategy [1-2] outlined in the Strategic Plan is to create a better linkage between the CEC's Title 24 compliance efforts and the IOUs' energy efficiency programs. In order to achieve the market transformation goals of the Strategic Plan, program management is working with the CEC and its Codes and Standards team to pursue

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a variety of compliance enhancement reviews for commercial projects. The new construction programs will continue to work closely with the CEC to pilot tools, measures, and approaches that meet their common goals.

In support of AB32 implementation, SBD will work with the Air Resources Board (ARB) and the local AQMD, to inform projects of their carbon impacts of their energy savings.

SBD will also work with state government partners to implement the California Green Building Initiative in state projects.

### Linkages to the Strategic Plan for HVAC

SBD has repeatedly touched on the close relationship between SCG and SCE in delivering the program in our joint territory. This coordination will continue in the area of HVAC code compliance, installation and maintenance.

The commercial HVAC Quality Installation (QI) 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 (for example, 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.

SBD will work closely with the HVAC QI program, and the Codes and Standards compliance enhancement team to improve acceptance testing and quality installation standards of HVAC equipment in new commercial construction. Through SBD's close relationship with the Partnership group, particularly the Strategic Planning Sub-Program (ICLEI-ILG-LGC), where there is local interest in pursuing reach codes such as making voluntary acceptance standards mandatory.

### **ii. Similar IOU and POU programs**

The SMUD has joined the four IOUs in delivering SBD. The statewide team continues to monitor initiatives around the state and elsewhere for best practices.

## **b) Program Delivery and Coordination**

### **i. Emerging Technologies (ET) Program**

Integration of New Construction Program with Emerging Technologies activities will be handled at the statewide level through the New Construction Program Management team addressing coordinated implementation. Locally, SCE program management will work with Emerging Technology on demonstrating technologies applicable to the Non-Residential sector.

### **ii. Codes & Standards Program**

See the Codes and Standards PIP for more information. Codes and Standards 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.

In order to achieve the market transformation goals of the Strategic Plan, SBD is working with the CEC and its Codes and Standards team to pursue a variety of compliance enhancement reviews for commercial projects. The new construction programs will continue to work closely with the CEC to pilot tools, measures, and approaches that meet their common goals.

### **iii. WE&T efforts**

SBD’s WE&T efforts consist of training for design professionals and the Energy Design Resources website.

**Training for Design Professionals.** In conjunction with the Workforce Education and Training program, Savings By Design will provide curriculum development, event promotion, and experts from its own staff to conduct training in integrated building design 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 staff will offer “lunch and learn” sessions to architectural and engineering firms interested in learning about utility energy efficiency programs.

**EDR** offers a variety of tools 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 approaches that contribute to energy-efficient Non-Residential New Construction. Additionally, design tools that reduce the time spent evaluating the energy use impact of design decisions are provided at no cost.

EDR has begun to expand the materials and tools offerings to include Residential New Construction. Although EDR currently supports Non-Residential New Construction activities, the future of this statewide coordinated offering involves becoming the portal for energy efficiency information for several statewide programs.

EDR was developed under the aegis of the SBD program to meet its specific needs, but as EDR expands beyond Non-Residential offerings, it is anticipated EDR will be managed and led by the WE&T team.



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EDR activities:

- Expand the website to include an interactive component that allows educators and students to post and discuss materials related to energy efficiency and other demand side opportunities/issues;
- Expand the portal to include a Residential New Construction component, solicit design materials and tools that will enable participants in the Residential New Construction industry to maximize energy uses, reduce greenhouse gas emissions, reduce carbon footprints and integrate renewable energy technologies. The material will train current and future green collar workforce participants on how to make their new home or Residential building more efficient;
- Expand the portal to include Non-Residential and Residential retrofit reference materials, tools and web links to other energy efficiency/sustainability/climatic solutions websites. The material will train current and future green collar workforce participants on how to make their facility, home, or building more efficient;
- Solicit specific materials for the website that will assist the design community to achieve ZNE construction goals;
- Integrate green house gas mitigation concepts and energy efficiency impacts in all new materials; and
- Develop materials that address integration of renewable generation in new construction projects.

#### **iv. Program-specific marketing and outreach**

SBD will continue to deliver the program through targeted marketing to thought leaders in the development and design communities. These targeted channels include the following:

- Green building partners;
- Award sponsorship;
- Internet resources;
- Print media; and
- Conferences and training

**Green Building Partners.** SBD 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);
- Illuminating Engineering Society (IES);
- American Society of Heating and Refrigeration Engineers (ASHRAE) and its Standard 189;
- United States Green Building Council's (USGBC) LEED Rating System;
- Collaborative for High Performance Schools (CHPS);
- California Commissioning Collaborative (CaCx);
- DOE/EPA's ENERGY STAR® benchmarking tool for buildings;

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- California Green Building Standard in Title 24; and
- Metropolitan Water District and local water agencies

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's California Council) the annual Energy Efficiency Integrated Design Awards. These awards are designed to raise the awareness of successful high-performance facilities within the design professions.

**Internet Resources.** Comprehensive information about SBD can be found on [www.savingsbydesign.com](http://www.savingsbydesign.com). In addition, SBD case studies are posted on the Energy Design Resources website. For more detail on EDR, see discussion below (Section 6. Program Implementation, sub-section b. Program delivery and coordination, item iii., WE&T efforts, above). Utility websites will continue to advance Savings By Design by providing program information on SCE.com.

**Print Media.** Articles and press releases are from time to time submitted to specialty publications targeting developers, building owners and design professionals.

**Conferences and training.** SBD will continue to seek out speaking opportunities at conferences and to provide expert teachers for architects and engineers in aspects of incorporating energy efficiency and sustainability in their designs. SBD will continue to sponsor and staff conferences targeted at decision makers and design teams.

### **v. Non-energy activities**

Where applicable, SBD will seek to identify new types of water savings technologies opportunities and 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;
- **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

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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; and

- **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.

### **vi. Non-IOU programs**

SBD will work with the Metropolitan Water District and local water agencies on water efficiency efforts. There may also be opportunities to partner with local AQMDs and County Integrated Waste Management Boards to encourage AB 32 compliance and construction waste diversion in support of broader green certification.

### **vii. CEC work on PIER**

As described above (b, Program delivery and coordination, i., Emerging Technologies), SBD will work closely with ET. Through its work with ET, SBD will also attempt to create program pull in the PIER program for technology research that meets the future needs of program participants.

### **viii. CEC work on C&S**

SBD will promote available resources to the new construction market players regarding Title 24 code changes, in coordination with Codes and Standards Program.

### **ix. Non-utility market initiatives**

A number of market players have significant influence over decision makers in commercial development. Increasingly, the industry has recognized that efficient, green buildings rent for higher premiums, attract longer-term tenants, and spend less time unoccupied. SBD will continue to reach out to these organizations to help demonstrate that there is a strong business case for green building and energy efficiency. They include:

- Urban Land Institute
- US Green Building Council
- Major banks and financial institutions
- Commercial real estate investment trusts and holding companies

### **c) Best Practices**

The statewide Savings By Design team has completed process evaluations of the 2006-2008 programs. Based on interviews with various market actors and focus groups from the design community, several consistent themes emerged as recommendations to improve the program. Consequently, several enhancements were added to the program as follows:

## **New Construction: Savings By Design**

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### **Process Evaluation Recommendations:**

- Provide Early Integrated Design Workshop - The objective of the workshop 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 receive 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**

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 warehouses and retailers with dominant refrigeration loads. For 2009 - 2011, 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.

### **Targeted Approaches**

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, Walgreen’s, Thrifty, Staples, Lowe’s, Edwards Theatres and others have participated in the SBD program.

## **New Construction: Savings By Design**

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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 this 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 (for example, Safeway/Vons) this activity is expected to increase in the 2009-2011 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 discussed in more detail elsewhere. In summary, these are:

- SBD's "Path To Zero" campaign, which aims to create demand in the marketplace for efficient, green, renewable-powered, high-performance buildings.
- Simplified SBD for smaller projects.
- Collaboration with educational institutions on curricula and workshops to train the next generation of providers.
- Sustainability incentives: additional financial incentives beyond direct energy and demand reduction incentives for SA and whole building approach projects that meet qualifying criteria.
  1. Integrated Design Workshops Stipend
  2. Green Building Certification Incentive
  3. Commissioning
  4. Measurement & Verification Plans

### **e) Integrated/coordinated Demand Side Management**

The whole building approach is the preferred method of promoting energy savings because it enables a design team to consider integrated, optimized, energy efficiency solutions. The systems approach is a performance-based method that uses a more limited set of savings variables to optimize efficiency choices for projects later in design or with simpler building systems.

In addition to SBD, SCE continues to offer the Sustainable Communities Program (SCP) which seeks to expand the traditional focus of utility programs from energy efficiency in "vertical construction," that is, the individual building on a lot such as Savings By Design has traditionally done, to "horizontal construction" i.e., the planning of communities, layout of streets, infrastructure design, and civil

## **New Construction: Savings By Design**

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engineering. This gives the utility a voice in numerous decisions affecting energy use such as solar orientation. In addition, when working with “vertical” construction,” SCP will promote sustainable development, addressing Residential and commercial construction practices that affect occupant health and environmental well-being. This includes energy use as well as non-traditional sources of energy savings, such as water efficiency. Sustainable Communities is also the location of the Path to ZNE program element that seeks to design and demonstrate near ZNE commercial buildings.

The explosion of “green” into the Non-Residential sector and the increased awareness of green benefits have created significant market opportunities to pursue energy efficiency. SCE will leverage this progress to expand previous emphasis upon materials and distributed generation to include an integrated approach to energy efficiency and demand side measures.

The concerted efforts of many stakeholders, including the IOUs, will be necessary to make significant progress towards the realization of the BBEES. SCE recognizes that - as laid out in the Strategic Plan- the integration of DSM approaches and integrated design is extremely important to achieving ZNE new construction. This can better be accomplished when the entire suite of DSM offerings is at the table (including demand response, energy efficiency, SmartConnect™, and distributed generation). Further, these offerings can only be maximally effective when they are part of an integrated design.

SCE also intends to leverage other existing offerings, internal and external to SCE, to assist projects that desire a cohesive sense of sustainability beyond the traditional aspects of electric energy efficiency. Such offerings may include coordination with LEED™ certification and ENERGY STAR® ratings, connections with demand response, self-generation, and water conservation programs and sub-programs, partnerships with industry organizations to promote acceptance of new program approaches by design professionals, and others as applicable. SCE will leverage SBD and SCP to make progress towards the milestones of the Strategic Plan.

### **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.

## **New Construction: Savings By Design**

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### **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 Technology 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**

To clarify the placement of ZNE in commercial new construction, SCE's intention is to operate this element under the aegis of the Sustainable Communities Program. It is called out due to the issue's centrality to meeting the Strategic Plan's 2030 goals for ZNE commercial new construction.

### **The ZNE "Path to Zero" Program Element**

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.

SBD efforts toward the ZNE program will be leveraged through SCE's Sustainable Communities Program. The campaign will focus on market segments and climate zones having the most potential to achieve 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 the desired results.

## **New Construction: Savings By Design**

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### **ZNE Program Goals**

- Buildings will use a minimum of 40% less energy than Title 24 codes requirements
- Buildings will incorporate innovative technologies, design elements not easily captured in Title-24, or integrated design approaches
- A performance metric will be adopted (for example, kBtUs per sq. ft. by building type) to encourage inclusiveness of strategies (for example, buildings operations and occupant created loads)

Any ZNE savings will be counted as part of SBD.

### **ZNE Incentives**

Reaching ZNE's goal of energy efficiency 40% below Title 24 will require additional support. ZNE building innovators may be eligible for utility funding such as:

- Advanced computational modeling
- Additional technical/design team assistance
- ET demonstration dollars for candidate technologies
- Ongoing system monitoring post construction
- Project write-ups and post-occupancy performance analysis

### **ZNE Program Evaluation**

All SBD projects will be benchmarked using ENERGY STAR® or the appropriate tools as necessary. Buildings that present performance problems will receive additional review and or services to improve performance, for example, recommissioning.

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 to improve SBD performance over time.

### **ZNE Case Studies**

SBD will prepare case studies 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 help make ZNE buildings a reality.

### **h) EM&V**

The utilities plan to work together and with the Energy Division to develop a complete plan for 2009-2011 studies and budgets after the program plans are finalized and filed.



## **New Construction: Savings By Design**

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

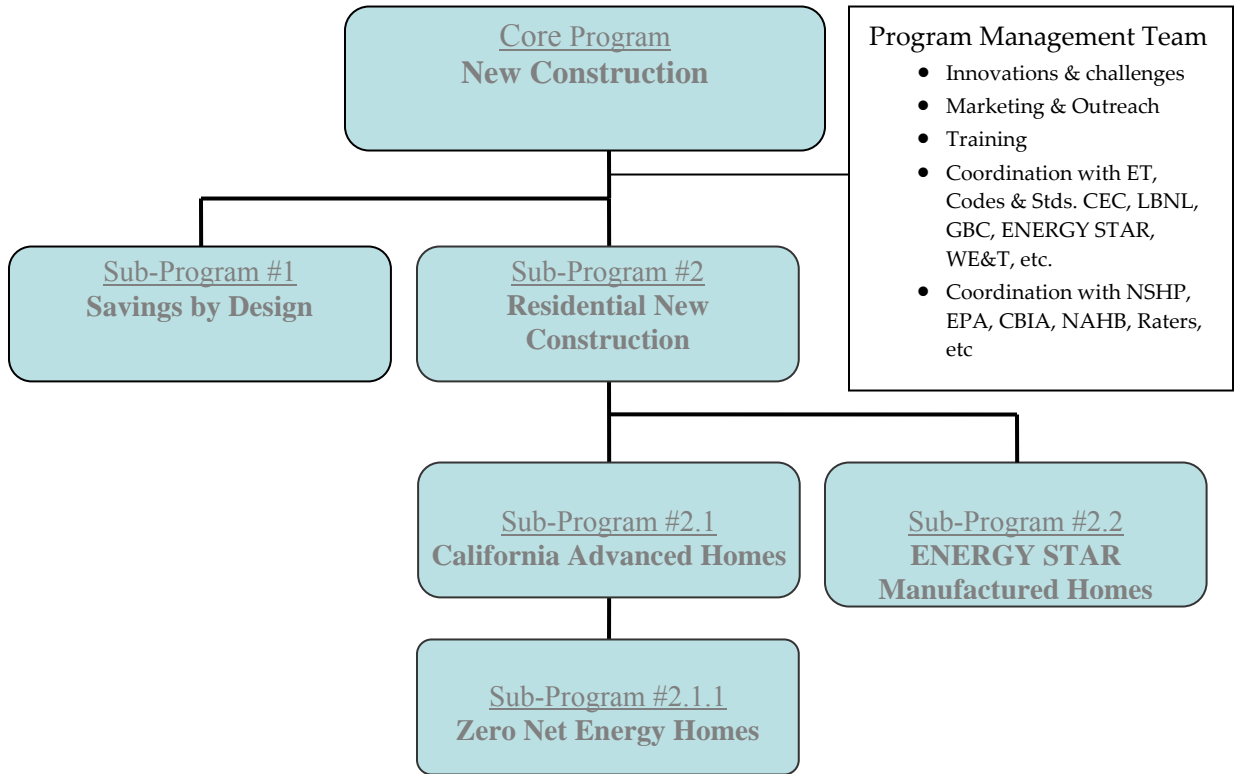
- Work with ED to resolve market baseline and transformation issues.
- Conduct statewide process evaluation to assess and track the proposed metrics.
- Conduct process evaluation to improve program design, implementation and market effectiveness.

