STATE OF CALIFORNIA EDMUND G. BROWN JR., *Governor*

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

July 11, 2014

Clay Faber
Director, Regulatory Affairs
San Diego Gas and Electric Company
8330 Century Park Court, Room 32C
San Diego, CA 92123-1548

Subject: SDG&E Supplemental Advice Letter 2604-E-B / 2294-G-B

Dear Mr. Faber,

Energy Division staff have determined that SDG&E Advice Letter 2604-E-B / 2294-G-B, and related Advice Letters (Pacific Gas and Electric Advice Letter (AL) 3475-G-B / 4424-E-B; Southern California Edison (SCE) AL 3042-E-B; and, Southern California Gas Company (SCG) AL 4646-B), hereafter "Joint Advice Letter," are in compliance with my January 22, 2014 Letter of Disposition to Advice Letter SCE 2979-E, which states, "D. -5-09-043 does require an AL filing if the incentive change exceeds 50%." Supplemental AL 2604-E-B / 2294- G-B provides sufficient additional information and clarification to AL 2604-E / 2294 – G filed on May 21, 2014, as well as Supplemental AL 2604-E-A / 2294- G –A filed on June 24, 2014, which it replaces in its entirety. Energy Division therefore approves SDG&E's Supplemental Advice Letter 2604-E-B / 2294 – G- B – and the Joint Advice Letter - filed on July 1, 2014. The effective date of this approval is July 31, 2014.

SDG&E filed Advice Letter 2604-E / 2294 – G on May 21, 2014 to request to increase the incentive amount for the California Advanced Home (CAHP) program of San Diego Gas & Electric Company, Southern California Gas Company, Southern California Edison Company and Pacific Gas and Electric Company, and to indicate additional programmatic changes. On June 16, 2014, the Office of Ratepayer Advocates (ORA) filed a Late-filed protest regarding the Joint Advice Letter, stating that AL 2604-E / 2294 – G did not provide sufficient justification and detail for the proposed incentive changes and was therefore deficient. ORA indicated seven areas in which the Advice Letter had not provided clear or sufficient information. Energy Division suspended the Joint Advice Letter on June 17, 2014, also stating that the advice letter was deficient in key information necessary to understand the proposed incentive change and that it therefore required staff review. In its email suspending the Advice Letter, Energy Division requested that the IOUs address the ORA protest by filing a Supplemental Advice Letter containing the requested information.

SDG&E filed Supplemental Advice Letter 2604-E-A / 2294- G –A, "Supplemental Data and Justification on the Incentive Structure Changes for the CAHP Program," on June 24, 2014. On June 25, Energy Division indicated in an email to SDG&E that the information provided was likely sufficient to address information deficiencies, but requested that the additional information be incorporated directly into the CAHP Program Implementation Plan, and that the supplemental AL include this updated PIP in its entirely.

On July 1, 2014 SDG&E filed AL 2604-E-B / 2294-G-B with the requested additional information addressing the seven content gaps identified by ORA. These are reviewed below.

Information Gaps Identified by ORA:

1) **The IOUs do not justify, in their AL, why it is necessary to differentiate the incentive structures of single family and low-rise buildings versus high-rise multifamily buildings and further differentiate incentive levels between single family buildings and low-rise buildings. The original PIP provides for one incentive structure for all residential buildings.**

SDG&E in its response indicated the analysis that it had undertaken to ensure an equitable and simple incentive structure sufficient to drive builder participation -- targeting 50% of incremental costs as directed by Energy Division -- but low enough to maintain former levels of program cost-effectiveness. SDG&E indicated that MF units achieved lower per unit savings, and thus had been assigned a lower incentive level and to match per-unit differences from the 2008-code based program. Incentive levels for single family and multi-family homes were based on the California Home Energy Rating Score (HERs), which does not exist for MF High Rise buildings. Therefore, SDG&E's proposed incentive structure for MF High Rise buildings utilizes a simple two-tier incentive structure that mirrors the incentive structure currently in place, while it undertakes further research (p. 4 – 5 of AL; p. 1, 5-6 of Attachment A1 [PIP]).

2) **The AL does not sufficiently explain how the CAHP scoring for single family and low-rise buildings works (other than stating that it is derived from the California HERS Design Rating System), what it is based on, and how it compares to the original incentive structure in terms of output. Without an adequate explanation of the scoring system it is not possible to determine what level of savings corresponds to the various points in the new 'point system-based' incentive structure. This prevents the reader's ability to understand the impact of proposed changes on the levels of ratepayer investment and on incentive levels per unit savings. Furthermore, the program should be clear about how varying levels of efficiency correspond with varying incentive awards so that the market and builders in the market understand the system and can design their projects, accordingly.**

SDG&E in its response indicates that the proposed incentive structure is based upon the CA HERs whole-house design rating system, which is a performance-based rating system, by climate zone, and normalized relative to a reference home building to meet the Title 24, 2008 prescriptive (Package D) requirements, which has a HERs score of 100. A zero net energy (ZNE) building, reflecting California's 2020 ZNE goals, has a HERs score of "0." The CAHP incentive score is derived from the HERs tool, and the lower the score, the more efficient the home, and the higher the CAHP incentive. This incentive structure addresses the declining amount of savings that are a "percent better than Title 24," while still driving the California new home building market to ZNE homes (p. 4-5 of AL; p. 6 of Attachment A1 [PIP]).

3) **The AL does not specify the minimum threshold of building efficiency that will trigger an incentive payment. Ratepayer funds should not be applied to buildings that do not achieve efficiency levels that are above the Title 24 standards that are applicable at the time. In other words, when the 2013 Title 24 standards go into effect in July of this year, incentives should only be given to buildings constructed above these new standards.**

Though the AL states that "these incentive changes [in the AL] will better align with changing building code," the AL does provide any evidence of how the proposed incentive structure, nor how other proposed changes in the AL, will do this. The IOUs should demonstrate how their proposed point system corresponds to levels of building efficiency in relation to the 2013 Title 24 code and should set a minimum threshold that would trigger an incentive payment at a level that is above the relevant building code at the time, or above the 2013 Title 24 standards.

SDG&E in its response indicated that the minimum CAHP score of 84 to qualify for an incentive under the proposed new structure correlates with a 10-20 percent efficiency improvement relative to 2013 Title 24, accounting for climate zone differences. It indicated that projects that do not meet 2013 Title 24 Standards will not be eligible for participation in the program (p. 5 of AL; p. 1 of Attachment A1 [PIP]).

4) **The existing PIP details the percentage by which the incentive covers the builder's cost of achieving certain efficiency levels, specifically that the incentive covers 67percent of the incremental measure cost "at the 20% savings level". This is useful detail as it is important to track how much of the cost of efficiency is being subsidized by ratepayers. The ratio of incentive subsidy to customer cost should be declining over time if the program is successful in transforming the market and ensuring lasting savings at reasonable ratepayer cost. The AL does not provide details on how much of the incremental measure cost will be covered by the new incentive structure. This is a critical omission that the IOUs should rectify in its proposed changes to the current incentive structure.**

SDG&E in its response indicated that the proposed incentive curve was developed to comprise 50 percent of the incremental builder cost on average across all climate zones based on an anticipated range of CAHP Scores. Since the cost curve increases exponentially relative to CAHP score the incentive curve also has a built-in escalation to match (p. 4, 6-8 of AL; p. 5-6 of Attachment A1 [PIP]).

5) **The AL states that single family and low-rise building participants can receive additional point reductions in their CAHP score based on 'pre-determined energy efficiency measures not included in performance modeling', however, it does not detail what these predetermined EE measures are, nor does it provide sufficient information that justifies 'point reductions' in a manner that would enable the reader to determine the value of such an approach. Ratepayer dollars on incentives should not be spent unless the efficiency savings are cost-effectively procured and justified.**

SDG&E in its response indicated that the proposed incentive structure was designed to drive builders to exceed 2013 Title 24 and that CAHP bonus points had been crafted in conjunction with Codes & Standards and Emerging Technologies programs to (1) Act as market softeners for future code measures, (2) Promote energy efficiency targets that get buildings ZNE Ready and (3) Promote other energy efficiency targets that are recognized as high performing nationwide. The specific measures were included in the IOUs new CAHP Customer Handbook (p. 5-6 of AL; p. 7 of Attachment A1 [PIP]).

6) **The AL states that the new CAHP Score will be easier to understand, but it does not explain how.**

SDG&E in its response stated that the CAHP Score is easier to understand for several reasons: 1. The smaller the number the better the score (the closer you get to zero, the closer you are to zero energy). 2. The single score provides adequate information for a builder to understand their overall energy use in a fashion to which they are already accustomed (CA HERS Score). 3. It is a static scoring system that will be the same through 2020, which provides a steady target for California's ZNE goals. A score of 100 equates to a 2008 Title 24 baseline home (p. 4 of AL; p. 8 of Attachment A1 [PIP]).

7) **The AL should reference all IOUs PIPs that are impacted by the AL, including dates of the PIP filings.**

SDG&E in its response indicated that the Advice Letter was modifying the CAHP program filed on January 14, 2013 and subsequently supplemented via Advice Letters: SDG&E AL 2448-E/2167-G, PG&E AL 3356-G-A&B/ 4176-E-A&B, SCE AL 2836-E; SoCalGas AL 4449-G.

Based on this additional information provided, Energy Division approves SDG&E's Supplemental Advice Letter 2604-E-B / 2294 – G- B – and the Joint Advice Letter - filed on July 1, 2014. The effective date of this approval is July 31, 2014.

Sincerely,

Edward Randolph
Director, Energy Division

cc: Meg Caulson, SDG&E
Sid Newsom, SCG
Megan Scott-Kakures, SCE
Leslie Starck, SCE
Brian K. Cherry, PG&E
Pete Skala, Energy Division
Carmen Best, Energy Division
Hazlyn Fortune, Energy Division
Nicholas Castillo, Energy Division
Tariff Unit, Energy Division
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July 1, 2014

Advice 2604-E-B/2294-G-B
(San Diego Gas & Electric Company - U902-M)

Advice 4646-B
(Southern California Gas Company – U 904-G)

Advice 3042-E-B
(Southern California Edison Company – U 338-E)

Advice 3475-G-B/4424-E-B
(Pacific Gas and Electric Company - U 39-M)

Public Utilities Commission of the State of California

SUBJECT: SUPPLEMENTAL: REQUEST TO INCREASE INCENTIVE AMOUNT FOR SAN DIEGO GAS & ELECTRIC COMPANY, SOUTHERN CALIFORNIA GAS COMPANY, SOUTHERN CALIFORNIA EDISON COMPANY AND PACIFIC GAS AND ELECTRIC COMPANY FOR THEIR CALIFORNIA ADVANCED HOME PROGRAM

PURPOSE

San Diego Gas & Electric Company (SDG&E), on behalf of itself, Southern California Gas Company (SCG), Southern California Edison Company (SCE) and Pacific Gas and Electric Company (PG&E) (together the Investor-Owned Utilities (IOUs), hereby submit for filing their supplement to SDG&E Advice 2604-E-A/2294-G-A, SCG Advice 4646-G-A, SCE Advice 3042 E-A, and PG&E Advice 3745-G-A/4424-E-A (Advice 2604-E-A/2294-G-A, et. al.), filed June 24, 2014. This supplemental Advice Letter (AL) addresses questions from the Office of Ratepayer Advocates (ORA) late protest filed June 16, 2014 and the Energy Division's Advice Letter Suspension Notice filed June 17, 2014. ORA requested sufficient justification and detail for the IOUs proposed changes. This supplemental filing replaces AL 2604-E/2294-G, et. al. and AL 2604-E-A/2294-G-A, et. al. in its entirety.

Attachments A1 and A2 to this Advice Letter (AL) are a redlined and clean version of the proposed joint-IOU statewide Program Implementation Plan (PIP) for the California Advance Home Program (CAHP). Attachments B1 and B2 are supporting documentation.

This supplemental advice filing requests Commission approval for program design and incentive level changes to the CAHP, the Residential New Construction subprogram of the California Statewide Program for Residential Energy Efficiency (CalSPREE). These programmatic and incentive changes will better align with changing building code and

California's "Big Bold" Energy Efficiency Strategies.[1] Additionally, the revised program design and incentive changes are expected to improve coordination with the California Energy Commission (CEC), and the Codes & Standards and Emerging Technologies Programs within the Energy Efficiency (EE) portfolios of the IOUs.

Pursuant to D.05-09-043, this request is being filed by advice letter as the proposed incentive change for this statewide program exceeds the 50% threshold."

BACKGROUND

In D.12-11-015, the Commission approved the IOUs' 2013-2014 EE program plans including the CAHP Residential New Construction sub-program. This program was implemented by the IOUs following approval of their respective compliance advice letters filed on January 14, 2013 and as supplemented.[2]

The CAHP incentives are structured as follows:

- The baseline entry level of the program is 15% above the 2008 Title 24 building code with the incentive payments based on the final 2008 T-24 reports created and signed by a Certified Energy Plans Examiner (CEPE) and verified by a third-party Home Energy Rating System (HERS) Rater.
- The incentives increase incrementally as the performance of the building increases.
- The current maximum incentive is attained once 45% better than 2008 Title 24 building code is achieved. At 15% above 2008 Title 24 building code a project is receiving $75/kW, $0.43/kWh & $1.72/therm.
- At the maximum incentive level on the scale (45% above 2008 building code) a project is receiving $225/kW, $1.29/kWh & $5.14/therm.

With the pending implementation of the 2013 Title 24 Building Code expected July 1, 2014, the existing program design would no longer provide incentives that offset the incremental cost to promote premium level efficiency equipment that achieves the higher levels of energy efficiency needed to surpass the new code and qualify for the program. Additionally, the existing program design does not allow for all end-uses to be incentivized, which also is needed to drive achievement of higher levels of energy efficiency; and in turn, zero net energy (ZNE).

It is imperative that the CAHP design changes are implemented in coordination with the adoption of the impending building code in order to maintain the program's continued positive impact on the progression of energy efficient residences within the state of California.

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[1] All new residential construction in California will be zero net energy by 2020, pursuant to the California Long term Strategic Plan adopted in D.07-10-032.

[2] SDG&E AL 2448-E/2167-G, PG&E AL 3356-G-A&B/ 4176-E-A&B, SCE AL 2836-E; SoCalGas AL 4449-G.

By adopting the proposed changes, the program will not only remain effective, but also increase integration with the Codes & Standards and Emerging Technologies statewide offerings and statewide programs. Additionally, the proposed changes will position the program to better lead the Residential zero net energy effort by offering "bonus point" packages created from future codes and emerging technologies measures.

On May 21, 2014, the IOUs filed their advice letter and PIPs (SDG&E3213, PGE2100, SCE3042-E & SCG3707) for program design and incentive level changes to the California Advance Home Program (CAHP), the Residential New Construction subprogram of the California Statewide Program for Residential Energy Efficiency (CalSPREE).

On June 16, 2014, Office of Ratepayer Advocates (ORA) filed a late protest citing the IOUs' advice letter did not provide sufficient justification and detail for the proposed changes and therefore is deficient.

On June 17, 2014, the Energy Division suspended the IOUs Advice Letter citing the "Advice Letter Requires Staff Review".

On June 25, 2014, the Energy Division contacted SDG&E to advise the CAHP updated PIP was not provided and is necessary to approve the advice letter.

PROGRAM DESIGN

The IOUs have developed the changes to CAHP with a plan to put them into effect July 1, 2014, which coincides with the adoption of the 2013 Title 24 Standards.

The IOUs will offer, within their respective service territories, a statewide restructured CAHP. The program's metric for single family and low rise residential will include switching to a CAHP score, similar to the California Home Energy Rating System (CA HERS) system, and will include all energy end-uses (lighting, plug loads, appliances). The CAHP score can be ascertained through existing Title 24 software and supports the California regulatory infrastructure (TDV energy, CA HERS system, and Title 24 modeling). High-rise residential will switch to a two-tiered deemed structure based on percent below code, similar to the existing CAHP.

The IOUs crafted the new incentive structure to meet a number of sometimes conflicting goals. Multiple stakeholders were consulted in the incentive structure change process including builders, regulatory authorities, program implementation staff, HERS Raters, energy consultants and other departments within the utilities that work with residential energy efficiency.

The objectives of this effort were as follows:

1. Incentives must be equitable across climates zones and building types.

2. Incentives must be high enough to drive builder participation - targeting 50 percent incremental builder costs, as directed by the CPUC.

3. Incentives and program implementation costs must be low enough to maintain similar levels of program cost effectiveness.

4. Incentives should be simple and transparent to communicate and implement for several reasons:

    a) The smaller the number the better the score (the closer you get to zero, the closer you are to ZNE).

    b) The single score provides adequate information for a builder to understand their overall energy use in a fashion to which they are already accustomed (CA HERS score).

    c) It is a static scoring system that will be the same through 2020, which provides a steady target for our ZNE goals. A score of 100 equates to a 2008 Title 24 baseline home.

Analysis for the new incentive structure show both single family and multifamily low-rise incentives to be, on aggregate, 32 percent higher than if the program had used the old incentive system. An incentive increase was deemed necessary and appropriate to continue to drive builder participation and to meet the 50 percent incremental builder cost target as directed by the CPUC. With the energy code upgrade, many of the most cost effective building measures that formerly could be used to show improvement above code are now included in the code standard. The remaining energy efficiency improvement measures are more expensive for the builders to implement.

Additionally, incentive differentiation between building types was necessary to meet the goals stated above. To create simplicity and transparency, the program is changing from awarding incentives relative to energy savings, to awarding per-dwelling unit. Therefore, the program assigned lower incentive levels for multifamily low-rise buildings since they achieve lower per-unit savings. Both single family and multifamily low-rise incentives were crafted to match 50 percent incremental builder costs using cost-research specific to the building type. Additionally, the single family to multifamily low-rise incentive difference was set to match per-unit incentive differences from the 2008-code based program.