Up to 10% of SBD projects will be monitored using ENERGY STAR® benchmarking.

# New Construction: Savings By Design

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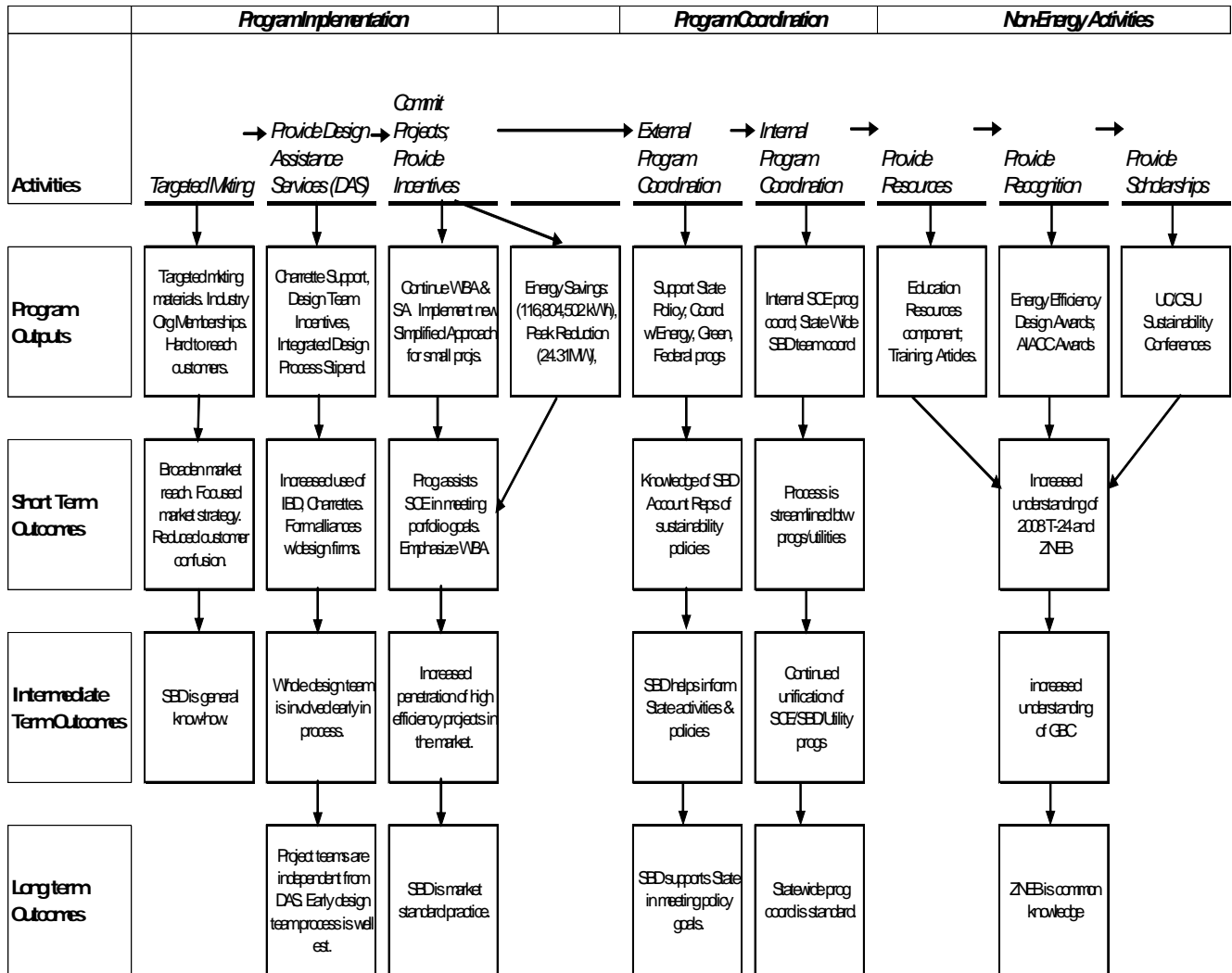
## 7. Diagram of Program



# New Construction: Savings By Design

## 8. Program Logic Model

Savings by Design DRAFT 2009-2011 Logic Model



KEY:

Comp	completed	IED	integrated building design
Marketing	Marketing	WBA	Whole Building Approach
bdg	building	SA	Systems Analysis (Approach)
comm	community	ZNEB	Zero Net Energy Building
coord	coordination	GBC	Green building Code
conf	conference		

## New Construction: Savings By Design

### Appendix A: Zero Net Energy: Goals and Strategies

Zero Net Energy		
Program Goals	Program Strategies	Action Strategies
<b>1-1:</b> Establish a long-term progressive path of higher minimum codes and standards ending with ZNE codes and standards for all new buildings by 2030.	<ul style="list-style-type: none"> <li>Establish one-or two-tiered voluntary EE standards, coordinated with green building rating systems.</li> <li>Align Title 24 targets with goals of AB 32 and carbon reduction.</li> </ul>	<ul style="list-style-type: none"> <li>Establish a minimum of 40% less energy than Title 24 codes requirements</li> <li>Adopt a performance metric to encourage inclusiveness of strategies (e.g. buildings operations and occupant created loads)</li> </ul>
<b>1-2:</b> Expand Titles 20 and 24 to address all significant energy and uses.	<ul style="list-style-type: none"> <li>Develop and adopt broader codes and standards for plug loads, such as copy machines, printers, battery chargers, and televisions.</li> <li>Expand Title 24 to include whole building approaches including metering and data management, automated diagnostic systems, and sub-metering for tenant-occupied space.</li> <li>Adopt progressive codes and standards for high-performance commercial lighting applications.</li> </ul>	<ul style="list-style-type: none"> <li>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.</li> </ul>
<b>1-3:</b> Establish a “Path to Zero” campaign to create demand for high-efficiency buildings.	<ul style="list-style-type: none"> <li>Convene leading building industry associations to plan and conduct campaign.</li> <li>Organize forums to develop and exchange experience and data on emerging technologies, practices and designs that deliver ultra-low and ZNE buildings.</li> </ul>	<ul style="list-style-type: none"> <li>Increased incentives and design assistance for innovative “Path to Zero” buildings.</li> <li>Create case studies to highlight showcase ZNE projects</li> <li>Partner with green-focused organizations to promote completed projects</li> <li>Utilize public relations to generate media interest</li> <li>Partner with local governments</li> <li>Partner with local utilities (such as water districts)</li> </ul>
<b>1-4:</b> Develop innovative financial tools for ZNE and ultra-low energy <i>new</i> buildings.	<ul style="list-style-type: none"> <li>Develop and pilot innovative financial tools.</li> <li>Identify building performance metrics or documentation needed to inform building performance and valuation.</li> </ul>	<ul style="list-style-type: none"> <li>On Bill Financing</li> </ul>
<b>1-5:</b> Create additional investment incentives and leverage other funding.	<ul style="list-style-type: none"> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>Financial assistance for natural ventilation strategies and on-site renewable energy systems – either utility- or customer-owned.</li> <li>Package additional funding sources, such as those offered by other utilities and any state and federal tax credits.</li> </ul>
<b>1-6:</b> Develop a multi-pronged approach to advance the practice of	<ul style="list-style-type: none"> <li>Promote ID development via Title 24 codes/standards and market activities.</li> <li>Identify/develop tools and protocols from building commissioning, retro-</li> </ul>	<ul style="list-style-type: none"> <li>Apply lessons learned from the completed-project process evaluations to the development of future training</li> <li>Offer advanced design training for</li> </ul>

## New Construction: Savings By Design

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<b>Zero Net Energy</b>		
integrated design.	commissioning, and building M&V to enable ID to be deployed. <ul style="list-style-type: none"><li>• From partnerships with industry and architectural/engineering schools to promote the practice of education in ID.</li><li>• Provide incentive credits for professionals who maintain their accreditation w/training.</li></ul>	architects, lighting designers, etc., covering subjects including natural ventilation systems and daylight lighting.



5b

## **New Construction: California Advanced Homes Program**

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- 1. Program Name:** California Advanced Homes Program (CAHP)  
**Program Type:** Third party

- 2. Projected Program Budget Table**

**Table 1** – Reference core program for budget details.

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

**Table 2** - Reference core program for projected gross impacts detail.

- 4. Program Description**

- a) Describe program**

CAHP is part of the statewide Residential New Construction (RNC) program offering. The RNC program represents one-half of the New Construction core offering. CAHP encourages single and multi-family builders of all production volumes to construct homes that exceed California's Title 24 energy efficiency standards by a minimum of 15 percent. Through this plan, multi-family and single-family projects are approached identically for program purposes except where explicitly noted. The ENERGY STAR® Manufactured Homes program addresses new factory-built housing. The structure of the relevant New Construction program elements is as follows:

New Construction Program (Core)

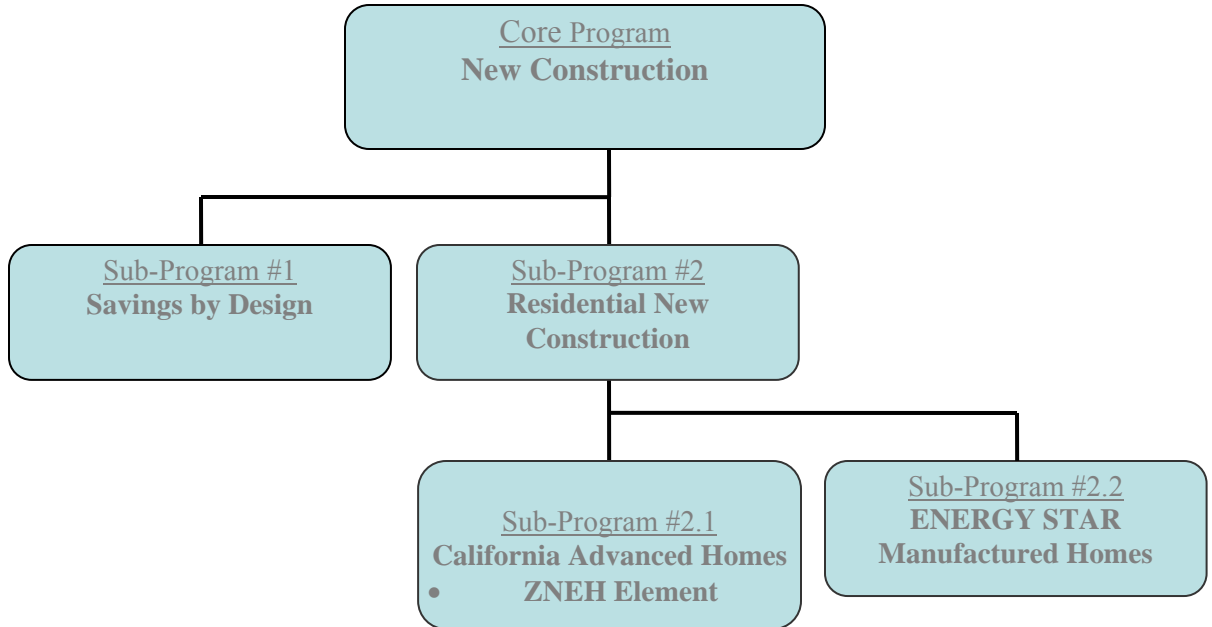
1. Non-Residential New Construction Sub-Program (SBD)
2. Residential New Construction Sub-Program
  - 2.1 Single-family/Multi-family Sub-Program (CAHP)
    - 2.1.1 ZNE Homes Sub-Program
  - 2.2 Manufactured Homes Sub-Program

For the convenience of the reader, two other programs related to New Construction are also called out:

1. Sustainable Communities Program (Name/location differs by IOU) (Third party)  
Covering Master-planned communities, mixed-use projects, campuses, and commercial projects pursuing advanced energy efficiency and green targets.
2. Partnership Programs (Core)
  - a. Strategic Planning Sub-Program (Energy Leader Partnership Strategic Support)  
Trains cities and counties to procure city projects to meet energy efficiency standards, to identify funding sources, to share best practices, and recognizes them for their achievements.



## New Construction: California Advanced Homes Program



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 the Strategic Plan), and works in close coordination with the ZNEH sub-element. Together these elements seek to raise plug load efficiency, focus on whole-house solutions, drive occupant behavior through in-home monitoring and visual display tools, and leverage market demand for green building standards. CAHP is also coordinated with demand response programs, Emerging Technology, and the New Solar Homes NSHP. In aligning itself with the Strategic Plan, the CAHP targets an interim goal of 50% of RNC to Tier II (2005) by 2011, 10 per cent of RNC to 55% by 2011, and a final goal of 100% of Residential New Construction to be net zero by 2020.

As explored in greater detail below, CAHP will work closely together with the ZNEH sub-element to adopt the following strategies toward achieving the Strategic Plan goals. As program technologies and approaches are developed and demonstrated in ZNEH, they will be incorporated into the CAHP. 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.

## New Construction: California Advanced Homes Program

### **b) List measures**

CAHP Program measures, known savings. All IOUs.<sup>20</sup>

- Whole House Incentive
- Dishwashers
- Aerators/Showerheads
- Clothes washers (Water-agency Partnership)<sup>21</sup>
- Dryers
- Interior Lighting
- Refrigerators

Pending Program Measures, savings/incentive TBD. IOU-dependent<sup>22</sup>

- Programmable Communicating Thermostat (deemed, delivers DR measure)
- Refrigerant Charge Adjustment (deemed, delivers Comp HVAC measure)<sup>23</sup>
- 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**

- Technical support to Energy Analysts and Design Teams<sup>24</sup>
- Economic modeling/measure selection support to builder/construction managers
- Marketing support to builders (sales agent training, marketing materials)
- DSM coordination (PV, DR, AMI, ET) for builders to maximize

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 Strategic Plan Codes and Standards strategy and support the ZNE 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

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<sup>20</sup> Savings per appliance will be consistent across all IOUs.

<sup>21</sup> 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.

<sup>22</sup> 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.

<sup>23</sup> T24 requires CIL or RCA in prescriptive path. If used for compliance, measure ineligible

<sup>24</sup> There is a desire by the IOUs to explore a variety of forms of design assistance, including design team incentives tied to home performance, peak kW reduction, design optimization services by implementation staff, and funded/hosted charrettes/workshops for design teams.

## **New Construction: California Advanced Homes Program**

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:

- 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.<sup>25</sup>
- For those units designated by the builder for low-income occupants, SCE's LIEE program will pay the full incremental cost of installing higher efficiency equipment (high Seasonal Energy Efficiency Rating (SEER) AC systems and refrigerators). LIEE will claim the energy savings from measures they funded.
- CAHP will pay the standard calculated incentives for all other measures in low-income units (e.g. improved duct work and windows). CAHP will claim the energy savings resulting from EE measures other than high SEER A/C and refrigerators.
- CAHP would treat market-rate units using the standard calculated approach and claim all energy savings.