Multifamily high-rise employs energy savings calculations from a different energy code than low-rise and single family (commercial code for high-rise versus residential code for low-rise and single family). Program redesign research conducted by TRC Engieering Services was unable to perform full analysis on high-rise prototypes due to significant delays in the implementation of the state's commercial-code energy simulation software. Therefore, expected energy savings could not be researched in advance to confirm that continuing the current per-savings incentives calculations would be sufficient to move the market. Initial assessments indicated that it would not be sufficient. Additionally, unlike single family and multifamily low-rise, there does not exist a multifamily high-rise whole building California HERS score framework. Therefore, the program could not apply the same CAHP-score concept for this building sector. For this building sector, a simplified two-tier system was designed to match incentive levels from the current program so we could be confident incentives would move the market to participate for the remainder of this program cycle. This will provide adequate time to research and develop a long term solution that more closely matches the other building types in the program.

The CAHP scoring system (used for single family and multifamily low-rise) is based upon the CA HERS whole-house design rating system which is a 'Miles-per-gallon' type of rating system that ranges from 250 to 0, representing its Time Dependent Valuation (TDV) energy use,

normalizing relative to a reference home built to meet the Title 24 2008 prescriptive (Package D) requirements. The reference home has a score of exactly 100, while ZNE is 0. The score is based on TDV Energy use including all energy end uses from both regulated and non-regulated loads and therefore directly supports California's regulatory goals. Additionally, the simulation protocols are nearly identical to those for Title 24 compliance. Additionally, since the reference building is static, the score framework can be maintained through 2020 and beyond. Therefore the CA HERS whole-house design rating was selected as the best option for CAHP. The CAHP score is closely derived from the CA HERS design rating in intention and in mathematical construct. The CAHP score will determine a home's incentive amount. A lower CAHP score will yield a higher incentive. To facilitate calculation in approved single-family code-compliance software, the TDV energy use of the CAHP score's baseline reference building is side-calculated from the 2013 Energy Code Standard design results in an effort to approximate the appropriate 2008 Package D reference building. In addition, the large-home scale-back equation has been eliminated so that the efficiency program is inclusive of the entire new construction market. Additionally, the program eliminated design rating credit for installing solar photovoltaic energy. The IOUs will continue to coordinate with the California Energy Commission as the CA HERS design rating's rule set and technical standards are finalized.

A CAHP score of 84 correlates with 10-20 percent above 2013 Title 24 code compliance with significant fluctuation by climate zones and building type. Projects that do not meet the 2013 Title 24 Standards (less than 0 percent better than code) will not be eligible for participation in the program. Generally, we expect CAHP participants to exceed 2013 Title 24 code by at least 10 percent.

For a single family home a participant entry will require a CAHP score of 84, and eligible projects will receive $300 for reaching that threshold. For each point reduction below 84, the participant will receive $100 until reaching a CAHP score of 75, after which the project will receive $200 for each additional point reduction. Low rise residential will follow the same scoring system as single family but with half the incentive levels ($150 for entry @ 84, $50 per point to 75 and $100 per point below).

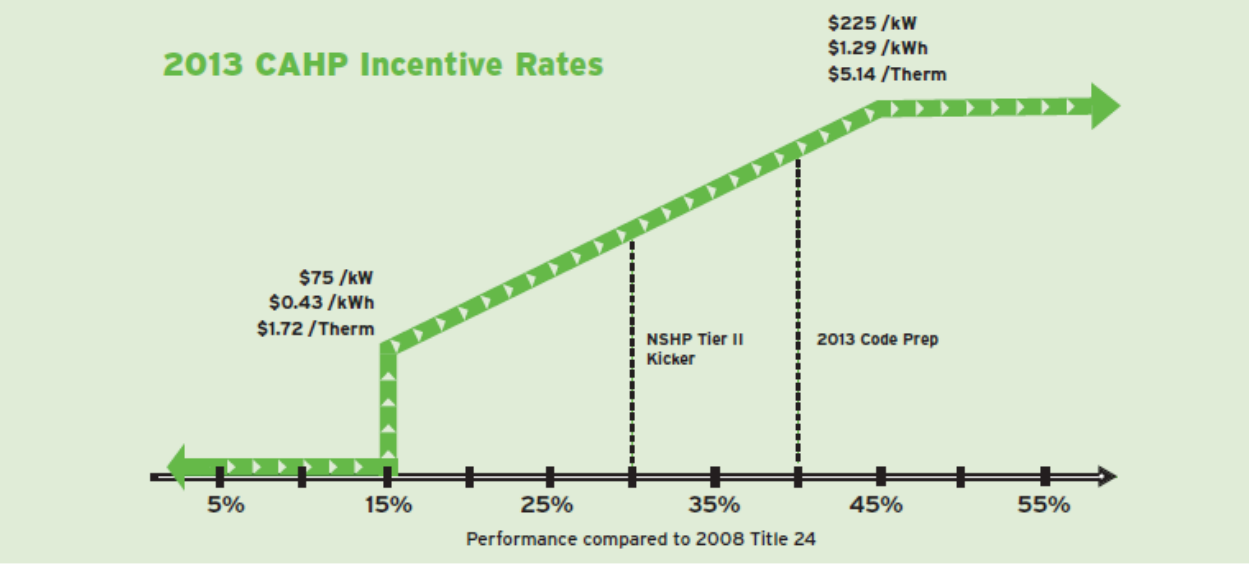
For multifamily high-rise, the minimum baseline qualification is 15% above 2013 Title 24 building code. The custom incentive for each building is calculated by the Title 24 energy modeling software and displayed in the CAHP Incentive Report (CIR). Incentives are specific to the orientation of each building and number of units for each multi-family building. The flat-rate incentive per unit will be $150 for buildings achieving 15% to 29.9% above 2013 Title 24 building code, and $400 per unit for building achieving 30% or better above 2013 Title 24 building code. For Multifamily High-rise projects the maximum incentive per project is $250,000 (includes incentives and bonus kickers). For all projects reaching the $250,000 cap, a 10% retention fee ($25,000) will be held back from payment until the entire project is complete and documentation has been submitted.

Single family and low -rise program participants will have the opportunity in the new incentive structure to receive additional point reductions in the CAHP score thereby increasing the incentive. Points are awarded based upon pre-determined energy efficiency measures not included in performance modeling. The goal of the proposed point system is entice builders to exceed the Title 24 EE targets. CAHP has offered similar bonuses in the past for Energy Star, the Green Point Rating system, kW reduction and New Solar Homes Program (NSHP) Tier II. The CAHP bonus points are crafted in conjunction with Codes & Standards and Emerging Technologies to (1) Act as market softeners for future code measures, (2) Promote energy

efficiency targets that get buildings ZNE Ready and (3) Promote other energy efficiency targets that are recognized as high performing nationwide. The specific measures are not defined in the IOUs AL but are clearly defined in the new Customer Handbook.
Specifically, IOUs are proposing to do the following:

- Modify the current percent-better-than-code sliding scale incentive model to a CAHP scoring scale to determine incentives for single family and low-rise residential.

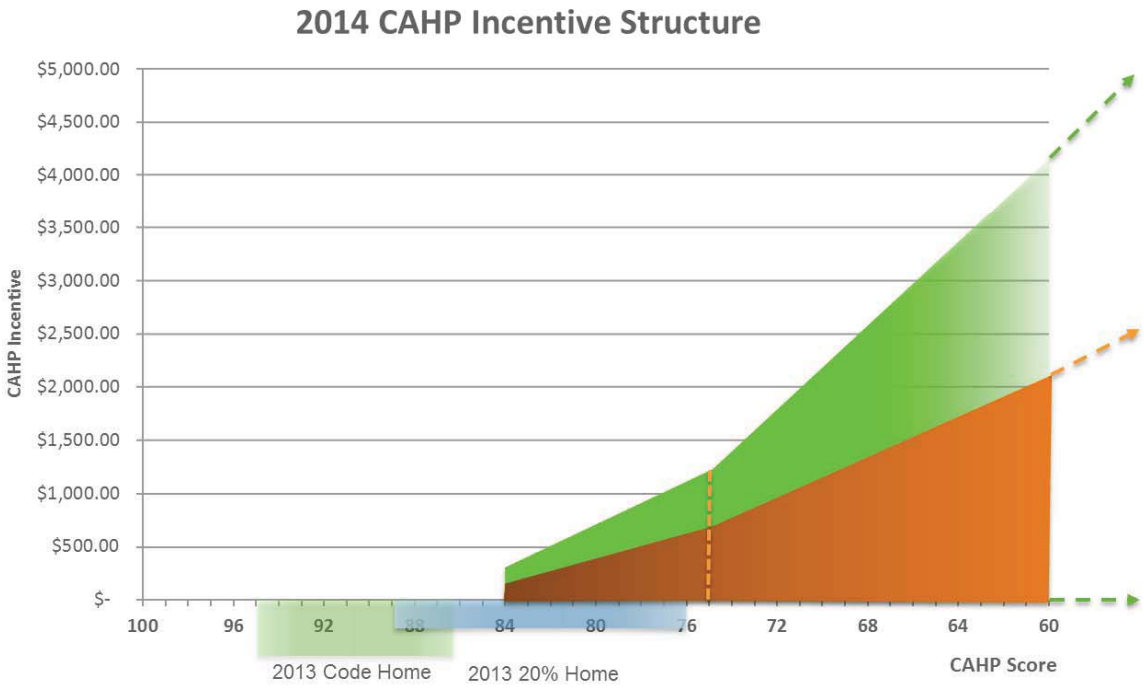
- Modify the current percent-better-than-code sliding incentive model to a two-tiered deemed incentive model for hi-rise residential.

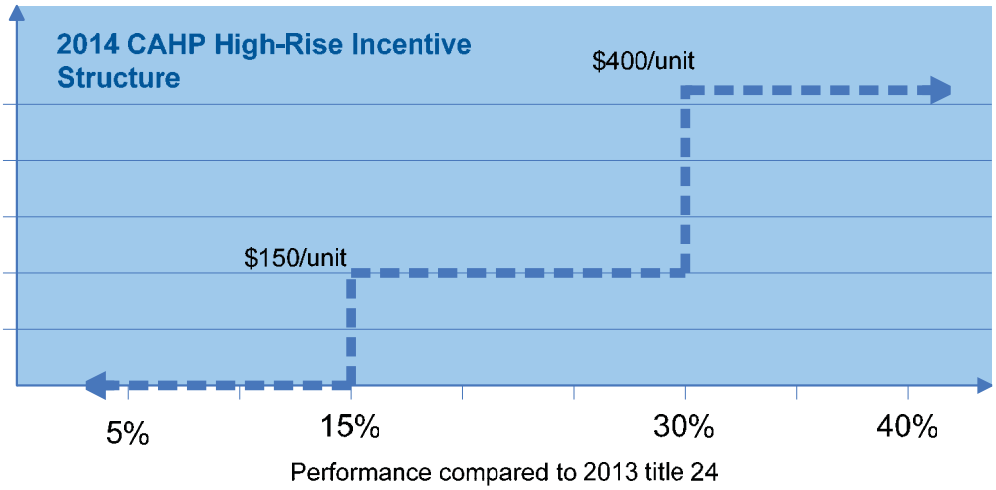


2014 CAHP-SF & Low-rise Incentive Structures

CAHP-SF
- $300 for program entry CAHP Score of 84
- $100 for each point up to 75
- $200 for each point thereafter

CAHP-MF Proposed (half of CAHP SF)
- $150 for program entry CAHP Score of 84
- $50 for each point up to 75
- $100 for each point thereafter





- Include all energy end use-uses within the home's envelope.
- Add "CAHP Bonus Points" in order to further promote highly energy efficient design and advanced building technologies.

Modify the current percent-better-than-code sliding scale incentive model to a CAHP scoring scale to determine incentives.

The program's current sliding scale that is based upon percent-better-than-code is being replaced for several reasons. First, the current sliding scale does not closely align with the concept of low/zero net energy since the higher the number, the better the performance. Second, the sliding scale is inflexible, and as new codes go into effect, it does not allow for innovation in the CAHP approach to encourage energy efficiency and transition towards ZNE. However, the new CAHP scoring scale addresses these barriers and is a relative energy use metric (equitable across climate zones). The proposed new scale is a static score framework that remains constant as code changes. In addition, it is user friendly and simple to implement.

Modify from Title 24 only measures to include all energy end -uses within the home's envelope.

Moving to a format that allows the CAHP program to incentivize end-uses outside Title 24 is important to the ongoing success of the CAHP program. As revised code requirements go into effect, they inherently shrink the amount of energy savings possible. The measures that were cost effective previously are now code, so new measures that tend to be more expensive (higher IMC) become the new measures to promote. To continue to drive toward zero net energy, the CAHP program must begin to look at the whole picture of a home's energy use.

Add "CAHP Bonus Points" in order to further promote highly energy efficient design and advanced building technologies.

The CAHP Points will be a major asset to the program for two reasons: (1) The revised point structure will allow the CAHP to influence customers to seek higher levels of energy efficiency than they can through scale only by offering points for certain energy targets that may have been cost prohibitive without the added incentive, (2) The revised point structure allows for greater integration with Codes & Standards and Emerging Technologies. Different packages can be offered for points that can be developed with Codes & Standards and Emerging Technologies to begin bringing construction techniques/technologies to market that will be necessary to reach future codes.

PROGRAM IMPACTS

Code changes are having monumental impact on the CAHP. There is a substantial increase in the level of energy efficiency required to pass code and thus participate in the CAHP program. This also means a much lower energy budget per project which causes a decrease in the amount of incentives available for what would have been a qualifying project under the current CAHP program. Also, the proposed programmatic changes are a milestone towards the goal of ZNE residential new construction by 2020.

EFFECTIVE DATE

The IOUs designate this filing as a Tier 2 Advice Letter subject to Energy Division disposition (effective after disposition) pursuant to GO 96-B. The IOUs respectfully request that this filing be approved and become effective on July 31, 2014, which is 30 calendar days after the date of filing.

PROTEST

This supplemental advice letter addresses the protest to the IOU's first advice filing submitted on May 21, 2014. Its content also reflects feedback from discussions with the Energy Division staff. Therefore, the IOUs are waiving the protest period pursuant to the Energy Division.

NOTICE

A copy of this filing has been served on the utilities and interested parties shown on the attached list, including interested parties in R.09-11-014 and A.12-07-001 et. al., by providing them a copy hereof either electronically or via the U.S. mail, properly stamped and addressed. Address changes should be directed to the emails or facsimile numbers above.

_____
CLAY FABER
Director – Regulatory Affairs

CALIFORNIA PUBLIC UTILITIES COMMISSION

ADVICE LETTER FILING SUMMARY
ENERGY UTILITY

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

Company name/CPUC Utility No. **SAN DIEGO GAS & ELECTRIC (U 902)**

Utility type:
☒ ELC ☒ GAS
☐ PLC ☐ HEAT ☐ WATER

Contact Person: Christina Sondrini
Phone #: (858) 636-5736
E-mail: csondrini@semprautilities.com

EXPLANATION OF UTILITY TYPE
ELC = Electric GAS = Gas
PLC = Pipeline HEAT = Heat WATER = Water

(Date Filed/ Received Stamp by CPUC)

Advice Letter (AL) #: 2604-E-B/2294-G-B, et. al.

Subject of AL: Supplemental: Request to Increase Incentive Amount for SDG&E, SCG, SCE and PG&E for their California Advanced Home Program

Keywords (choose from CPUC listing): Compliance, Energy Efficiency

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

If AL filed in compliance with a Commission order, indicate relevant Decision/Resolution #:
D.12-11-015

Does AL replace a withdrawn or rejected AL? If so, identify the prior AL N/A

Summarize differences between the AL and the prior withdrawn or rejected AL[1]: N/A

Does AL request confidential treatment? If so, provide explanation: N/A

Resolution Required? ☐ Yes ☒ No

Tier Designation: ☐ 1 ☒ 2 ☐ 3

Requested effective date: 7/31/14

No. of tariff sheets: 0

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

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

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

Tariff schedules affected: N/A

Service affected and changes proposed[1]: N/A

Pending advice letters that revise the same tariff sheets: N/A

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

CPUC, Energy Division
Attention: Tariff Unit
505 Van Ness Ave.,
San Francisco, CA 94102
EDTariffUnit@cpuc.ca.gov

San Diego Gas & Electric
Attention: Megan Caulson
8330 Century Park Ct, Room 32C
San Diego, CA 92123
mcaulson@semprautilities.com

[1] Discuss in AL if more space is needed.