This collaboration will encourage the development of more below market rate low income units by developers, will increase participate in the New Construction program based on the combined higher incentives, and will benefit low income occupants over the life of the installed equipment.

The partnerships program will assist in gathering information to ensure that the units actually are occupied by low income qualified customers. Local governments typically track this information in order to show compliance with state mandates.

### ZNEH

The ZNEH program element 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 provided below.

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<sup>25</sup> See, <http://www.hcd.ca.gov/hpd/hrc/plan/he/>, accessed 25 Apr 08.

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The ZNEH program element will consist of a series of pilot projects, typically custom homes with motivated owners willing to pick up a substantial portion of the cost of additional features. The sub-program may, at its discretion, provide direct financial incentives over and above the standard CAHP offer, but only on a case-by-case basis. The Emerging Technology program may also fund the purchase, installation, and monitoring of candidate technologies. The ZNEH program element will provide its support in the form of soft-cost design support to help design teams meet their energy and environmental objectives. The sub-program works closely with home builders seeking assistance in the development of sustainable design and construction, green building practices and emerging technologies.

The ZNEH program element offers educational opportunities to builders, architects and other Residential construction stakeholders seeking knowledge about emerging technologies and new home design. The program encourages single and multi-family architects and builders to design and construct dwelling units that exceed California's Title 24 standards, reduce greenhouse gas emissions, and provide a healthier and less resource-intensive environment. Such non-standard design elements may include optimization for solar orientation, design for comfort without traditional HVAC, or non-vapor compression cooling systems. It also is a priority goal of the sub-program to execute candidate technologies and integrated approaches to realize zero-peak homes, even if zero-net homes (site BTUs for both therms and kWhs) prove too costly.

- Design Assistance Options:
  - General Team Education: Give presentations, review rating system options, determine big picture green building goals.
  - Energy Efficiency/Green Building Recommendations: Project specific recommendations report highlighting ways to incorporate energy efficiency, healthy materials, and other green building features into the unique parameters of the project. Specific product recommendations will not be provided.
  - Energy Modeling Support: Provide support and recommendations for Title 24 energy performance modeling to estimate actual building usage and give the project credit for energy efficiency measures that are difficult or uncommon to model.
  - Plan and Specification Review: Provide comments on the construction documents at various stages to give feedback on clarity of green building specifications.
  - Green Feature Cost Assessment: Provide cost-benefit analyses or value engineering assistance to evaluate specific green building features under consideration for inclusion in the project.
- Rating System Documentation Support: Assess and identify project credit/certification goals, identify and assign rating system tasks to members of the design team, guide the team in system process and timing, assist team in understanding and/or documenting credit achievement. This aid will enhance -

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but not supplant - participants' efforts to pursue project specifications, designs, calculations, modeling and other necessary services.

The minimum threshold for acceptance in the ZNEH program element will be a whole building performance of at least 45% over Title 24 standards. Projects must meet LEED for Homes (Silver) equivalent and/or qualify for a minimum of 100 points from Build It Green's Green Point Rated system. Energy savings will be evaluated based on the diversity of measures and the overall energy performance. The life cycle CO<sub>2</sub> reductions and water savings will also be tracked.

### CAHP Incentive Rationale

The program's most ambitious goal for the 2009 - 2011 program cycle is to have 50% 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 Climate Zone somewhat). Thus, the Big Bold Energy Efficiency goal of getting half of new homes to 2005 Tier II (at 35% better than code by 2011) is the equivalent of getting those same homes to about 20% better than the 2008 code. Getting half of the market to 20% 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% 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 ZNE 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

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- 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% to 10% 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**

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

**Table 3** – Refer to the overarching program for quantitative baseline metric

#### **b) Market Transformation Information**

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

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

#### **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 requirements 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% 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 that homes have on the environment. CAHP is working with IOU marketing efforts, statewide partners (for example, Flex Your Power), ENERGY STAR® campaigns, and builders' own messaging to increase consumer awareness of this idea. Moreover, there is scant evidence that energy efficiency drives decision-making among homebuyers whose access to capital is more difficult in a constrained capital market.

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### 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 IOUs' goals for the reduction of greenhouse 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.

### **d) Quantitative Program Targets**

The targets provided herein are best estimates, but nonetheless are forecasts.

**Table 5**

California Advanced Homes	Program Target 2009	Program Target 2010	Program Target 2011
Single Family Units Paid	1500	1350	1215
Multi-family Units Paid	604	544	489

### **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 Strategic Plan. The Strategic Plan envisions a transformation of the core Residential sector to ultra-high levels of energy efficiency, resulting in 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 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.

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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 the Strategic Plan, and works in close coordination with the ZNEH sub-element. Together these programs seek to raise plug load efficiency, focus on whole-house solutions, drive occupant behavior through in-home monitoring and visual display tools, and leverage market demand for green building standards. CAHP is also coordinated with demand response programs, Emerging Technology, and the NSHP. In fully aligning itself with the Strategic Plan, the CAHP targets an interim goal of 50% of RNC to Tier II (2005) by 2011, 10 per cent of RNC to 55% by 2011, and a final goal of 100% of Residential New Construction to be net zero by 2020.

The ZNEH program element 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 program element program will be a whole building performance of at least 45% over Title 24 standards. Projects must meet LEED for Homes (Silver) equivalent and/or qualify for a minimum of 100 points from Build It Green's Green Point Rated system. Financial incentives and marketing support offered for the case study projects will be significantly higher than those offered under CAHP. By providing strong encouragement for builders to move up on the energy efficiency scale with financial and non-financial incentives, the ZNEH program element is uniquely positioned to support the Strategic Plan goal of ZNE 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 ZNEH program element. ZNEH is the place to demonstrate innovative technologies and to help drive the market for energy efficiency through the adoption and marketing of green standards. Given consumer's interest in green, and the market's failure to drive energy efficiency sales, marketing the green features (one of which is EE) is the best way to increase consumer demand for more efficient homes. Moreover, the 15% threshold for participation aligns well with existing green building certification programs such as ConSol's California Green Builder and Build it Green's Green Point 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 corrections needed to help 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 ZNE Homes, although the details differ somewhat by utility. Factory-built housing will be referred to as ENERGY STAR® Manufactured Homes.

#### ii. Program delivery mechanisms

SCE delivers the program through in-house account executives leveraging third-party implementers.

#### 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.

#### iii. Incentive levels

##### Incentive Structure

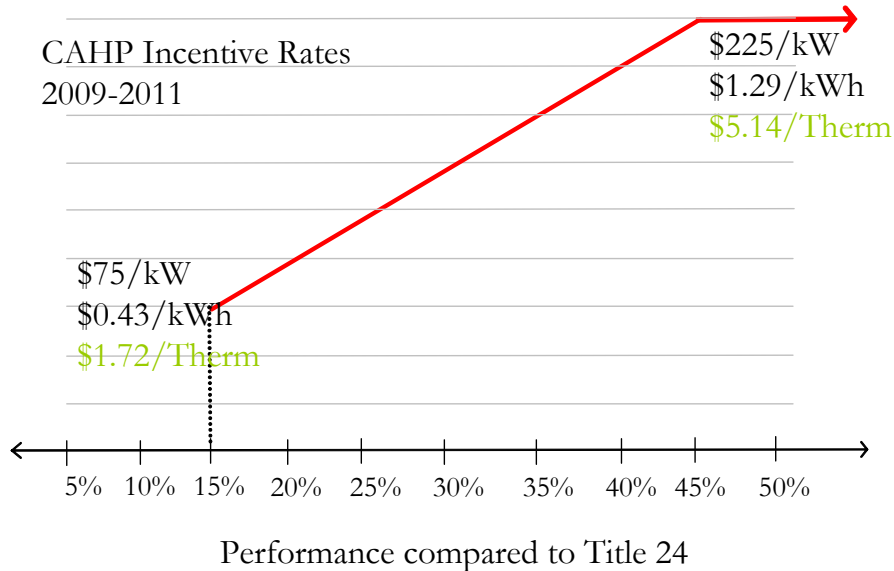
The pay-for-performance incentive structure for the 2009 - 2011 CAHP will change from the current deemed structure of three tiers (15 percent, 20 percent, and 35 percent). Under the current deemed program, builders receive the same incentive regardless of how much energy the project saves. By definition, a deemed incentive rewards the same, so overcompensates those who save the least, and under-rewards those who save the most. Since the deemed amount is an average across a wide variety of climate zones, those in the mildest zones are paid more per kWh than those in hotter areas. This effectively shortchanges those whose homes have the highest performance. It also tends to discourage participation in hotter areas (for example, climate zone 15, Palm Springs) where costs are in fact higher for achieving the same level of energy performance.

The proposed approach is closely modeled on the calculated whole building approach used by the Savings By Design program. In this approach, the incentive rate per unit of energy (\$/kW, \$/kWh or \$/Therm) is a function of the percentage by which the project exceeds code. Therefore, a kWh at 15% better than code is worth only \$0.43, but a kWh at 35% better than code is worth \$1.00 to the builder. Multiply this increase in rate by the absolute increase in units of energy

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saved as performance margins increase, and the result is an arithmetic progression.

The 2009-2011 calculated approach will be as follows:



The peak demand incentive rate is also variable, rising from \$75/kW at 15% to \$225/kW at 45%.

Moreover, because of the challenges faced by builders in adopting the new energy code requirements, the statewide IOU team has adopted the 10% rate to ease the transition to the new code for builders and to compensate for the abandonment of stand-alone prescriptive measures, discussed in more detail below. The IOUs assert that the special rate shall only be offered for a limited time, the five months from August 1, 2009 until December 31, 2009 for those projects subject to the 2008 Title 24 code. It will not be available after January 1, 2010.<sup>26</sup>

This approach rewards builders for achieving higher levels of energy efficiency and avoids the “clustering” problem in tiered programs. A tiered approach discourages builders from achieving incremental performance if they are unable to reach the next higher tier. In line with the elements of the strategic plan, the new approach rewards builders for undertaking whole house solutions where the entire structure can be considered as an integrated system.

Moreover, while executing a net zero home remains a financial and technical challenge, a zero peak home is well within the reach of existing technologies and is particularly appealing to a utility with summer capacity issues. To that end, CAHP has elected to focus on zero peak homes as a bridging strategy to net zero

<sup>26</sup> 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.

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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 ZNE, 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.

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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 Strategic Plan 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 (SCG) 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.

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### How CAHP program supports CEC's NSHP, 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 ZNEH 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 reason 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, and domestic hot water 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:

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$\frac{AB-PB}{AB}$	$\times 100 = \% < T24$
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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% 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.<sup>27</sup>

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
<b>2001 T24 kWh/home</b>				
kWh/Home	434	564	773 (est.)	1226 (est.)
\$/kWh 2001	\$0.92	\$0.89	\$0.91	\$1.63
<b>2005 T24 kWh/home</b>				
kWh/Home	235	300	415	658
\$/kWh 2005	\$1.70	\$1.67	\$1.69	\$3.04
<b>2008 T24 kWh/home (Est. at 15% &lt; 2005)</b>				
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.

Considering the low current levels of market penetration, and the significant market penetrations (50% to 35% < 2005 T24 by 2011) required by the Strategic Plan, the need for a reconsideration of the 2006-2008 incentive model is clear.

<sup>27</sup> 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.

<sup>9</sup> 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).

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- The second reason is that SCE and SCG have never had an inter-utility arrangement for SCE to sell its therms to SCG, and SCG to sell its kWh to SCE.<sup>28</sup> As an electric utility, SCE is unable to claim therm savings or add them to its cost-effectiveness calculation when preparing the E3. The therms SCE saves were likewise unclaimed by SCG. 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% performance level, that dishwasher is worth only \$17.32.

Incentive per refrigerator					
% < T24	kWh	\$/kWh	kW	\$/kW	Total
35%	58	\$1.00	0.0099	\$ 175	\$ 59.73
10%	58	\$0.29	0.0099	\$ 50	\$ 17.32

See complete list under Section 4: Program Description, sub-section b., List measures, above.

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), programmable communicating thermostats (PCTs), and In-Home Displays (IHDs) will continue to be paid at the deemed rates of their originating program, in large part because the funding for these items is coming from another program's budget.

As part of the effort to address plug loads, ZNEH is exploring such technologies as master plug shut-off switches (smart outlets that shut off when they detect only parasitic loads). Additionally, and as part of the coordinated demand side

<sup>10</sup> Both parties have executed an agreement for 2009-2011 program therm and kWh exchanges.

## New Construction: California Advanced Homes Program

management approach recommended by the Strategic Plan, 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.<sup>29</sup> In addition to financial savings, the rationale is that customers will gain social status and personal satisfaction by being the most conserving, much as current Prius 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.

<b>Program Criterion</b>	<b>Percentage Added to Overall Incentive</b>
<ul style="list-style-type: none"> <li>ENERGY STAR® Home</li> </ul>	10% (fixed)
<ul style="list-style-type: none"> <li>Green Home</li> </ul>	Independent, third-party, transparent verification provider will be retained to verify green building elements have been installed (similar to HERS registry function). The IOUs will establish a minimum threshold for participation and set an incentive equal to 5% of the total, rising proportionally for higher levels of green performance.
<ul style="list-style-type: none"> <li>Compact Home</li> </ul>	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.
<ul style="list-style-type: none"> <li>Solar Thermal</li> </ul>	The same \$/Therm rate as overall performance level, in effect a doubling of incentives for therms offset by Solar

<sup>29</sup> 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.



## **New Construction: California Advanced Homes Program**

<b>Program Criterion</b>	<b>Percentage Added to Overall Incentive</b>
	thermal collector.
• kW Reduction (Zero Peak Home)	The same \$/kW rate for each peak kW reduction due to on-site photovoltaic system

#### **iv. Marketing and outreach plans**

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.<sup>30</sup> For the multi-family segment of the program, qualifying homes include condominiums, townhomes, apartment buildings, and mixed-use projects.

There will be closer coordination of marketing efforts to synergize wherever possible. While each utility would like to leverage on their strengths and existing relationships within their service territories, certain marketing elements can be launched on a common platform. A common website will be created to provide builder information that will be commonly disseminated.

To reduce costs 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 CAHP and service offerings. The IOUs will continue to strengthen 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:

- California Energy Commission (CEC)
- FYP
- National Association of Home Builders (NAHB)
- California Building Industry Association (CBIA)

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<sup>30</sup> As discussed above, manufactured housing is not subject to Title 24 and uses the national HUD baseline.

## **New Construction: California Advanced Homes Program**

- Green Building Consultants (that is, Build it Green, California Green Builder, Global Green)
- National Association of Homebuilders
- United States Green Building Council (USGBC)
- ULI
- LABC
- California Manufactured Housing Institute
- IES
- AEE
- IHACHI
- PHCC, and
- Others

Through an innovative, coordinated approach, we will maximize outreach opportunities that 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. 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.

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.

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 SCG's Energy Resource Center, SCE's Customer Technology Application Center, and PG&E's Pacific Energy Center, the statewide new construction team will work to expand 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

## **New Construction: California Advanced Homes Program**

communications tools working in concert to expand program awareness and participation.

The IOUs will diligently explore other means of encouraging builder participation in the CAHP program.

- Developing a list of resources and contractors that could be used by builders
- Providing information on comparative costs and energy savings of alternative measures
- Exploring financing arrangements (green mortgages, energy-efficient mortgages, etc.), in consultation with the other IOUs and financial institutions
- Expedited permitting for high efficiency buildings
- Working with Municipalities to develop educational channels for codes and standards.

### **v. IOU program interactions**

The plan addresses above, in the CAHP Incentive Rationale section, the ways CAHP is responding to current code changes and how it anticipates a leading role in code modifications 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<sub>2</sub> 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)
- Flex Your Power (FYP)
- National Association of Home Builders (NAHB)
- California Building Industry Association (CBIA)
- Green Building Consultants (e.g.. Build it Green, California Green Builder, Global Green)
- National Association of Homebuilders (BIASC)
- United States Green Building Council (USGBC)
- Urban Land Institute (ULI)
- Los Angeles Business Council (LABC)
- California Manufactured Housing Institute
- Illuminating Engineering Society (IES)

## **New Construction: California Advanced Homes Program**

- Association of Energy Engineers (AEE)
- Institute of Heating and Air Conditioning Industries (IHACHI)
- Plumbing-Heating-Cooling Contractors Association (PHCC)

The California Building Industry Association and the 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.

CAHP will continue its commitment to the EPA's 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.

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. In 2008 SCE was rewarded for "Sustained Excellence in Energy Efficiency Program Delivery."

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 - 2011 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 CAHP 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, SCE 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 CAHP program.

### **vi. Similar IOU and POU programs**

The statewide CAHP 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.

## **New Construction: California Advanced Homes Program**

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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 (ET) program**

Emerging technologies will chiefly be handled within the ZNEH sub-element of CAHP. The IOUs are looking to partner with our ET and PIER-funded Testing Facilities to pilot zero-net energy approaches. SCE is looking toward the construction of a demonstration home at its CTAC facility. However, the proposed incentive approach allows the IOUs the flexibility to include both deemed and calculated energy savings from new technologies as they become market ready.

The utilities will seek to integrate R&D ideas from Emerging Technologies, PIER, LBNL and other avenues to further assist the projects to advance sustainability and achieve very high levels of energy efficiency.

#### **ii. Codes and Standards program**

See the Codes and Standards PIP for more information. Codes and Standards is looking to draft pre-approved “drop-in” legislation that can be used by local municipalities looking to create reach codes. Such activities would all be eligible for utility incentives since IOUs are playing such a critical role in drafting the language.

#### **iii. WE&T efforts**

The RNC team is seeking ongoing support from the three energy and training centers for classes relevant to the building industry and training the next generation of trade allies, builders, contractors, and the like.

#### **iv. Program-specific marketing and outreach efforts**

In 2009-2011, the program will expand its builder/contractor education and training materials to increase awareness of the California Advanced Home Program and better communicate the advantages to builders of participation. The IOUs will continue to strengthen delivery channels through improved information and support materials. The IOUs’ 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.

## **New Construction: California Advanced Homes Program**

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

Where applicable, the ZNEH program element will seek to identify new types of water savings technologies opportunities; CAHP will leverage local water agency incentives in the core CAHP to save cold and hot water.

### **vi. Non-IOU programs**

See item v. above on water-agency partnering efforts. There may also be opportunities to partner with local AQMDs and County Integrated Waste Management Boards to encourage material recycling in ZNEH and green programs.

### **vii. CEC work on PIER**

See Emerging Technology in sub-section i., above.

### **viii. 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.

### **ix. Non-utility market initiatives**

The homebuilding industry is facing some of the worst times in its history.<sup>31</sup> In fact, new Residential single-family housing permits have declined by 37.1% relative from 2006 and multi-family permits have declined by 21.2 percent.<sup>32</sup> As a result, builders are building fewer homes and releasing them more slowly to the market. The significant costs associated with carrying inventory coupled with declining prices of houses has created additional resistance in a building industry already averse to additional construction costs. In addition, the industry is consolidating operations and eliminating staff to reduce overhead costs and avoid bankruptcy.

The industry faces the burden of stringent California Title 24 building code standards. The CEC will institute a new code in 2009 and 2011, and on a three-year schedule thereafter. Each code is approximately 15% more stringent than the last, increasing costs and requiring additional efforts on the part of the builder. In California, homes built to current Title 24 standards are 35% more energy-efficient<sup>33</sup> 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.

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<sup>31</sup> Alan N. Nevin, CBIA Chief Economist and Principal, Market Pointe Realty Advisors, [California Builder Magazine](#), January/February 2008

<sup>32</sup> California Industry Research Board (CIRB) Report, January 24, 2008

<sup>33</sup> 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.

## New Construction: California Advanced Homes Program

Population growth drives the economy and, according to sources, 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."<sup>34</sup> 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 may pay more (up to \$11,000) for such features.<sup>35</sup> 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. 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.

### Transmission & Distribution

CAHP staff has been working with our counterparts in the Transmission & Distribution business unit that designs electrical service for new construction projects. SCE is developing an offering whereby energy-efficient projects will receive priority service from Electrical Service Planning. Those projects that do not participate in EE programs; however, will move no more slowly through the service planning process than before. As part of our partnership with SCG, this offering will be extended across our service territory as long as the project shows positive electric savings.

SCE is working with the water agencies on a water-energy pilot, pending commission approval, promoting water conservation, in our joint territories. If the pilot demonstrates meaningful energy savings from water efficiency, CAHP will be able to provide additional incentives. These incentives and our coordinated efforts with the water agencies reflect our commitment to an integrated approach among different utilities.

CAHP is also working with the LIEE program to coordinate energy-efficient new construction with low income housing development.

- 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<sup>36</sup>. For those units designated by the builder for low-income occupants, SCE's LIEE program will pay the full incremental cost of installing higher efficiency equipment, such as high SEER (Seasonal Energy

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<sup>34</sup> Wes Keusder, Former Chairman, CBIA, *Southern California Builder Magazine* Vol. 24

<sup>35</sup> Jan Dimeo, *Builder*, <http://www.builderonline.com/business/surveys-reveal-home-buyer-wishes-for-energy-efficiency-and-beyond.aspx>. Accessed 14 Mar 08

<sup>36</sup> See, <http://www.hcd.ca.gov/hpd/hrc/plan/he/>, accessed 25 Apr 08

## **New Construction: California Advanced Homes Program**

Efficiency Rating) AC systems and refrigerators. LIEE will claim the energy savings from the measures they fund.

- CAHP will pay the standard calculated incentives for all other measures in low-income units (e.g. improved duct work and windows). CAHP will claim the energy savings resulting from EE measures other than high SEER A/C and refrigerators.
- CAHP would treat market-rate units using the standard calculated approach and claim all energy savings.

This collaboration will:

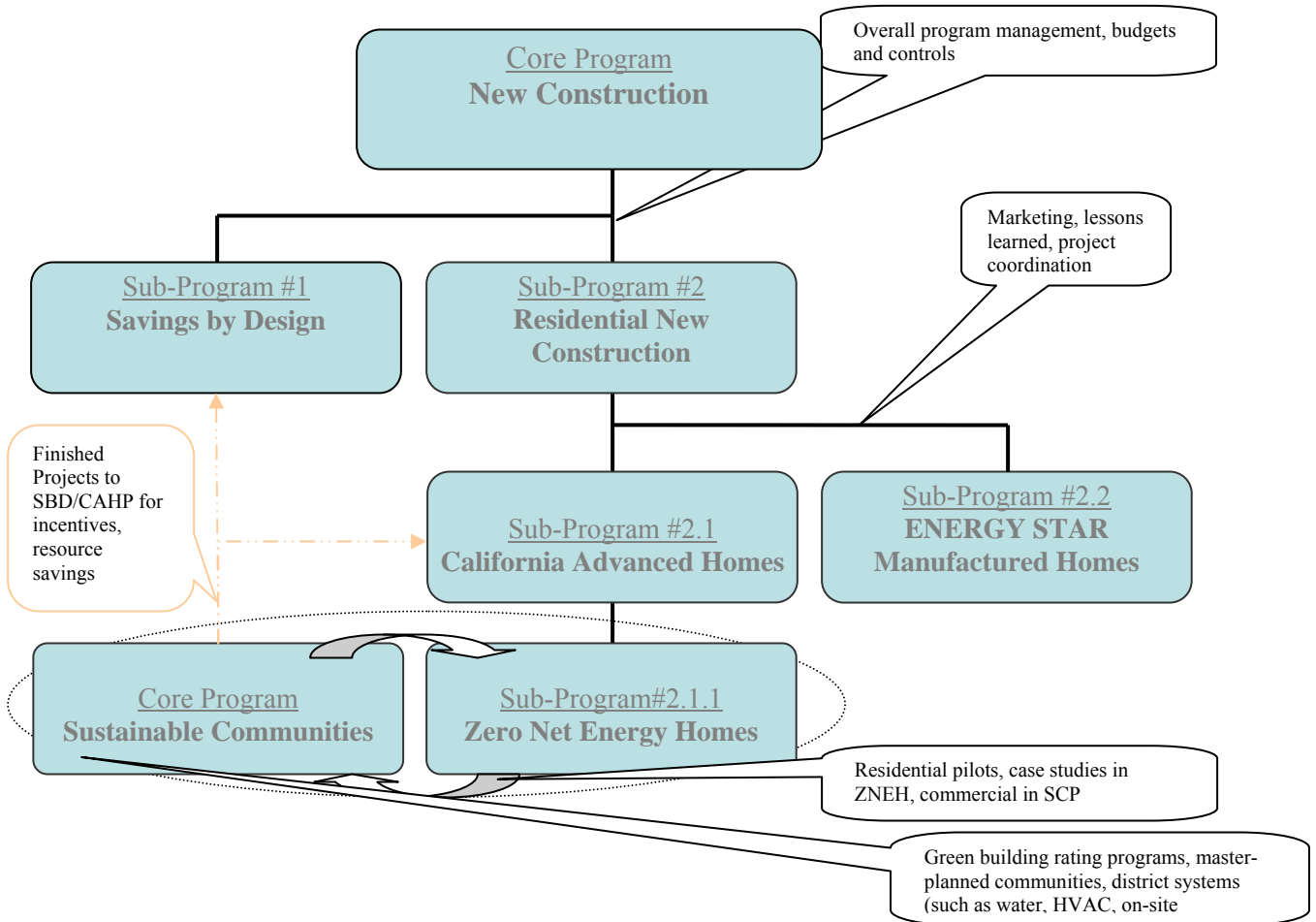
- Encourage the development of more below market rate low income units by developers,
- Increase participate in the New Construction program based on the combined higher incentives, and
- Benefit low income occupants over the life of the installed equipment.

The partnerships program will assist in gathering information to ensure that the units actually are occupied by low income qualified customers. Local governments typically track this information in order to show compliance with state mandates.



# New Construction: California Advanced Homes Program

## SCE Program Coordination Model



The program will be implemented by direct contact with the market actors: builders, architects, civil and mechanical engineers, energy analysts, HERS providers, HERS raters and other participants. Through design assistance and coordination with the builders and their consultants and contractors, projects will be evaluated for optimal approaches to increase energy savings and demonstrate green building concepts.

The program will target the Residential design and construction teams, architects, energy analysts, HERS raters, trade contractors, and builders. The target segment is low-rise and high-rise Residential New Construction with participation being open to all Residential New Construction including custom homes, single-family production housing, condominiums, town homes and rental apartments

Builders may qualify to participate under one of the two sub-program categories: CAHP or ZNEH. 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

## **New Construction: California Advanced Homes Program**

based upon a sliding scale from 15% to 45% reduction in energy usage from Title 24 budget. Program focus will be on increasing the participation to a 35% threshold.

SCE will implement the program through a third party for technical support in its service territory, while leveraging experienced account executives to maintain relationships with builders.

### **c) Best Practices**

The Residential New Construction team will gather information and past experience in successful low energy and ZNE 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® .
  - SCG and SDG&E have made LEED certification as one of the requirements for participation in the ZNEH program element.
  - SCE will leverage the Build It Green Green-Point 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 program element. 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: 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, SCG and SDG&E redesigned their marketing collaterals to be more informative and professional in appearance.
- SCE has undergone substantial marketing material revisions and will continue to do so.

## **New Construction: California Advanced Homes Program**

- Enhance account executive'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 SCG / SDG&E teams now consist of seasoned account executives and are effective.
  - SCE has newly hired AE and program management staff in 2008.

### 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. 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,

## **New Construction: California Advanced Homes Program**

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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 them 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 ZNEH for show-casing, 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 element offers a great opportunity for savvy builders to demonstrate their commitment towards a truly integrated approach to DSM options. With design assistance, 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 can 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 SCG and SCE, which allows the two utilities to buy back therms and kWh. SCE is 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**

As discussed above, the program is looking to partner with relevant stakeholders to identify water, air quality, and waste-diversion opportunities.

# New Construction: California Advanced Homes Program

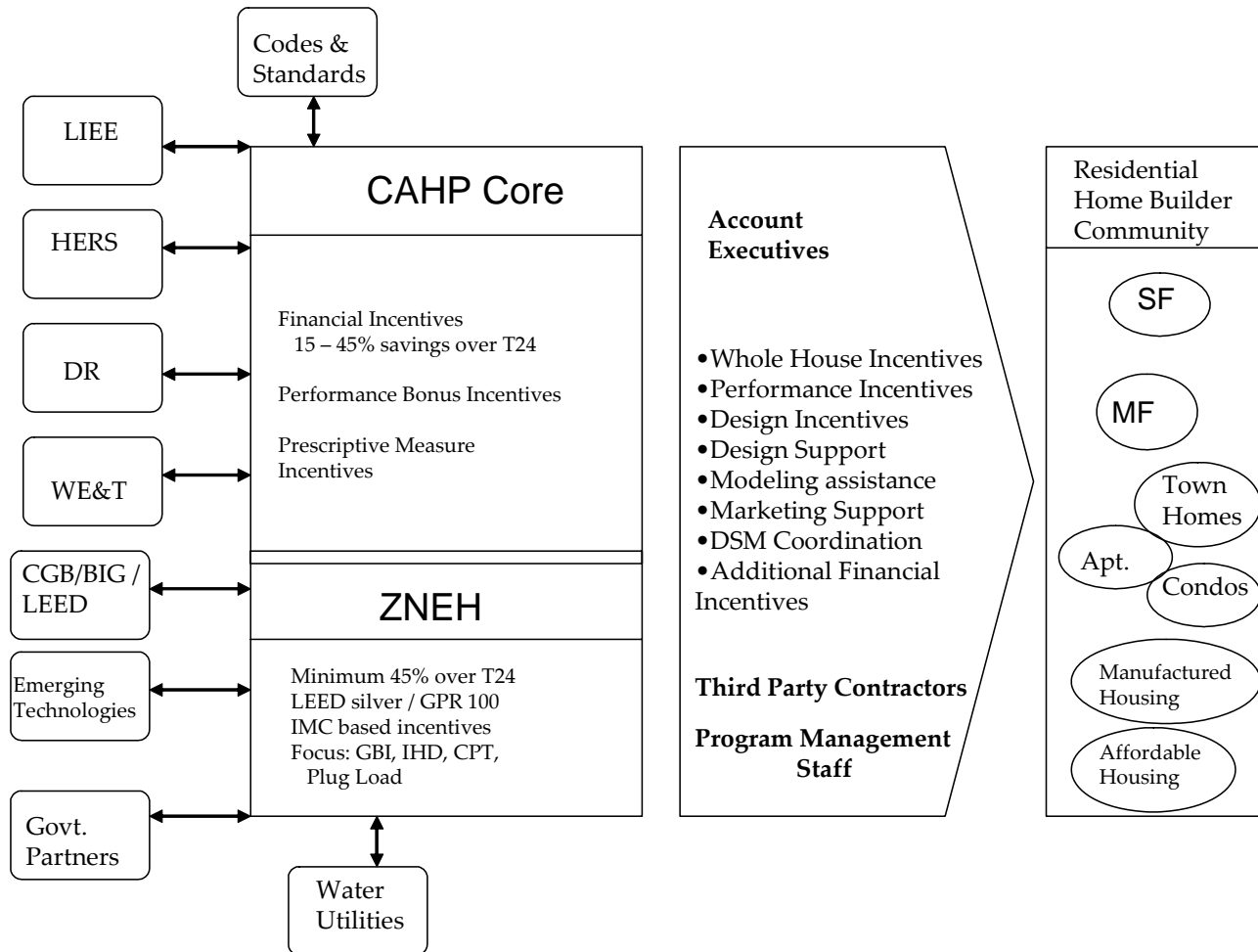
## g) Pilots

As discussed above, the ZNEH 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

Under development in consultation with EM&V team.