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A.12-07-001
A.12-07-002
A.12-07-003
A.12-07-004

Attachment A1 – Redline Version

Residential New Construction PIP
California Advanced Homes Program (CAHP)

Residential New Construction PIP

1. **Program Name:** California Advanced Homes Program (CAHP)
   Program Type: Statewide Core

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) sub-program offering. The RNC sub-program represents one-sixth of the CalSPREE core offering.[BC1] [JT2]CAHP encourages single and multi-family builders of all production volumes to construct homes that perform above and beyond what is required by ~~exceed~~ California's Title 24 energy efficiency standards. ~~by a minimum of 15 percent.~~ Program qualification is based ~~off of~~upon a home's CAHP Score which is a simple scale ranging from 0-250 ~~[LS3]~~, zero being no energy use at all with 250 being extremely high. The scoring is derived from the CA HERS Design Rating system. A CAHP score of 84 correlates with 10-20 percent above 2013 Title 24 code compliance with significant fluctuation by climate zones and building type. Projects that do not meet the 2013 Title 24 Standards (less than 0 percent better than code) will not be eligible for participation in the program. Generally, we expect CAHP participants to exceed 2013 Title 24 code by at least 10 percent. Through this plan, multi-family low rise and single-family projects are generally approached ~~identically~~in the same way. ~~for program purposes except where explicitly noted.~~ Due to the delay in the development of the software needed to calculate building performance and incentives for high-rise residential buildings, ~~high rise residential buildings~~ the program will incorporate a simple, two-tier deemed incentive structure for high rise residential buildings as follows:

   - $150/unit achieving 15%-29.9% above 2013 Title 24
   - $400/unit achieving 30% or better above 2013 Title 24.[BD4]

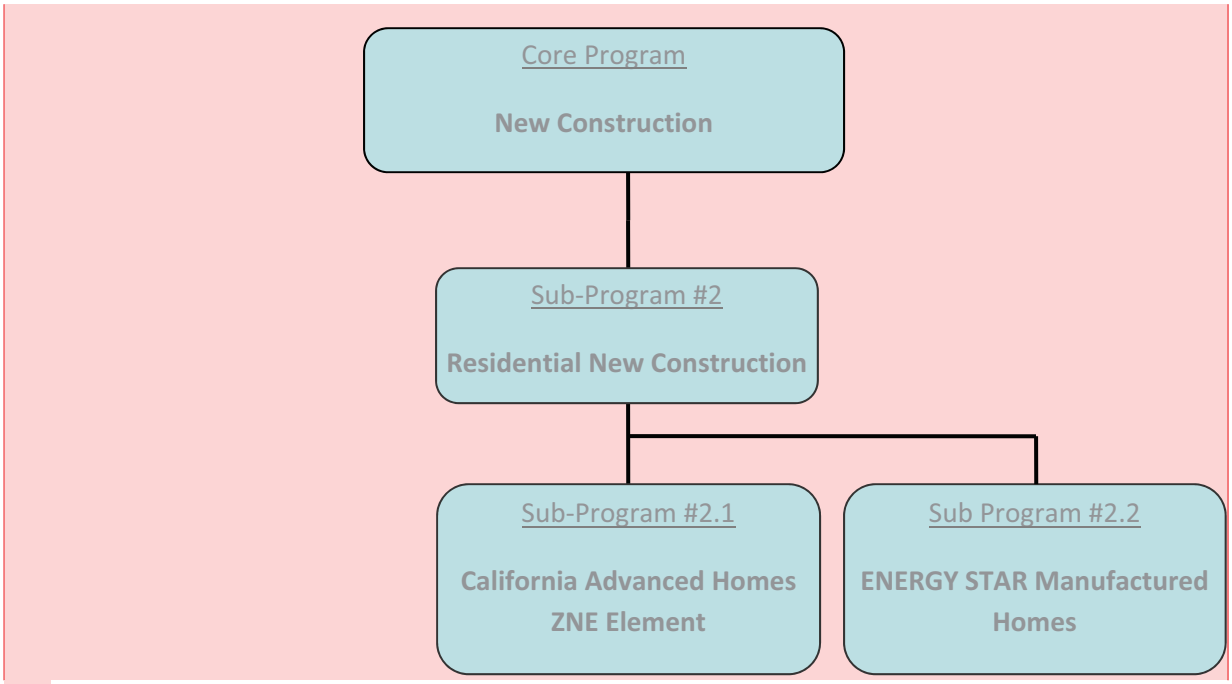
   ~~The ENERGY STAR® Manufactured Homes program, offered by Sempra and Southern California Edison, addresses new factory-built housing and is discussed in further detail below (ESMH PIP).~~ The structure of the ~~relevant~~ Residential New Construction program elements is as follows:

   CalSPREE Program (Core)
   1. Residential New Construction Sub-Program
      .1 Single-family/Multi-family Sub-Program (CAHP)
         .1.1 ZNE Homes Sub-Program
      .2 Manufactured Homes Sub-Program for Sempra and Southern California Edison[BD5][BC6][JT7]

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 recognize them for their achievements.



[BC8]

[JT9]

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 ZNE 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, [JT10] and the New Solar Homes Partnership (NSHP).

As explored in greater detail below, CAHP will incorporate a ZNE sub-element to adopt the following strategies toward achieving the Strategic Plan goals. As program technologies and

approaches are developed and demonstrated in ZNE, they will be incorporated into the CAHP.

- Raise plug load efficiency (ZNE)
- 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 (ZNE)
- Encourage incorporation of Green Building Standards (ZNE)
- 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.

To further help make ZNE a reality in the residential sector, utilities will:

1. Integrate successful ZNE strategies and activities proven through program and/or pilot projects during the 2013-2014 Transition Period. The residential new construction program will absorb and enhance existing residential programmatic elements aimed at delivering ZNE best practices to the marketplace, potentially including but not limited to:
2. Project consultations that pair projects with experts capable of driving unique designs to ZNE;
3. Provide education opportunities to key architectural, engineering, and other design professionals (see WE&T plans); and
4. Explore cost effective ZNE solutions that consider the intersection of building and community energy use

b) <u>List measures</u>

CAHP Program measures, known savings. All IOUs[1].

- Marketing assistance as feasible and appropriate for builders who achieve ENERGY STAR® certification.
- Calculated incentives.

c) <u>List non-incentive customer services</u>

- Technical support to Energy Analysts and Design Teams[2]
- 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

[1] Savings per appliance will be consistent across all IOUs.

[2] 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.

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.

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.[3]
- CAHP would treat market-rate units using the standard calculated approach and claim all energy savings.

Zero Net Energy (ZNE)

The ZNE 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, ZNE will help educate the industry on how to achieve energy-efficient, green homes.

The ZNE program element will consist of projects that have used advanced modeling techniques to project total kBTU usage and demonstrates a plan to offset said usage with onsite generation over the course of 12 months. This portion of the program will provide customized financial incentives that intend to cover a portion of the verified incremental cost for a portion of the homes, at levels that may vary. This incentive will only apply to the energy efficiency measures of the home and will explicitly exclude the cost of renewable energy generation. The Emerging Technology program may also fund the purchase, installation, and monitoring of candidate technologies. The ZNE program element will also provide support in the form of soft-cost design support to help design teams meet their energy and environmental objectives. This portion of the program works closely with home builders seeking assistance in the development of sustainable design and construction, green building practices and emerging technologies.

The ZNE program element, in conjunction with WE&T programs, offers educational opportunities to builders, architects and other Residential construction stakeholders. 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 this element of the 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.

[3] See, http://www.hcd.ca.gov/hpd/hrc/plan/he/, accessed 25 Apr 08.

Design Assistance Options:

- General Team Education: Give presentations, review rating system options, determine big picture green building goals.

- Energy Efficiency/Green Building Recommendations: Project specific recommendations report highlighting ways to incorporate energy efficiency, healthy materials, and other green building features into the unique parameters of the project. Specific product recommendations will not be provided.

- Energy Modeling Support: Provide support and recommendations for Title 24 energy performance modeling to estimate actual building usage and give the project credit for energy efficiency measures that are difficult or uncommon to model.

- Plan and Specification Review: Provide comments on the construction documents at various stages to give feedback on clarity of green building specifications.

- Green Feature Cost Assessment: Provide cost-benefit analyses or value engineering assistance to evaluate specific green building features under consideration for inclusion in the project.

Rating System Documentation Support: Assess and identify project credit/ certification goals, identify and assign rating system tasks to members of the design team, guide the team in system process and timing, assist team in understanding and/or documenting credit achievement. This aid will enhance - but not supplant - participants' efforts to pursue project specifications, designs, calculations, modeling and other necessary services.

The minimum threshold for acceptance in the ZNE program element will be a whole building performance with advanced modeling showing the total kBTU usage of the home as well as the method of generating the offsetting kBTUs.