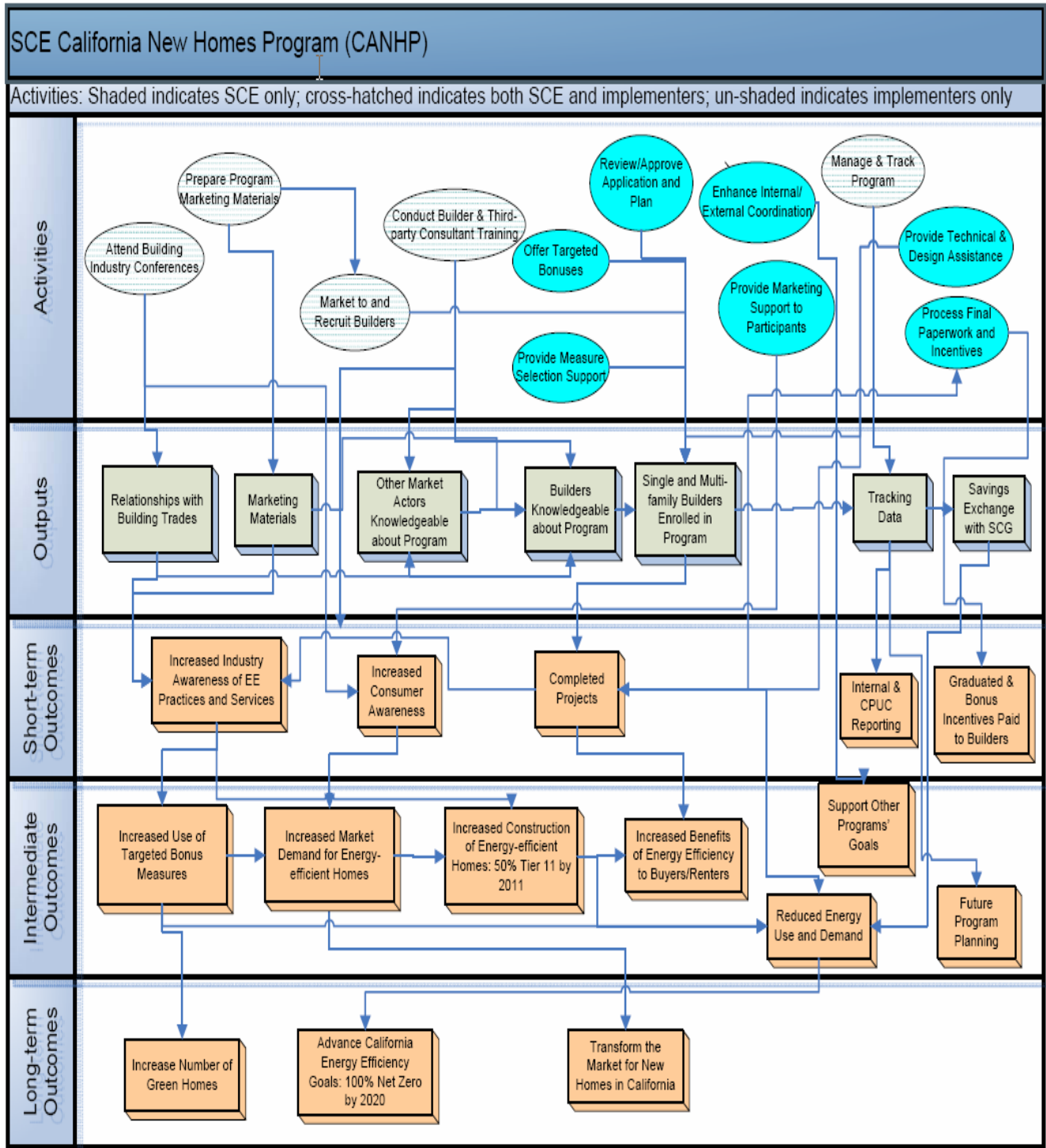
## 7. Diagram of Program



# New Construction: California Advanced Homes Program

## 8. Program Logic Model

CAHP & ZNEH Logic Model



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## **New Construction: ENERGY STAR® Manufactured Homes**

- 1. Program Name:** ENERGY STAR® Manufactured Homes Program  
**Program Type:** Core

- 2. Projected Program Budget Table**

**Table 1** – See core program for budget details

- 3. Projected Program Gross Impacts Table**

**Table 2** – See core program for projected gross impacts detail.

- 4. Program Description**

- a) Describe program**

The ENERGY STAR® Manufactured Homes Program (EMH) is part of the statewide Residential New Construction (RNC) program offering. The RNC program is itself one half of the New Construction core offering. EMH addresses new factory-built housing. The structure of the relevant New Construction program elements is as follows:

New Construction Program (Core)

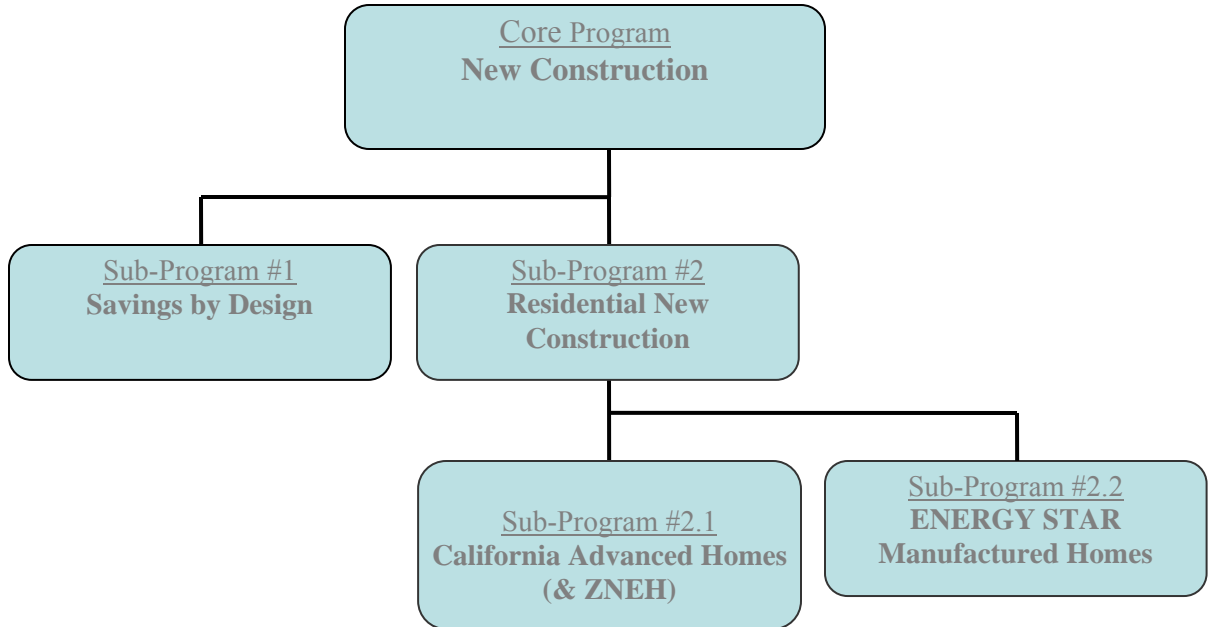
1. Non-Residential New Construction Sub-Program (Savings by Design)
2. Residential New Construction Sub-Program
  - 2.3 Single-family/Multi-family Sub-Program (CAHP)
    - 2.3.1 ZNEH Sub-Program
  - 2.4 Manufactured Homes Sub-Program

For the convenience of the reader, two other programs relevant to New Construction are also called out:

1. Sustainable Communities Program (Name / location differs by IOU) (Third party)  
Covering Master-planned communities, mixed-use projects, campuses, and commercial projects pursuing advanced energy efficiency and green targets.
2. Partnership Programs (Core)  
Strategic Planning Sub-Program (Energy Leader Partnership Strategic Support).  
Trains cities and counties to procure city projects to meet energy efficiency standards, to identify funding sources, to share best practices, and recognizes them for their achievements.



## New Construction: ENERGY STAR® Manufactured Homes



The goal of energy-efficient RNC will be achieved through a combination of incentives, technical education, design assistance, and verification. CAHP supports the ambitious goals of the Strategic Plan, and works in close coordination with the ZNEH sub-element. Together these elements seek to raise plug load efficiency, focus on whole-house solutions, drive occupant behavior through in-home monitoring and visual display tools, and leverage market demand for green building standards. CAHP is also coordinated with demand response programs, Emerging Technology, and the NSHP. In aligning itself with the Strategic Plan, the CAHP targets an interim goal of 50% of RNC to Tier II (2005) by 2011, 10 per cent of RNC to 55% by 2011, and a final goal of 100% of Residential New Construction to be net zero by 2020.

As explored in greater detail below, CAHP will work closely together with the ZNEH sub-element to adopt the following strategies toward achieving the Strategic Plan goals. As program technologies and approaches are developed and demonstrated in ZNEH, they will be incorporated into the CAHP. 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)

## **New Construction: ENERGY STAR® Manufactured Homes**

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.<sup>37</sup>

- Whole House Incentive
- Dishwashers
- Aerators/Showerheads
- Clothes washers (Water-agency Partnership)<sup>38</sup>
- Dryers
- Interior Lighting
- Refrigerators

Pending Program Measures, savings/incentive TBD. IOU-dependent<sup>39</sup>

- Programmable Communicating Thermostat (deemed, delivers DR measure)
- Refrigerant Charge Adjustment (deemed, delivers Comp HVAC measure)<sup>40</sup>
- 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**

- Technical support to Energy Analysts and Design Teams<sup>41</sup>
- Economic modeling/measure selection support to builder/construction managers
- Marketing support to builders (sales agent training, marketing materials)
- DSM coordination (PV, DR, AMI, ET) for builders to maximize demand-side reductions.

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<sup>37</sup> Savings per appliance will be consistent across all IOUs

<sup>38</sup> 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.

<sup>39</sup> 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.

<sup>40</sup> T24 requires CIL or RCA in prescriptive path. If used for compliance, measure ineligible

<sup>41</sup> 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.

## **New Construction: ENERGY STAR® Manufactured Homes**

### ENERGY STAR® Manufactured Homes

In addition to the performance approach cited above, CAHP will retain a deemed prescriptive approach for the manufactured home market segment. Homes will have the flexibility to include the entire ENERGY STAR® package for manufactured housing or to incorporate elements within those standards, such as improved windows.

The ENERGY STAR® Manufactured Homes sub-program is designed to promote the construction of new manufactured homes in SCE'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 HUD standard specification. The program encourages manufacturers to install "right-size" 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 program element.

The program is a logical fit in SCE's Residential New Construction portfolio of programs and will be another market segment within 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 and SCE's AMI (SmartConnect™)
- To move the industry toward zero-net energy as identified in the BBEES and advanced in the Strategic Plan
- 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" HVAC equipment
- 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.

## **New Construction: ENERGY STAR® Manufactured Homes**

Market actors include manufacturers, retailers and homebuyers. As the primary focus is on retailers, the program is considered a midstream program. Incentives are offered to help induce retailers to promote ENERGY STAR® qualified manufactured homes.

<b>Program Criterion</b>	<b>Incentive</b>
Prescriptive elements, e.g. windows, add'l 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 Strategic Plan's ZNE homes. The addition of a zero-peak photovoltaic kicker is part of the effort toward achieving zero-peak homes.

As part of the effort to address plug loads, EMH 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 integrated demand side management (DSM) approach recommended by the Strategic Plan, EMH 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.<sup>42</sup> 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.

Marketing efforts will target manufactured home retailers as well as customers.

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<sup>42</sup> 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.

## **New Construction: ENERGY STAR® Manufactured Homes**

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 (for example, 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 SCE 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.

### **5. Program Rationale and Expected Outcome**

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

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

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

#### **b) Market Transformation Information**

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

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

## **New Construction: ENERGY STAR® Manufactured Homes**

### **c) Program Design to Overcome Barriers**

#### Priority Barrier: Homebuyers

The energy used in the average home produces roughly twice the greenhouse gas emissions as the average automobile. In fact, 16% of U.S. greenhouse gas emissions result from the generation of energy used in houses nationwide (U.S. EPA).

However, there is little consumer awareness of the impact their homes have on the environment. CAHP is working with IOU marketing efforts, statewide partners (e.g. Flex Your Power), ENERGY STAR® campaigns, and builder's own messaging to increase consumer awareness of this idea. Moreover, there is scant evidence that energy efficiency drives decision-making among homebuyers, whose access to capital is more difficult in a constrained capital market.

#### Manufactured Housing: a potential opportunity

The current decline in the housing industry, the high cost of Residential housing, and increasing customer awareness of energy efficiency all make this a good time to address this underserved market segment. The manufactured housing industry is somewhat counter-cyclical to the site-built home market. As buyers are priced out of site-built homes, manufactured housing has become an affordable alternative.

Historically, manufactured housing has been considered a lost opportunity. However, as SCE found in the 2006-2008 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 help meet the state's and IOUs' goals for the reduction of greenhouse 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, be tracked and reported.

ENERGY STAR® qualified manufactured homes will generate energy savings and demand reduction. In addition to leveraging retailers of manufactured homes, the

## **New Construction: ENERGY STAR® Manufactured Homes**

program will leverage the Partnerships Program to reach out to local governments where the homes will be built.

Manufactured homes have a higher potential for market transformation than the site-built industry due to factory standardization, and the fact that recent research indicates that eight manufacturers control approximately 98%<sup>43</sup> of the manufactured housing market.

Customers may also receive incentives for purchasing an ENERGY STAR® manufactured home. The incentives are paid directly to the customer after successful construction, assembly, and inspection of the home site.