CAHP Incentive Rationale: The IOUs crafted the new incentive structure to meet a number of sometimes conflicting goals. Multiple stakeholders were consulted in the incentive structure change process including builders, regulatory authorities, program implementation staff, HERS Raters, energy consultants and other departments within the utilities that work with residential energy efficiency. The objectives of this effort were as follows:

1. Incentives must be equitable across climates zones and building types
2. Incentives must be high enough to drive builder participation - targeting 50 percent incremental builder costs, as directed by the CPUC
3. Incentives and program implementation costs must be low enough to maintain similar levels of program cost effectiveness
4. Incentives should be simple and transparent to communicate and implement

An early analysis for the new incentive structure show both single family and multifamily low-rise incentives to be, on aggregate, 32 percent higher than if the program had used the old incentive system. An incentive increase was deemed necessary and appropriate to continue to drive builder participation and to meet the 50 percent incremental builder cost target as directed by the CPUC. With the energy code upgrade, many of the most cost

effective building measures that formerly could be used to show improvement above code are now included in the code standard. The remaining energy efficiency improvement measures are more expensive for the builders to implement.
Additionally, incentive differentiation between building types was necessary to meet the goals stated above. To create simplicity and transparency, the program is changing from awarding incentives relative to energy savings, to awarding per-living unit. Therefore, the program assigned lower incentive levels for multifamily low-rise buildings since they achieve lower per-unit savings. Both single family and multifamily low-rise incentives were crafted to match 50 percent incremental builder costs using cost-research specific to the building type. Additionally, the single family to multifamily low-rise incentive difference was set to match per-unit incentive differences from the 2008-code based program.
Multifamily high-rise employs energy savings calculations from a different energy code than low-rise and single family (commercial code for high-rise versus residential code for low-rise and single family). Program redesign researchers were unable to perform full analysis on high-rise prototypes due to significant delays in the implementation of the state's commercial-code energy simulation software. Therefore, expected energy savings could not be researched in advance to confirm that continuing the current per-savings incentives calculations would be sufficient to move the market. Initial assessments indicated that it would not be sufficient. Additionally, unlike single family and multifamily low-rise, there does not exist a multifamily high-rise whole building California HERS score framework. Therefore, the program could not apply the same CAHP-Score concept for this building sector. For this building sector, a simplified two-tier system was designed to match incentive levels from the current program so we could be confident incentives would move the market to participate for the remainder of this program cycle. This will provide adequate time to research and develop a long term solution that more closely matches the other building types in the program.

The CAHP scoring system is based upon the CA HERS whole-house design rating system which is a 'Miles-per-gallon' type of rating system that ranges from 250 to 0, representing its Time Dependent Valuation (TDV) energy use, normalizing relative to a reference home built to meet the Title 24 2008 prescriptive (Package D) requirements. The reference home has a score of exactly 100, while zero net energy (ZNE) is 0. The score is based on TDV Energy use including all energy end uses from both regulated and non-regulated loads and therefore directly supports California's regulatory goals. Additionally, the simulation protocols are nearly identical to those for Title 24 compliance. Additionally, since the reference building is static, the score framework can be maintained through 2020 and beyond. Therefore the CA HERS whole-house design rating was selected as the best option for CAHP. The CAHP Score is closely derived from the CA HERS design rating in intention and in mathematical construct. The CAHP Score will determine a home's incentive amount. A lower CAHP Score will yield a higher incentive. To facilitate calculation in approved single-family code-compliance software, the TDV energy use of the CAHP score's baseline reference building is side-calculated from the 2013 Energy Code Standard design results in an effort to approximate the appropriate 2008 Package D reference building. In addition, the large-home scale-back equation has been eliminated so that the efficiency program is inclusive of the entire new construction market. Additionally, the program eliminated design rating credit for installing solar photovoltaic energy. The IOUs will continue to coordinate with the California

Energy Commission as the CA HERS design rating's rule set and technical standards are finalized.

The program's most ambitious goal for the 2013-2014 transition period is to promote the early adoption of reach as well as future code elements into the builders' standard practices.

CAHP plans to accomplish this through the strategic creation of CAHP Points which reduce participants CAHP Score~~, therefore~~ thereby increasing their incentive. CAHP Points are given for the following:

- ~~3~~5 points – Future Code Preparation [BD11]measures (bundle per Codes & Standards recommendation)
- High R-value Walls R-21 + 4 and 2x6 (0.051 U-value or better)
    1. Heating and Cooling Distribution Efficiency
    2. Ducts and Air-handler in conditioned space (DCS)/Ductless, or see your utility for other options
    3. High Performance Water Heating
    4. Tankless gas or Condensing gas storage water heater, or see your utility for other options
    5. Quality Insulation Installation (QII)
    6. ACH3 at 50Pa (IECC minimum)
- 3 points – DOE Zero Energy Ready Home
- 5 points – Low Energy Use bonus (≤(100,000 kTDV/year (Production market attainable absolute energy goal)
- 5 points – Ultra Low Energy Use bonus (≤(60,000 kTDV/year) (Correlated to the approximately Energy output of a 3.5 kW PV panel)

The goal of the proposed point system is entice builders to exceed the Title 24 EE targets. CAHP has offered similar bonuses in the past for Energy Star, the Green Point Rating system, kW reduction and New Solar Homes Program (NSHP) Tier II. The CAHP bonus points are crafted in conjunction with Codes & Standards and Emerging Technologies to (1) Act as market softeners for future code measures, (2) Promote energy efficiency targets that get buildings ZNE Ready and (3) Promote other energy efficiency targets that are recognized as high performing nationwide.

~~Getting the market to adopt these levels of efficiency will not be easy. The IOUs expect significant pushback from the building industry due to rising costs. This argument will become even more significant in 2014 when the 2013 Title 24 energy codes take effect. The projected increase in cost to comply with these new codes may be between $3,000 and $5,000. The program is considering the following changes to the current incentive structure:~~

~~In 2013 the sliding scale will stay as it is currently. The IOUs will eliminate the Compact Home, Green Home, and kW reduction kickers from the program to help streamline and lower administration costs. After providing the kickers for the past 3 years it is the program's determination these kickers are not influencing the decisions of the builders and as such have proved not to be essential incentives. Additionally, the ENERGYSTAR kicker will be modified and a new Future Code Preparation kicker will be added with the intent of better preparing builders for the coming code adoption on 1/1/2014. These additional incentives~~

~~will help bridge the knowledge and financial gaps associated with meeting the new code. Finally, the NSHP tier II kicker will remain because analysis shows this kicker is having an influence on pushing builders from the 25-30% range to above 30%.Once the 2013 Energy code becomes effective the program will adjust the incentives in a way that will still cover a portion of the verified incremental measure cost for homes achieving high levels of efficiency above and beyond those required by code.~~

~~The program believes ENERGY STAR® is an important and highly recognizable brand for energy efficiency. However, implementation experience from the 2010-2012 program cycle has shown that the ENERGY STAR® incentive kicker as previously designed was not a significant driver of program participation and that, while support of the ENERGY STAR ® brand is important, the incentive dollars can be better utilized in 2013-14.~~ In conjunction with the rollout of the 2013 Title 24 Standards, CAHP incentives will no longer be based ~~incentives on a sliding scale based~~ upon the percentage better than code sliding scale. The new CAHP Score contains the following improvements:

1. It ~~is conceptually similar to moving~~moves towards Zero Net Energy.
2. It's Easier ~~E~~to understand~~asier to understand~~ because:
   - **i.** The smaller the number the better the score (the closer you get to zero, the closer you are to zero energy).
   - **ii.** The single score provides adequate information for a builder to understand their overall energy use in a fashion to which they are already accustomed (RESNET Score).
   - iii. It is a static scoring system that will be the same through 2020, which provides a steady target for our ZNE goals. A score of 100 equates to a 2008 Title 24 baseline home.~~.~~
3. When combined with CAHP Points, ~~it's a much more agile~~the proposed ~~-~~system ~~that~~ facilitates the creation of ~~allows for~~ new packages ~~to be easily created~~ as new technologies and systems are developed ~~come to the forefront of the market as they become necessary for~~ to achieve the higher levels of efficiency needed to surpass the 2013 Title 24 Standards.

In recognition of the need for a new program strategy to support ENERGY STAR®, the IOUs propose to shift from an incentive-based approach to a strategy based on ENERGY STAR® marketing support.

- To accomplish this, the IOUs propose to offer marketing support/collateral to CAHP builders who successfully apply for ENERGY STAR® certification. Credits of $40/single family lot and $10/multifamily unit, redeemable in the form of ENERGY STAR® marketing collateral, will be awarded to builders who demonstrate compliance with ENERGY STAR® standards. This marketing support will provide a valuable resource for builders and sales agents in communications with potential homebuyers, which will help in realizing the value of the home's energy efficient characteristics during sale.

5. Program Rationale and Expected Outcome

a) Quantitative Baseline and Market Transformation Information

On December 2, 2010, the Commission issued Resolution E-4385, approving Program Performance Metrics (PPMs) for Pacific Gas and Electric Company, Southern California

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

Below are the approved PPMs and metric types for the New Construction Statewide Program (Resolution E-4385, Appendix. A, p. 36).

Table 3

SW PROGRAM / Sub-Program	PROGRAM PERFORMANCE METRIC (PPM)	Metric Type
NEW CONSTRUCTION		
California Advanced Homes Program (CAHP)	1. Number and percentage of committed CAHP participant homes (applied and accepted) with modeled, ex-ante savings exceeding 2008[JT12] T24 units (Single family (SF) and multi-family (MF)) by 15%-19%, by 20%-29%, 30%-39%, and 40+%.	2a
	2a. Percentage of (current year SF CAHP program paid units)/ (SF building permits within service territories from the previous year) 2b. Percentage of (current year MF CAHP program paid units)/ (MF building permits within service territories from the previous year)	2a
	3. Number and percentage of CAHP participant new homes verified* by IOUs' HERS	2b

SW PROGRAM / Sub-Program	PROGRAM PERFORMANCE METRIC (PPM)	Metric Type
	which exceed Title 24 (T24) building standards (SF and MF) by 15%-19%, 20%-29%, 30%-39%, 40%+. * The IOUs use the existing HERS Rater infrastructure to verify HERS measures and other building characteristics as required by CA Title 24 and the CEC. The IOUs do not perform the verification inspections and do not certify HERS raters. Note: HERS inspection protocol for production builders does not require inspection of 100% of homes; there is a sampling protocol. For more information on HERS inspection please see http://www.energy.ca.gov/HERS/index.html	

b) Market Transformation Information

Resolution E-4385 identifies a preliminary list of objectives and market transformation indicators (MTIs) for statewide energy efficiency programs and subprograms. These MTIs will be presented at a public workshop to allow for public comments and discussion before being finalized. The Resolution further directs the Joint Utilities to work collaboratively with Energy Division staff to select a subset of these MTIs for data collection, tracking and reporting as part of the 2010-2012 energy efficiency evaluation, monitoring and verification (EM&V) activities.

Bullet 1) A description of the market, including identification of the relevant market actors and the relationships among them;

The MT elements described here follow guidelines and terminology explained in Rosenberg & Hoefgen's (2009) *Market Effects and Market Transformation: Their Role in Energy Efficiency Program Design and Evaluation.*

<<paper is available here http://uc-ciee.org/downloads/mrkt_effts_wp.pdf >>

Ideally, information about a market would come from a variety of sources, including existing studies and newly-commissioned studies. Rosenberg & Hoefgen (2009) recommend that California should "Commission initial market characterization research for those products and services for which the structure of the market and the motivations of the market actors are not well understood or documented, at least in terms of their response to the product in question." Due to a lack of time, the following market information draws heavily upon qualitative analyses made by the program managers based upon information they have obtained through experience in implementing the program. We look forward to an opportunity to develop a better understanding of these markets through future commissioned studies, in conjunction with ED and other market transformation stakeholders.

The Residential New Construction market consists of several key players including builders, designers, subcontractors, HERS raters, local cities, manufacturers, real estate agents, financing agencies, and home buyers. The RNC sub-program is located upstream, targeting builders and subcontractors early in the design stage of the production process. Upstream of the IOU's RNC influence are local cities' permitting rules and associated costs. Downstream of the RNC sub-program are real estate agents, financing agencies, and home buyers. The RNC sub-program works directly with builders, designers, subcontractors, HERS raters, builder sales staffs, and manufacturers via equipment recommendations at the design stage.

Bullet 2) Identification of the key barriers and opportunities to advancing demand-side management technologies and strategies;
The key barriers and opportunities to be addressed through a market transformation initiative would ideally draw upon a market characterization study. Due to lack of planning time, the following market barriers and opportunities are drawn from qualitative analyses made by the program managers.

Key RNC market barriers include A) entrenched builder and subcontractor habits, B) a lack of buyer knowledge, interest, and demand, and C) an ensuing disconnect between the price buyers are willing to pay and the related increased builder costs of incorporating DSM technologies, energy efficient equipment, and advanced building practices. Opportunities to address these barriers include education and outreach to builders, subcontractors, and buyers to increase demand and alter builder habits; design assistance to improve builder knowledge and maximally cost-effective strategies; and incentives to bridge the gap of builder costs and buyer demand.

Bullet 3) A description of the proposed intervention(s) and its/their intended results, and specify which barriers each intervention is intended to address;
To address Barrier A, the following intervention is proposed:
Builders and subcontractors will be offered training and design assistance to facilitate the acceptance and incorporation of new technologies and building practices including DSM. Market habits will only change in response to proof that new and improved methods are both feasible and help businesses achieve their goals and improve their bottom lines. By providing appropriate training and design assistance, CAHP will push builders and subcontractors past outdated building practices and better equip them with the skills needed to reach 2020 ZNE.
To address Barrier B, the following intervention is proposed:
Builder sales staffs will be provided training and marketing support on the advantages of EE homes that incorporate DSM technologies. Financing mechanisms will be explored to reduce buyer costs and increase demand. CAHP will also work with builders' sales offices to improve buyers' brand awareness of both CAHP and ENERGY STAR, building an association and increased interest for buyers. To achieve this, sales staff will be trained as well as provided marketing aids describing the benefits of purchasing energy efficient homes. Furthermore, the statewide CAHP team commissioned an extensive study on recommendations of how to best increase buyer interest. Program staff will review these findings during Q1 of 2013 and use them to further refine strategies to overcome Barrier B.

To address Barrier C, the following intervention is proposed:
Incentives will target a reduction in the cost to builders of incorporating EE measures and DSM technologies. This tactic will support the financial disconnect through a reduction of demand-side costs. Additionally, training and education of builders' sales staff will lead to increased buyer awareness of CAHP benefits. This will support the disconnect through an increase of consumer demand and associated market prices. Barrier C interventions will also be bolstered by lessons learned from the buyer interest/marketing study mentioned above.

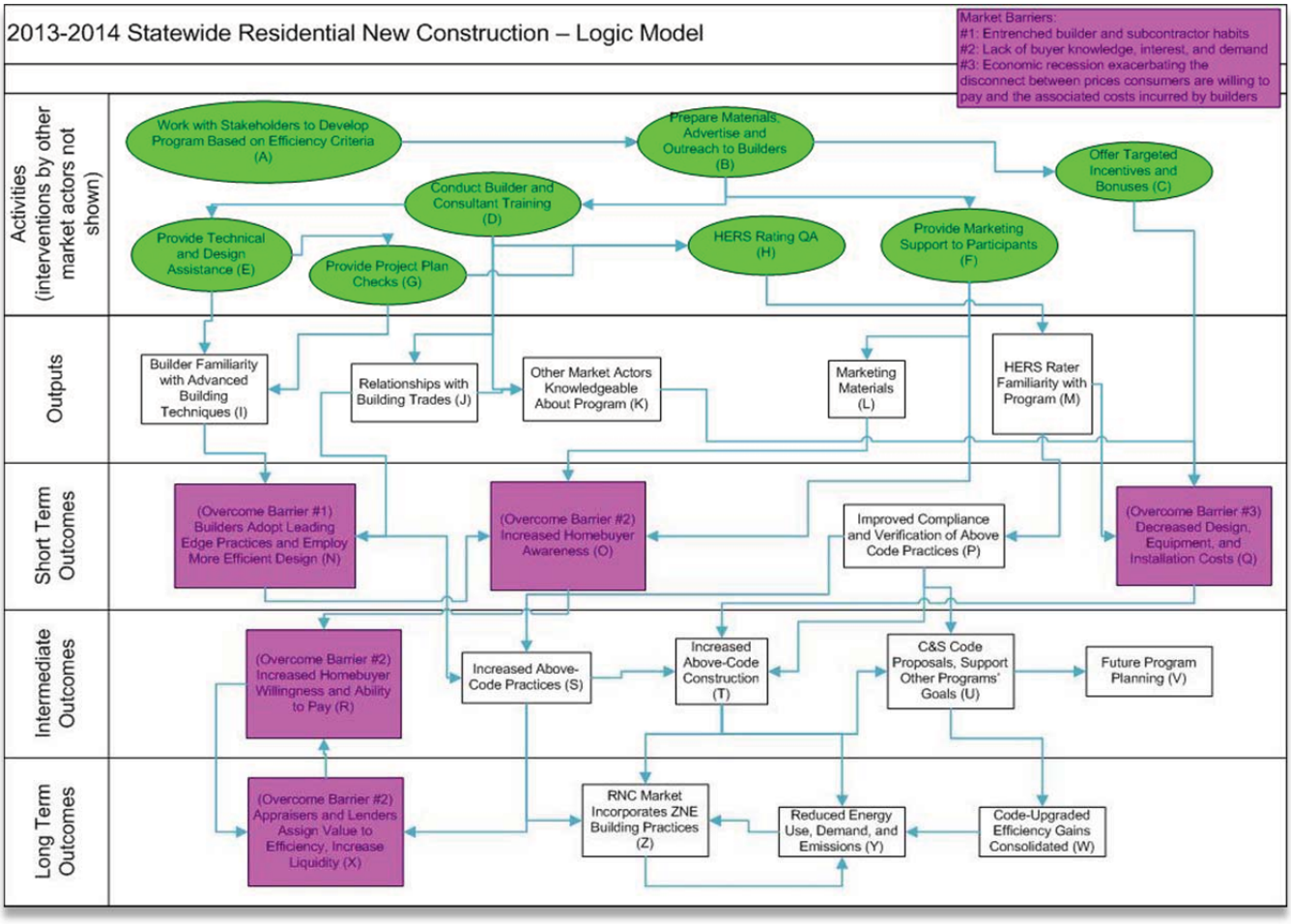
Market transformation interventions can be expected to take 2, 5 or even 10 yrs before effects