### **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. Prior to SCE's intervention in the market, there were no ENERGY STAR® -qualified manufactured homes sold in our service territory.

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. This program is statewide among all the IOUs, to provide continuity and better service to the builder at reduced costs.

### **d) Quantitative Program Targets**

The targets provided herein are best estimates, but nonetheless are forecasts.

**Table 5**

ENERGY STAR Manufactured Homes	Program Target 2009	Program Target 2010	Program Target 2011
Units Paid	130	117	105

### **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 Strategic Plan. The Strategic Plan envisions a transformation of the core Residential sector to ultra-high levels of energy efficiency, resulting in ZNE new construction standards by 2020. It spells out several goals and strategies to address energy reduction in Residential New Construction.

<sup>43</sup> "Synopsis of manufacturer market share and status," Manufactured Research Association, communication, October 2007.

## **New Construction: ENERGY STAR® Manufactured Homes**

**Goal #1:** New Construction will deliver “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 the Strategic Plan, and works in close coordination with the ZNEH sub-element. Together these elements seek to raise plug load efficiency, focus on whole-house solutions, drive occupant behavior through in-home monitoring and visual display tools, and leverage market demand for green building standards. CAHP is also coordinated with demand response programs, Emerging Technology, and the NSHP. In fully aligning itself with the Strategic Plan, the CAHP targets an interim goal of 50% of RNC to Tier II (2005) by 2011, 10 per cent of RNC to 55% by 2011, and a final goal of 100% of Residential New Construction to be net zero by 2020.

### **6) Program Implementation IOU-specific elements**

#### **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 corrections need to achieve them.

##### **i. Program name**

The single-family and multi-family programs will be implemented under the common name of California Advanced Home Program. The zero peak pilots will be referred to as ZNE Homes, although the details differ somewhat by utility. Factory-built housing will be referred to as ENERGY STAR® Manufactured Homes.

##### **ii. Program delivery mechanisms**

Sempra and PG&E deliver the program primarily through in-house account executives with some outside technical support for specific analysis or niche markets (cf. PG&E, multi-family). SCE 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**

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.<sup>44</sup>

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 website 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 CAHP 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, e-mail 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 excellent relationships in partnering with trade organizations and other groups actively promoting the benefits of green, sustainable building practices. Such organizations include: CEC, FYP, AIA, USGBC, ULI, California Manufactured Housing Institute, Build It Green, IES, AEE, IHACHI, PHCC and others. Through an innovative, coordinated approach, we will maximize outreach opportunities that 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. Participant recognition (plaques, feature

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<sup>44</sup> As discussed above, manufactured housing is not subject to Title 24 and uses the national HUD baseline.

## **New Construction: ENERGY STAR® Manufactured Homes**

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.

### **v. IOU program interactions**

The plan addresses above, in the Incentive Rationale section, the ways CAHP is encouraging 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<sub>2</sub> 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:

- NSHP
- EPA
- California IOUs
- Green Building Consultants (i.e. Build it Green, California Green Builder, Global Green)
- Rater Organizations (e.g. ResNet, CalCerts, CHEERS)

CAHP will continue its commitment to the EPA's 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.

Since 2002, CAHP has partnered with the EPA in promoting ENERGY STAR® New Homes and has won ENERGY STAR® achievement awards for the last seven consecutive years. In 2008 SCE was rewarded for "Sustained Excellence in Energy Efficiency Program Delivery".

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 during 2009 - 2011 designed for builders' sales agents. Sales agents have direct contact with the homebuyer and have the greatest impact on selling homes. In order to

## **New Construction: ENERGY STAR® Manufactured Homes**

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, SCE 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.

### **vi. 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 (ET) program**

Emerging technologies will chiefly be handled within the ZNEH program. The IOUs are looking to partner with our ET and PIER-funded Testing Facilities to pilot zero-net energy approaches, particularly in the manufactured home/prefabricated segment. SCE is looking toward the construction of a demonstration home at its CTAC facility. However, the proposed incentive approach allows the IOUs the flexibility to include both deemed and calculated energy savings from new technologies as they become market ready.

The utilities will seek to integrate R&D ideas from Emerging Technologies, PIER, LBNL and other avenues to further assist the projects to advance sustainability and achieve very high levels of energy efficiency.

#### **ii. Codes and Standards program**

As mentioned above, manufactured housing is not subject to Title 24, although there are national efforts to improve the HUD code.

#### **iii. WE&T efforts**

The RNC team is seeking ongoing support from the three energy and training centers for classes relevant to the building industry and training the next generation of trade allies, builders, contractors, and the like.

### **iv. Program-specific marketing and outreach efforts**

In 2009-2011, the program will expand its manufacturer and retailer outreach to increase overall awareness and understanding of EMH. We will continue to strengthen our information and support materials, focusing on the value to the retailer of making the sale to the homebuyer. The IOUs' communication tools will include: account representative meetings/presentations, targeted customer mailings, trade organization affiliations, and builder award recognition. All materials and communications will also be made available in electronic file formats so information can be forwarded to customers immediately via the internet.

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

Where applicable, the program will seek to identify new types of water savings technology opportunities; CAHP will leverage local water agency incentives to save cold and hot water.

### **vi. Non-IOU Programs**

See item v. above (non-energy activities) 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 ZNEH and green programs.

### **vii. CEC work on PIER**

See item i. above (Emerging Technologies).

### **viii. CEC work on C&S**

The IOUs will continue to support Codes and Standards development work with the CEC and to test candidate technologies in the new construction programs.

### **ix. Non-utility market initiatives**

Population growth drives the economy and according to sources, "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."<sup>45</sup> The year 2007 saw only 112,000 new units permitted. The 2008 forecast is for only 87,000<sup>46</sup>.

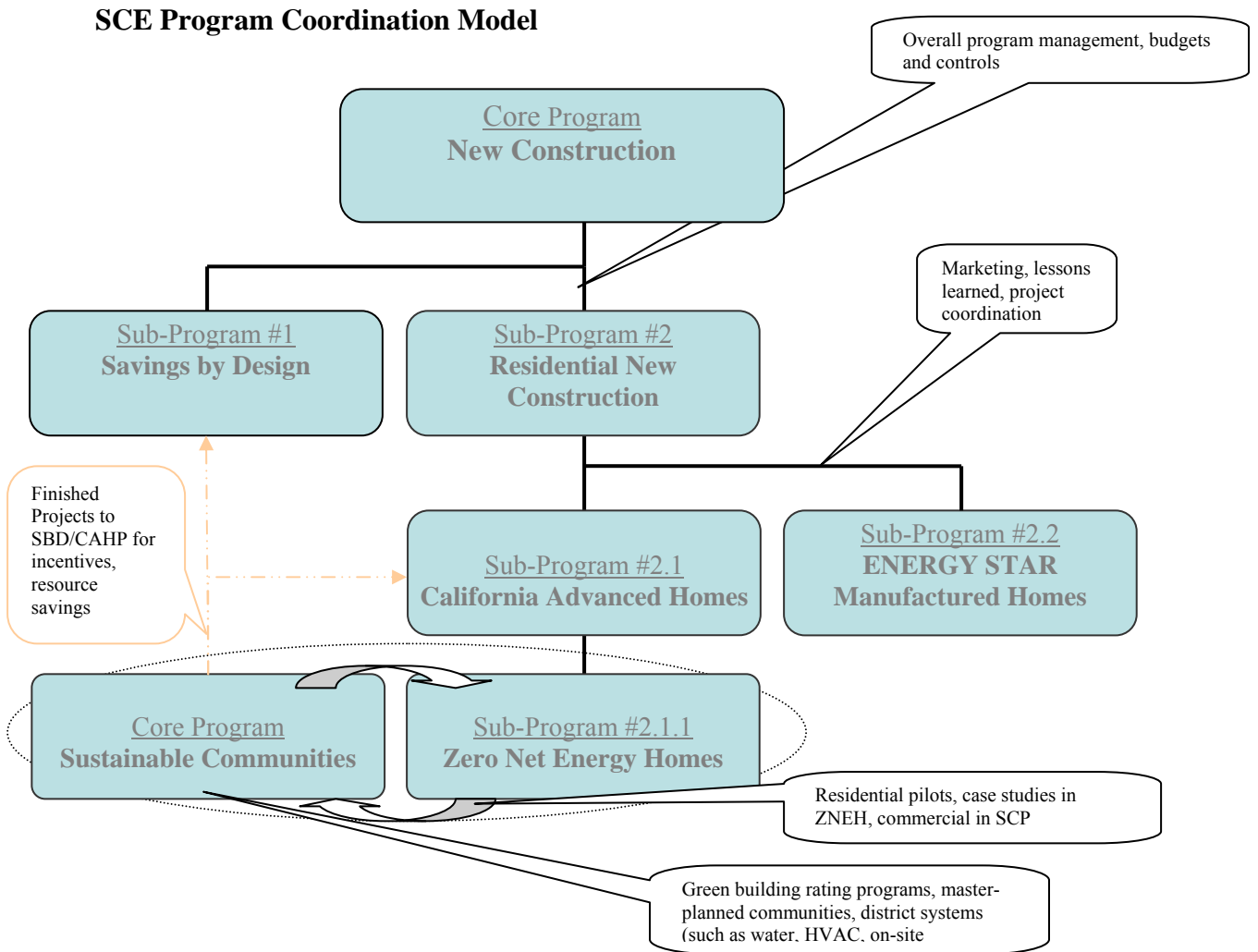
SCE is working with the water agencies on a water-energy pilot, pending commission approval, promoting water conservation, in our joint territories. If the pilot demonstrates meaningful energy savings from water efficiency, CAHP will be able to provide additional incentives. These incentives and our coordinated efforts with the water agencies reflect our commitment to an integrated approach among different utilities.

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<sup>45</sup> Wes Keusder, Former Chairman, CBIA, *Southern California Builder Magazine* Vol. 24

<sup>46</sup> Construction Industry Research Board (CIRB)

## New Construction: ENERGY STAR® Manufactured Homes



Sub-program SBD will implement the program through a third party for technical support in its service territory, while leveraging experienced account executives to maintain relationships with builders.

### **c) Best Practices**

The Residential New Construction team will gather information and past experience in successful low energy and ZNE 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:

## **New Construction: ENERGY STAR® Manufactured Homes**

- 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® .
  - SCG and SDG&E have made LEED certification as one of the requirements for participation in the ZNEH program element.
  - SCE will leverage the Build It Green - Green Point 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 program element. 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 part of the overall marketing tools.
  - SCE 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.
  - SCE has newly hired AE and program management staff in 2008.

### 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

## **New Construction: ENERGY STAR® Manufactured Homes**

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 them 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 ZNE homes for show-casing, 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.

## **New Construction: ENERGY STAR® Manufactured Homes**

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### **e) Integrated/coordinated Demand Side Management**

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 SCG and SCE, which allows the two utilities to buy back therms and kWh. SCE is 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**

As discussed above, the ZNEH sub-program is a pilot to test emerging technologies and the viability of zero peak and zero-net homes under actual operating conditions.

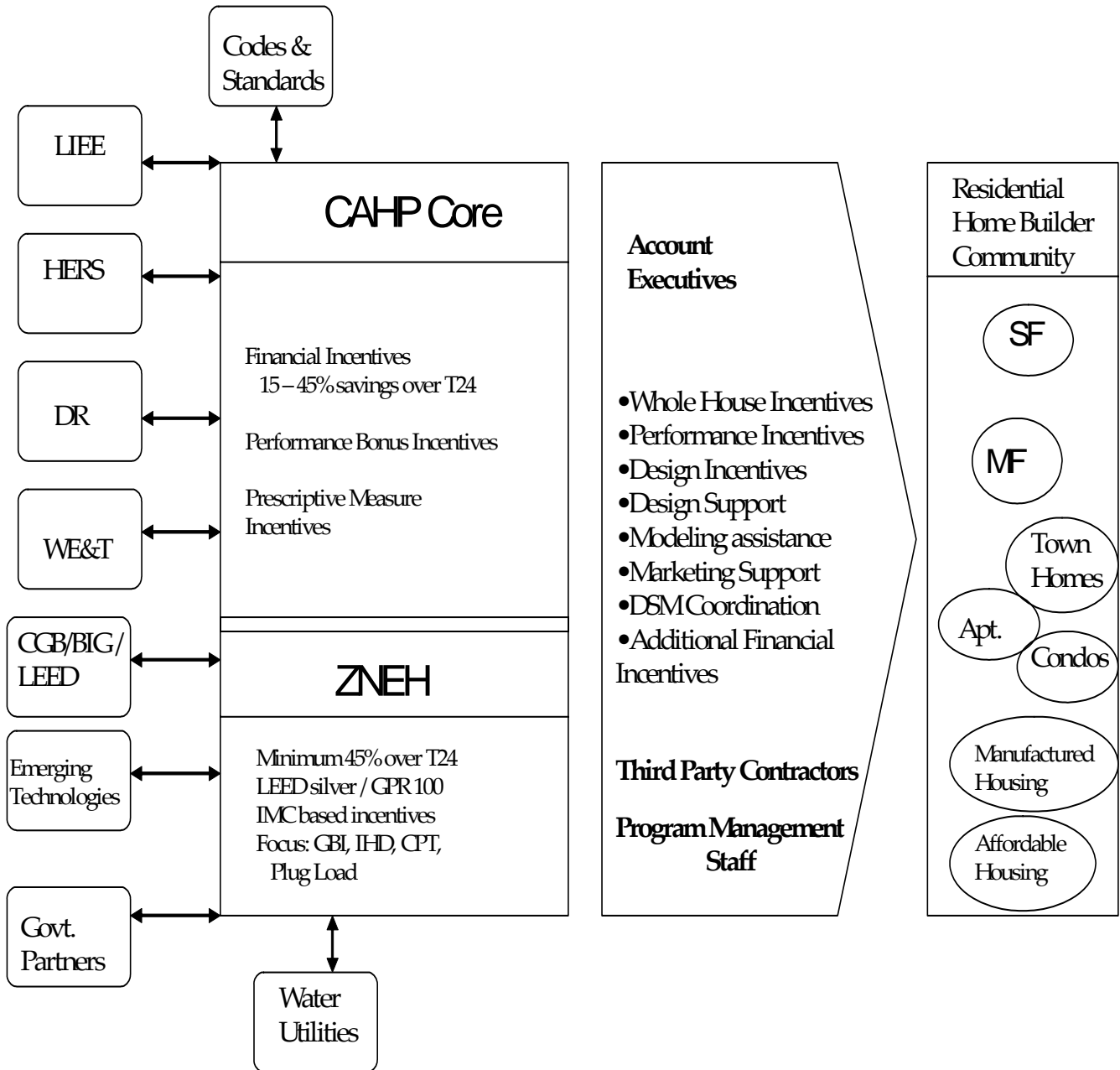
### **h) EM&V**

The utilities are proposing to 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 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.



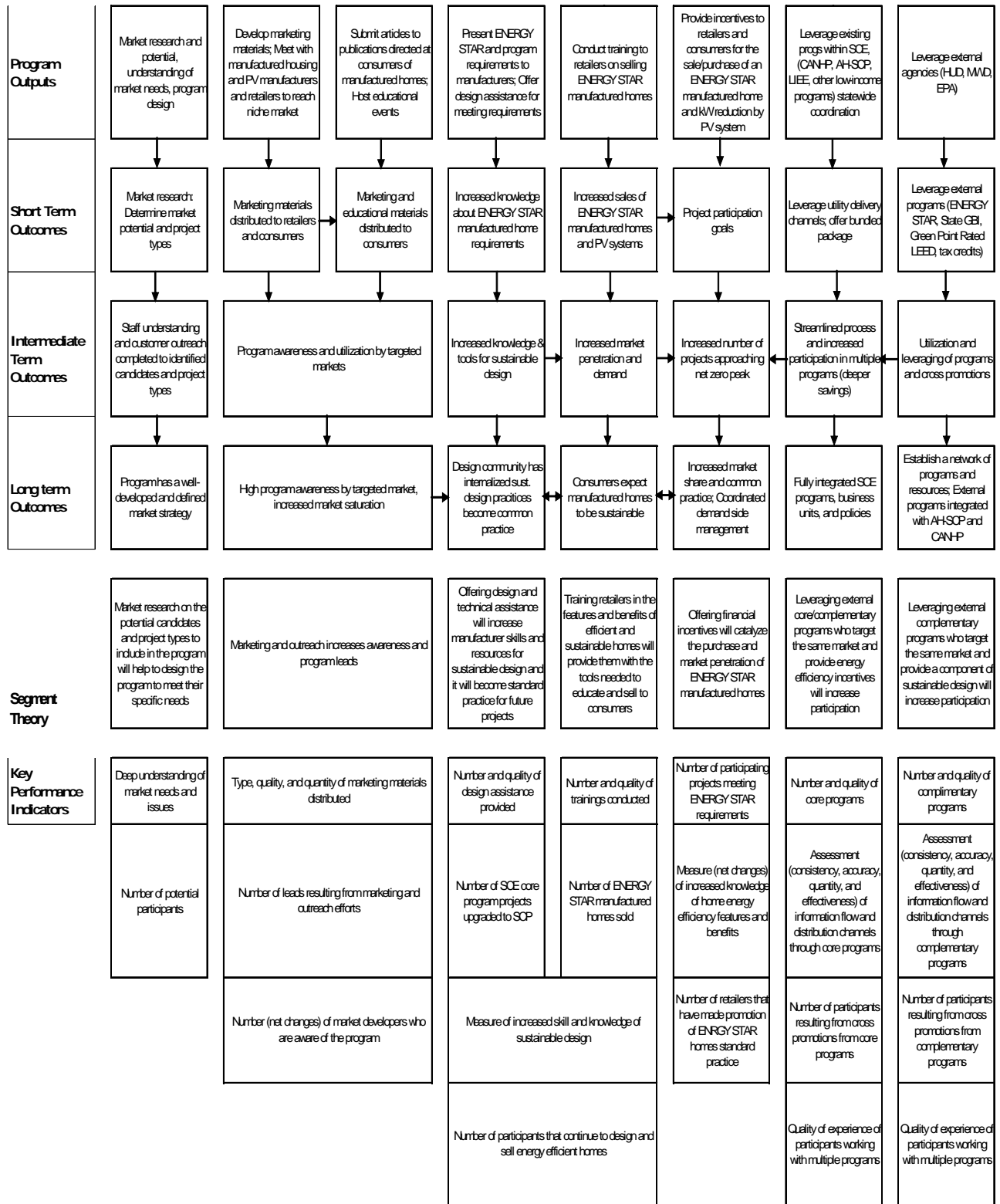
# New Construction: ENERGY STAR® Manufactured Homes

## 7. Diagram of Program



# New Construction: ENERGY STAR® Manufactured Homes

## 8 Program Logic Model



# 6

# Statewide Lighting Market Transformation Program

- 1. Program Name:** Statewide Lighting Market Transformation Program (LMT)  
**Program ID:** SCE-SW-006  
**Program Type:** Core

## 2. Projected Program Budget Table

**Table 1**

SCE-SW-006	Main Program Name / Sub-Program	Total Administrative Cost (Actual)	Total Marketing & Outreach (Actual)	Total Direct Implementation (Actual)	Integration Budget Allocated to other Programs (If Applicable)	Total Budget By Program (Actual)
<b>CROSSCUTTING</b>						
	Statewide Lighting Market Transformation Program	\$ 1,054,000	\$ -	\$ -		
	<b>TOTAL:</b>	<b>\$ 1,054,000</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 1,054,000</b>

The table of annual costs above does not capture Integration Budgets of other programs that this program will intend to leverage. Much of the activity of this program is dependent on those budget relationships, and the anticipated total amount, including this program and all integrated activities, is expected to be about one million dollars annually. For SCE, the programs that will be leveraged include all rebate programs that have lighting measures, Emerging Technologies, and Codes and Standards. Additionally SCE will leverage funding for the Customer Experience Management and Measurement and Verification organizations.

## 3. Program Description

### a) Describe program

The Lighting Market Transformation Program (LMT) establishes process through which the IOUs can develop and test market transformation strategies for emerging lighting technologies (products, systems and design strategies), as well as for technologies already incorporated into their energy-efficiency programs. The LMT will address lighting opportunities across residential, commercial, and industrial market segments for both replacement and new construction activities. These LMT activities augment and leverage the existing IOU programs for evaluating and testing the market transformation needs for short and long term activities to get to the zero net energy (ZNE) goals in the California Long-Term Energy Efficiency Strategic Plan (Strategic Plan). LMT includes market research and coordination activities, as well as an educational component aimed toward improving the information available to consumers, contractors, and other market actors regarding new and existing lighting technologies. The program also formalizes a process by which the IOUs can rapidly introduce advanced lighting solutions and emerging technologies to the marketplace, continually improve the IOUs' current lighting programs across all market sectors, and develop innovative new program strategies to continually advance the lighting market.

This program includes three activities as follows:

1. The Lighting Technology Advancement activity explores and chooses processes by which the IOUs can rapidly introduce advanced lighting solutions and

## Statewide Lighting Market Transformation Program

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emerging lighting technologies to the marketplace. This activity contains elements to conceptualize and test initiatives that introduce mid-term improvements to current lighting programs in response to product and market developments across all market sectors

2. The Lighting Education and Information activity addresses the pressing need for more accessible information on lighting technologies across all market sectors and among IOU staff and installation contractors. The activity helps identify and utilize avenues by which advanced lighting education can be applied to pipelines for large scale customer applications.
3. The Lighting Market Transformation activity enables the IOUs to identify gaps in LMT strategies for different technologies and create data-driven solutions. These solutions will inform and leverage energy efficiency program efforts to fill the gaps in market transformation strategies for each lighting technology. The activity will develop and test innovative program strategies to advance market transformation and help enfold proven approaches into resource-based production programs. This third activity will integrate the findings and networks uncovered by the first two activities to implement synergistic activities that drive the market forward. It will collaborate with other lighting programs to plot paths and monitor progress toward achieving ZNE objectives.

Together, these activities serve numerous related components of the lighting market through all stages of product development, deployment, and end-of-life disposal. Starting from collaboration on technology specification and development with the lighting industry, the program moves on to define the most efficient and effective pathways for each technology's incorporation into the IOUs' customer energy-efficiency programs.

The program incorporates a process for investigating the best possible combination of incentives and other market transformation activities for each technology, and then leverages the IOUs other energy efficiency programs for delivering these products to consumers and contractors – all of whom have been well-educated regarding product choices, applicability, and installation (through the program's educational components). The program's educational component will also educate end-users regarding proper disposal of each technology at the end of its useful life.

### **b) Statement of Problem and program solutions to overcome the problem**

As stated in the Strategic Plan, lighting programs have historically comprised the majority of savings generated by the portfolios of the California IOUs, particularly within the residential sector. Lighting opportunities are generally recognized as the least expensive strategies for obtaining near-term energy savings. They are also among the easiest strategies to implement. But because the lighting market is changing rapidly, the IOU programs must be prepared to move quickly beyond current lighting programs and re-orient toward measures that extend beyond these new standards.

## **Statewide Lighting Market Transformation Program**

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This program enables the IOUs to move emerging lighting technologies quickly and efficiently into customer energy efficiency programs and to define market transformation strategies for each technology. The program enables the IOUs to develop pilot programs to test market transformation strategies for a variety of lighting technologies, systems, and/or design strategies. This proposed program also aims to provide a mechanism for further understanding the state of the current market for technologies that have already achieved a noticeable degree of market transformation (such as basic CFLs, high-bay lighting, T-8/T-5 lamps and non dimmable electronic ballasts, and others).

The IOUs pursue a resource acquisition approach to all energy efficiency undertakings, and also apply market transformation principles where they make sense to achieve the objectives of utility system optimization, procurement planning, and societal benefit in ways that justify publicly-funded intervention. These objectives balance areas such as demand side management, demand response, and mitigation of negative environmental impacts. The LMT program will help the IOUs discover opportunities where specific measures become less cost-effective in meeting these objectives - and equally important - discover opportunities where concentrating resources into new areas of energy-efficient lighting will help meet the objectives in a more suitable way during each industry cycle.

The IOUs do not view market transformation itself as an “end game,” but as an ongoing realignment of priorities and resources in a continually flexible way of applying the most advantageous endeavors for the given economic environment. The task of identifying an “end game” has value and will be applied when indicators show education and incentives for a measure to display diminishing returns because the market has been transformed. The task will be applied on the appropriate specific levels such as by retail sector or demographic until it is necessary to be applied at a macro level. If, in a future cycle, the market potential arises for a previously phased-out measure, a “renewed game strategy” can be reassessed at that time.

### **c) Program goals, strategies and measurable objectives**

#### **Lighting Technology Advancement**

The IOU programs have contributed to inroads toward market transformation for energy-efficient lighting products in California. The IOUs are also faced with the continuing need to incorporate new technologies into their programs and to develop innovative new program strategies to advance the lighting market.

The goal of this initiative is to formalize a process by which the IOUs can rapidly introduce advanced lighting solutions and emerging technologies to the marketplace, continually improve the IOUs’ current lighting programs across all market sectors, and develop and test innovative new program strategies to continually advance the lighting market. This process involves the following activities:

1. Coordinate with, and leverage the activities of, relevant federal, state, and local organizations including CEC/PIER, CLTC, DOE, LBNL, public institutions,

## **Statewide Lighting Market Transformation Program**

- lighting manufacturers, and end-user groups. The CLTC is annexed for SCE through the SCLTC.
2. Ensure that rigorous quality standards exist for each technology and that each model incorporated into IOU programs meets these standards (to be achieved primarily through leveraging the Lighting Market Transformation initiative).
  3. Identify adequate market availability and pipelines for each technology before its transition into energy efficiency programs (resource-based or other).
  4. Create “phase-in” market transformation plans with new program strategies and programs to incorporate each technology into resource-based energy-efficiency programs (with the long-term net-zero goal in mind).
  5. Develop and test mechanisms to aid the transition of lighting technologies from the IOUs’ emerging technologies programs or directly from manufacturers into their incentive or other lighting measure programs (including third-party and LGP programs) at a faster rate than has been achieved historically.
  6. Within portfolio target and cost-effectiveness parameters, design and test a package of rebates, incentives, and voluntary industry agreements to bring significant numbers of the best available lighting technologies (e.g., Solid State Lighting) to market (per the Strategic Plan) and leverage other program activities to deploy these products and incentives to end-users.

These activities will enable the IOUs to develop a multi-year market transformation plan or “roadmap” for each lighting technology that charts its course from emerging technology programs or manufacturers, into production energy-efficiency programs, and eventually – as market transformation occurs – into a lower profile within programs. This initiative will be closely linked with the Lighting Market Transformation, which will develop appropriate metrics and end-point definitions for each technology. All together, the IOUs will have the information necessary to more closely monitor a specific technology’s progress in the market and provide a reasonable means to predict the timeframes during which the dollar value of incentives for specific measures may become lower, quantities may be reduced in programs, or specific measures no longer achieve the IOUs objectives.

This initiative may involve several additional strategies:

- Leveraging incentives offered by the IOUs' other customer energy efficiency programs to encourage increased production and distribution of high-quality products;
- Augmenting funding for existing energy efficiency programs to include activities required to fill the LMT gaps identified by the Lighting Technology Advancement initiative<sup>1</sup>;
- Influencing technology development with manufacturers through activities such as design competitions and collaboration in developing equipment specifications;

## Statewide Lighting Market Transformation Program

- Driving down prices for new technologies through group-purchasing arrangements for large quantities of lighting products among specific end-users (e.g., public universities); and
- Engaging in other innovative activities to continually advance the market for new lighting technologies

This initiative will continually encourage manufacturers to incorporate efficiency gains and demand response into equipment specifications and create demand for improved lighting products through pilot programs, demonstration projects, and other activities.

Several lighting technologies are at varying degrees of readiness for incorporation into the IOUs' existing energy efficiency programs and/or are worthy of consideration as new programs are developed. At the December 16, 2008 CPUC Lighting Advisory Group meeting held at the California Lighting Technology Center (CLTC), CPUC advisors and IOU representatives generated a preliminary list. The table below represents some of those technologies. A more detailed and definitive listing will be created within the first year of program operation and will be updated throughout the program cycle on a regular basis.

Commercial	Residential	Exterior
Task/Ambient lighting designs (such as the PIER Integrated Office Lighting System)	LED fixtures and systems (e.g., recessed cans, under-cabinet, decorative fixtures, porch and outdoor fixtures, kitchens, bathrooms, and ceiling fans)	Smart Occupancy Sensors (Smart outdoor systems for Fluorescent, HID, Induction, SSL)
LED applications (downlights, under-counter, task, decorative, display, and exterior)	Dimmers that are compatible with CFLs and LEDs	Smart Occupancy sensor systems (for pathway, wall packs, and parking garages/lots)
Integrated and Retrofit-Integrated Classroom Lighting Systems	Super CFLs	Streetlight replacement programs
Dual Relay Occupancy Sensor and Self Commissioning Dual Loop Daylight Harvesting	Halogen IR	
Simplified daylight and occupancy controls	Small HID	
Dimming/controllable fluorescent ballasts		
Daylight with skylights, TDD, etc.		
HID Electronic ballasts		

### Lighting Education and Information

The goal of this initiative is to address the pressing need for better and more accessible information on lighting technologies. This initiative will provide improved access to information and education regarding existing and emerging lighting

<sup>1</sup> One example is to provide funding to facilitate technological advancement of dimmer switches that work effectively and reliably with CFLs and LEDs, so that dimming systems for these technologies are no longer perceived as barriers to adoption.



## **Statewide Lighting Market Transformation Program**

technologies among end-users, IOU staff, equipment suppliers, lighting designers, and equipment installation contractors.

As new technologies become available, consumers are faced with the challenges of identifying those technologies, discerning which technology or group of technologies are most appropriate for a given application, understanding the limitations of each technology, and – finally – locating the technologies they wish to purchase. The retail prices of each technology may pose additional barriers. As one possible strategy for overcoming these barriers, statewide funding has been allocated toward development of a trusted long-term resource for lighting information, workshops, case studies, and best design practices. These efforts should target both new construction and retrofit markets to complement the existing IOU LMT efforts. Similar to the Western Cooling Efficiency Center's role in the HVAC PIP, a group such as UC Davis' California Lighting Technology Center (CLTC) may coordinate educational efforts for lighting technologies. The CLTC is annexed for SCE through the SCLTC, which will serve this purpose for the SCE Program.

An online resource will also be incorporated into the initiative's educational efforts. This resource will have an excellent, cutting-edge design that engages average consumers (both residential and non-residential) and could also include or provide links to online or brick-and-mortar retail outlets that sell the recommended technologies. Links to IOU rebate applications (or online retailers selling IOU-discounted products) may help address the first-cost barrier for consumers.

The IOUs may expand upon the model provided by SCE's Online Byers Guide. The guide currently includes technical information, a product database, savings calculation tools, a shopping guide that provides customizable specs for customers to print and take to the store, rebate program information and retailer information for a subset of home energy products. The Online Buyers Guide could be expanded to provide detailed information regarding residential and nonresidential lighting technologies.

The CPUC is currently developing an Energy Efficiency Web Portal through its ME&O efforts, as required by D.07-10-032. The CPUC's Web Portal will be a "user-centered, interactive resource" that provides "one integrated point of access to a multitude of energy efficiency information."<sup>2</sup>

### **Lighting Market Transformation**

The IOU programs have been instrumental in making significant inroads toward market transformation for efficient lighting products in California. The IOUs must continually address the challenges of determining when a specific lighting technology has become sufficiently mainstreamed to reduce quantities or per-unit incentives. The LMT initiative will create a more formalized process for making such determinations.

## **Statewide Lighting Market Transformation Program**

The Strategic Plan asserts that “it is necessary to develop appropriate rules, metrics, and guidelines for determining when market transformation has occurred and publicly-funded intervention is no longer appropriate, so as to define an end-point for strategies and set the course for new programs and goals.”

This initiative provides an opportunity for the IOUs to conduct activities in support of developing end-point definitions, rules, and progress metrics for specific lighting technologies (such as basic CFLs and high-bay lighting). This initiative has two key goals:

1. Clearly define “market transformation” for each technology by reviewing existing research (especially with regard to market data on technology saturation), identify research gaps, and propose/conduct additional research and data collection, as appropriate, to increase understanding of the technology (including rate of technology adoption); and
2. Develop appropriate metrics and guidelines for determining when market transformation has occurred and publicly-funded intervention is no longer appropriate, so as to define an end-point for strategies and set the course for new programs and goals.

Closely related to the above goals and to the Technology Advancement sub-program is improved coordination and communication between utilities, manufacturers, and research bodies to ensure development of (and strengthen targeted research on) quality technologies that meet utility program specifications.

These activities will be undertaken to help the utilities identify and deliver solutions for filling gaps identified in the market transformation strategies for lighting technologies, systems, and design approaches through the Technology Advancement initiative.

### **d) Target Audience**

IOU staff will lead the processes described above. There will be ample opportunities to selectively engage a broader pool of stakeholders, such as manufacturers, retailers, professional associations, end-user groups, and others.

### **e) Identify if and how this program will provide any elements of Workforce Education & Training**

As new educational materials and approaches are developed, the information will be incorporated into WE&T courses and planning.

## **4. Program Rationale and Expected Outcome**

### **a) If available, Quantitative Baseline and Market Transformation Information**

By its nature, market transformation occurs as a result of numerous factors and programs, not single sub-programs. Therefore, it is proposed that metrics for this programmatic effort be included within the broader metrics proposed at program

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<sup>2</sup> This, as well as the CLTC’s Lighting Portal (<http://thelightingportal.ucdavis.edu/>), which will soon be incorporating a web-based lighting store, may provide additional partnership opportunities.

## Statewide Lighting Market Transformation Program

sector level. Please refer to the quantitative baseline and market transformation discussion, presented in the Residential and Commercial PIPs for details.

**Table 3** – Specific metrics are not offered for this program

### **b) Market Transformation Information**

By its nature, market transformation occurs as a result of numerous factors and programs, not single sub-programs. Therefore, it is proposed that metrics for this programmatic effort be included within the broader metrics proposed at program sector level. Please refer to the quantitative baseline and market transformation discussion, presented in the Residential and Commercial PIPs for details.

**Table 4** – Specific metrics are not offered for this program

### **c) Program Design to Overcome Barriers**

In this program, market transformation activities will be focused heavily on designing approaches to overcome barriers. A major part of the program involves design and planning that can be transferred to pilots and existing programs. Expected program outcomes include several designs of programs or program components, approaches, strategies, and pilot programs to overcome the barriers inherent in introducing advanced technologies to the market.

The Statewide LMT is intended to drive implementation of strategies to improve movement of technologies from the Emerging Technologies program and from manufacturers, into other customer energy efficiency programs of the IOU, and ultimately (as the market for each technology is transformed) phase-out incentives for each technology. Each initiative addresses key barriers to this process as shown in the table below.

<b>Initiative</b>	<b>Barrier Addressed</b>	<b>Strategy to Address Barrier</b>
Lighting Market Transformation	<ul style="list-style-type: none"> <li>▪ Lack of clear strategy for efficiently phasing technologies into and out of customer energy efficiency programs</li> <li>▪ Insufficient market data and market transformation metrics for many technologies</li> </ul>	<ul style="list-style-type: none"> <li>▪ Initiative establishes processes to define phase-in and phase-out strategies for all technologies.</li> <li>▪ Initiative leverages research funding to provide market data sufficient for developing technology roadmaps</li> </ul>
Lighting Technology Advancement	<ul style="list-style-type: none"> <li>▪ Lighting technologies of insufficient quality</li> <li>▪ Insufficient availability of affordable, high-quality models for some lighting technologies</li> </ul>	<ul style="list-style-type: none"> <li>▪ Initiative enables utilities to influence technology development with manufacturers through design competitions and/or collaboration in developing equipment specifications;</li> <li>▪ Initiative provides opportunity for IOUs to leverage incentives offered by other customer energy-efficiency programs to encourage increased production and distribution of high-quality products.</li> <li>▪ Initiative includes potential for group-purchasing arrangements among specific end-users (e.g., governmental agencies) to purchase large quantities of lighting products at reduced prices.</li> </ul>

## Statewide Lighting Market Transformation Program

Initiative	Barrier Addressed	Strategy to Address Barrier
Lighting Information and Education	<ul style="list-style-type: none"> <li>▪ Lack of information/education among end-users, utility staff, and equipment installation contractors</li> <li>▪ Improper technology disposal habits.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Initiative provides access to quality information regarding appropriate technology choices and installation practices</li> <li>▪ Initiative includes messaging on appropriate disposal methods for lighting technologies</li> </ul>

### **d) Quantitative Program Targets**

Program targets will not be quantified because baselines do not exist for new technologies and both baselines and targets for market transformation for existing products are included in the applicable incentive program plans. However, the program does set qualitative targets, such as producing two or more Lighting Market Transformation reports, holding multiple meetings to integrate market transformation across programs and utilities, and completing business plans for program related activities or pilots.

### **e) Advancing Strategic Plan goals and objectives**

This program is designed to address several of the near-term objectives described in the Strategic Plan as described in the table below.

Relevant Strategic Plan Goal(s)	Strategy	Near-Term Goals (2009-2011)	Relevant Program Strategies
Residential Goal 4 – High-Performance Residential Lighting  Commercial Goal 3 – High Performance Commercial Lighting	4-1/3-1: Drive continual advances in lighting technology through research programs and design competitions	<ul style="list-style-type: none"> <li>▪ Work with research organizations to develop product with lower energy requirements and improved spectral performance</li> <li>▪ Work with Utilities and Retailers to develop public awareness and demand</li> </ul>	<ul style="list-style-type: none"> <li>▪ Lighting Technology Advancement Initiative: IOUs will work with equipment manufacturers to develop specifications for high-quality equipment.</li> <li>▪ Lighting Education and Information initiative will raise public awareness and demand for advanced lighting technologies by providing access to information and educational resources.</li> </ul>
Residential Goal 4 – High-Performance Residential Lighting  Commercial Goal 3 – High Performance Commercial Lighting	4-2/3-2: Create demand for improved lighting products through demonstration projects, marketing efforts, and utility programs	<ul style="list-style-type: none"> <li>▪ Deploy a package of rebates, incentives and voluntary industry agreements to bring significant numbers of the best available lighting technologies (SSL) to market</li> </ul>	<ul style="list-style-type: none"> <li>▪ Lighting Technology Advancement suggests program design strategies including development of appropriate incentive packages. Links to other customer energy-efficiency programs for incentive delivery.</li> </ul>
Residential Goal 4 – High-Performance Residential Lighting	4-3: Continuously Strengthen standards.	<ul style="list-style-type: none"> <li>▪ Continuously incorporate gains in efficiency in the appliance standards.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Lighting Technology IOU core resource programs and the Advancement will continually push manufacturers to incorporate efficiency gains into equipment specifications.</li> </ul>
Residential Goal 4 – High-Performance Residential Lighting  Commercial Goal 3 – High Performance Commercial	4-4/3-3: Coordinated phase out of Utility incentives for purchase of CFLs	<ul style="list-style-type: none"> <li>▪ Ensure that big box and home improvement retailers such as Wal-Mart and Home Depot are ready to stock Energy Star price discounted CFLs</li> </ul>	<ul style="list-style-type: none"> <li>▪ Lighting Technology Advancement will chart roadmaps for lighting technologies incorporated into customer energy-efficiency programs, including basic CFLs. The market research component of the Lighting Market</li> </ul>

## Statewide Lighting Market Transformation Program

Relevant Strategic Plan Goal(s)	Strategy	Near-Term Goals (2009-2011)	Relevant Program Strategies
Lighting		<ul style="list-style-type: none"> <li>in CA as IOUs phase CFL programs out.</li> <li>▪ Utilities engage in negotiations with manufacturers and retailers to buy-down prices and stock the next generation of high efficiency lighting.</li> </ul>	Transformation will enable IOUs to clearly define and end-game for this technology while exploring opportunities to incorporate emerging lighting technologies into new and existing programs.
Residential Goal 4 – High-Performance Residential Lighting	4-5: Ensure environmental safety of CFLs and other emerging lighting solutions	<ul style="list-style-type: none"> <li>▪ Coordinate consumer education and marketing programs to improve disposal habits.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Lighting Education and Information will include messaging on appropriate disposal methods for lighting technologies.</li> </ul>

### 5. Program Implementation

#### a) Statewide IOU coordination

**i. Program name:** Lighting Market Transformation Program

**ii. All program delivery mechanisms**

Delivery mechanisms include providing information, collaboration, and guidance to program staff, management, and other utilities.

**iii. Marketing materials and message**

Education for customers on technologies newly available on the market.

**iv. IOU program interactions with CEC, ARB, Air Quality Management Districts, local government programs, other government programs, CBOs, non-governmental organizations, manufacturers, retailers, trade and business associations, as applicable**

These organizations will be included when applicable through normal communication channels. Strategic partnerships with the DOE, EPA, and CEC will allow networking with industry allies through over-arching government organizations. Manufacturers, retailers, and non-governmental organizations such as CEE and NRDC will also serve as strategic allies.

**v. Similar IOU and POU programs**

The program will interface with similar programs across the country to benchmark and leverage knowledge transfer, best practices, and newest technological developments.

#### b) Program Delivery Mechanisms

Statewide strategies towards mid-scale field placement of priority technologies will be among many to be considered and further developed through this program.

#### c) Marketing Plan

Statewide coordinated marketing plans for priority technologies will be developed.

## **Statewide Lighting Market Transformation Program**

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**d) Best Practices**

The program will develop and promote best practices.

**e) Innovation**

This program is new, unique and innovative in its approach as a central point of market transformation activity for lighting within a utility.

**f) Integrated/coordinated Demand Side Management**

Load control and other demand response technologies are under-represented in current technology, and this program will work toward bringing them out in new technologies of the future.

**g) Integration Across Resource Types**

Integration will take place through monitoring and influencing developments that maximize interactive effects for energy savings across resource types.

**h) Pilots**

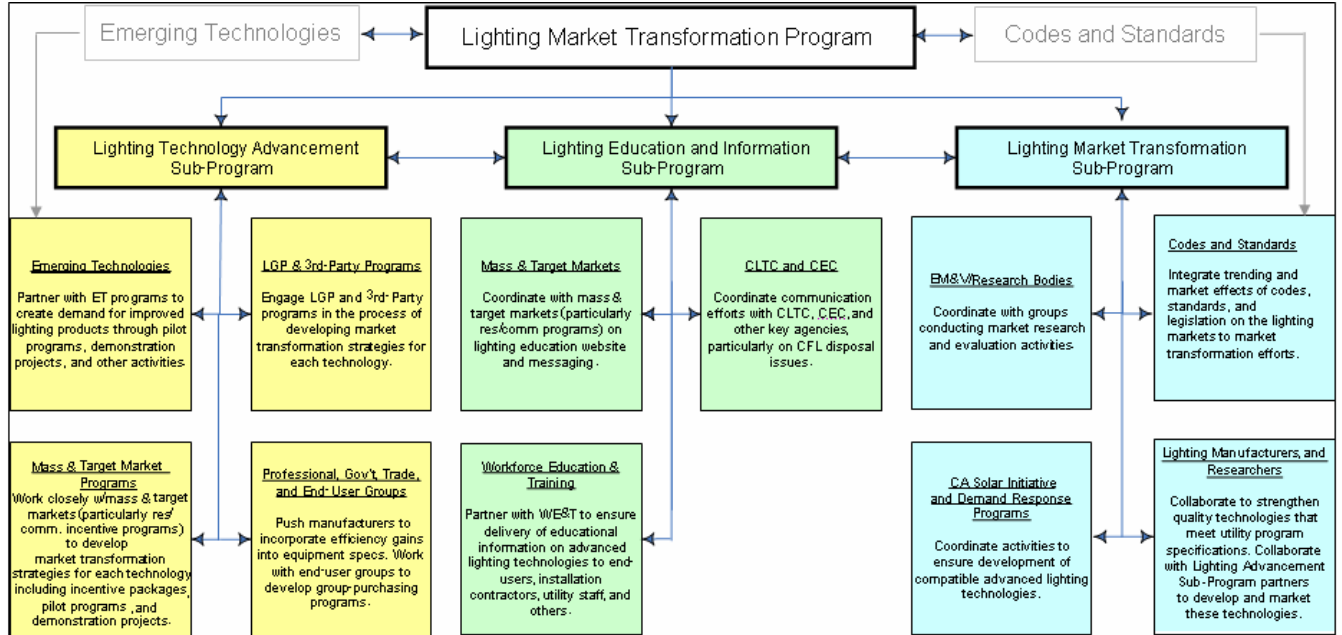
In this program, priority consideration will be given to pilots that leverage the efforts of the Emerging Technologies Program, mid-scale field placements, small scale incentive program tests, and other avenues.

**i) EM&V**

EM&V is not applicable because this program does not claim energy savings or demand reduction, and its market effects are indirect.

# Statewide Lighting Market Transformation Program

## 6. Diagram of Program



# Statewide Lighting Market Transformation Program

## 7. Program Logic Model

2009-2011 Statewide Crosscutting Lighting Market Transformation Program - Non Resource