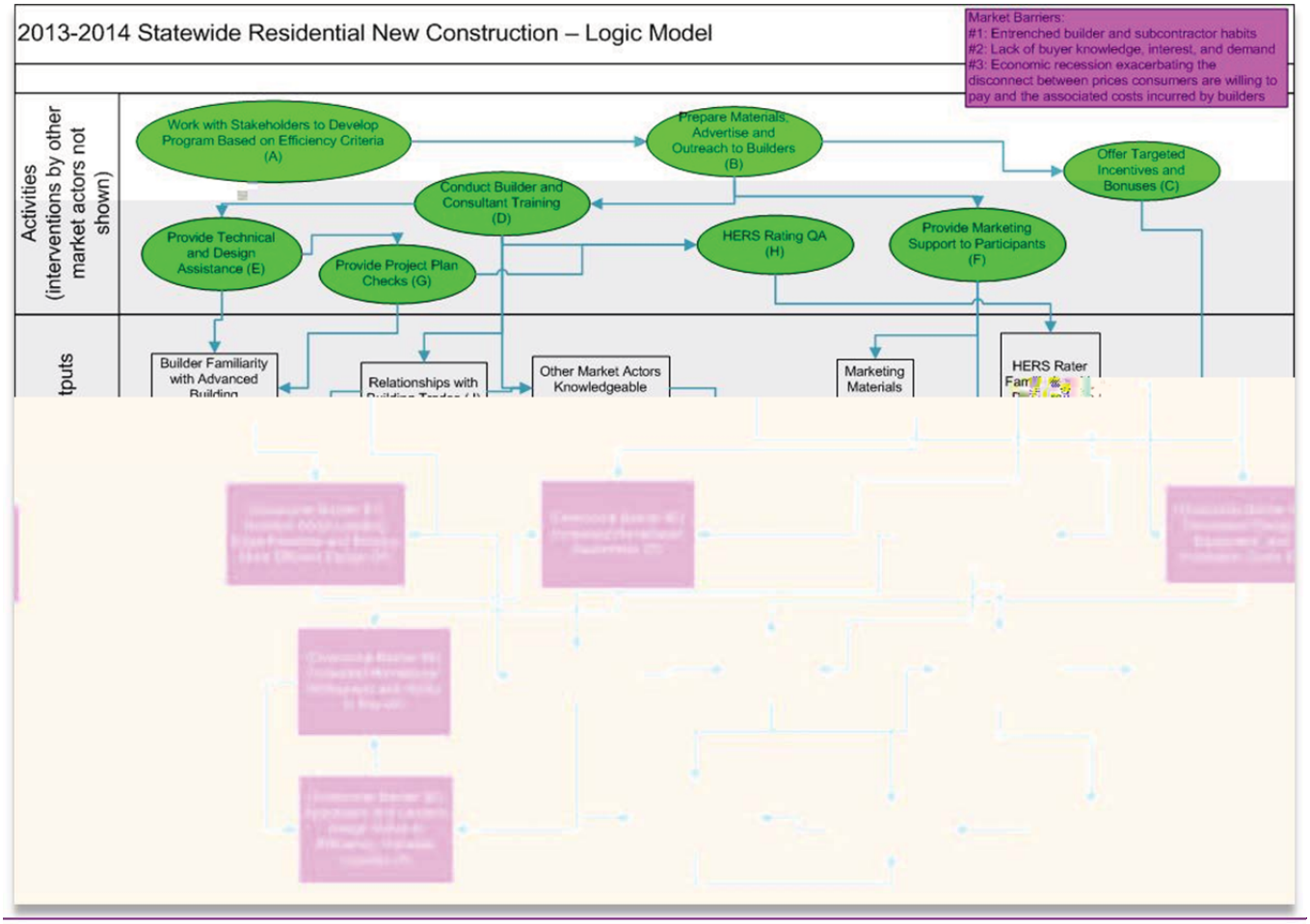
can be quantified. We propose the following that these would be the results that can be seen in the market at various time intervals:

After 2 years of implementation builders and subcontractors should feel significantly more confident in accepting new technologies and advanced building practices. By this time they should be familiar with IOU design assistance procedures and how to maximize the incentives and minimize the increased costs. Sales staffs should be well-versed in the advantages of participant homes.

After 5 years, builders and subcontractors should be very confident in advanced EE technologies, building practices, and DSM. At this time the market should be nearing ZNE building practices. Financing mechanisms should be in place to improve buyer demand. After 10 years, the RNC market should be exclusively building ZNE developments. At this point the program focus will be devoted to education and outreach, helping the industry competes with the less efficient existing market. Financing mechanisms will continue to play a role.

Bullet 4) A coherent program, or "market," logic model that ensures a solid causal relationship between the proposed intervention(s) and its/their intended results; and
In this example below, "Portfolio Program Elements" are the market transformation interventions that are specifically directed to the market barriers. "Outcomes" are the outputs of the MT interventions, which are the market effects and reductions in market barriers than can be seen in the short-, mid-, and long-term. Please note that the long term outcomes are "sustainable," which is what the market should look like after the market intervention has ended.


2013-2014 Statewide Residential New Construction – Logic Model
Market Barriers:
#1: Entrenched builder and subcontractor habits
#2: Lack of buyer knowledge, interest, and demand
#3: Economic recession exacerbating the disconnect between prices consumers are willing to pay and the associated costs incurred by builders
Activities (interventions by other market actors not shown)
Work with Stakeholders to Develop Program Based on Efficiency Criteria (A)
Prepare Materials, Advertise and Outreach to Builders (B)
Offer Targeted Incentives and Bonuses (C)
Conduct Builder and Consultant Training (D)
Provide Technical and Design Assistance (E)
Provide Project Plan Checks (G)
HERS Rating QA (H)
Provide Marketing Support to Participants (F)
Outputs
Builder Familiarity with Advanced Building Techniques (I)
Relationships with Building Trades (J)
Other Market Actors Knowledgeable About Program (K)
Marketing Materials (L)
HERS Rater Familiarity with Program (M)
Short Term Outcomes
(Overcome Barrier #1) Builders Adopt Leading Edge Practices and Employ More Efficient Design (N)
(Overcome Barrier #2) Increased Homebuyer Awareness (O)
Improved Compliance and Verification of Above Code Practices (P)
(Overcome Barrier #3) Decreased Design, Equipment, and Installation Costs (Q)
Intermediate Outcomes
(Overcome Barrier #2) Increased Homebuyer Willingness and Ability to Pay (R)
Increased Above-Code Practices (S)
Increased Above-Code Construction (T)
C&S Code Proposals, Support Other Programs' Goals (U)
Future Program Planning (V)
Long Term Outcomes
(Overcome Barrier #2) Appraisers and Lenders Assign Value to Efficiency, Increase Liquidity (X)
RNC Market Incorporates ZNE Building Practices (Z)
Reduced Energy Use, Demand, and Emissions (Y)
Code-Upgraded Efficiency Gains Consolidated (W)



Bullet 5) Appropriate evaluation plans and corresponding Market Transformation Indicators and PPMs based on the program logic model. (The IOUs should be prepared to start tracking proposed Market Transformation Indicators immediately in order to establish a baseline, and in cases where the logic model calls for metrics to be differentiated in terms of the sequence and timeframe in which they are expected to be relevant – i.e., leading vs. intermediate vs. lagging indicators of change – each metric should be identified as such).

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

Summative evaluation - Market Effects

The market transformation program's theory and logic model will be used to guide the evaluation efforts. The scope of the market effects study should be defined by the MT program's scope. The timeline for specific market effects that are to be evaluated should be defined by the MT program theory. Among other indicators, the program theory may specify

changes in market characteristics that can be evaluated, such as 1) Spillover, 2) attitudes, awareness and knowledge, 3) reductions in specific market barrier, 4) current pricing and product availability, and 5) other market milestones. We will make the following distinction between program "spillover" and market effects: spillover is energy savings not directly tracked by the program, whereas market effects are broader and would include spillover as well as meaningful changes in the structure or functioning of the market.

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

Program Performance Metrics: Please see Section 5, Table 3, above.

Market Transformation Indicators:
Per Resolution E-4385, a subset of market transformation indicators (MTIs) for statewide energy efficiency programs and subprograms were presented at a public workshop on November 7, 2011, to allow for public comments and discussion before being finalized. Per Energy Division Guidance received in December, 2012, the MTI outcomes from that public workshop were compiled in a Joint IOU matrix which is found in Appendix F in SDGE's January 14, 2013 compliance filing.

Attribution: Outside of California, most guidelines for evaluating market transformation acknowledge that it is very difficult to attribute market effects to any single program, and nearly impossible to partition out the respective contributions of several coordinated programs on market effects and market transformation. In California, the Framework (Sebold et al., 2001) emphasizes that attribution of market effects to programs bears further research. Others (R&H, 2009; Keating & Prahl (MT Workshop) suggest that declaring the program's strategic intent through the market transformation initiative's theory and logic model is key to establishing future claim on transformation effects. The methods proposed by Rosenberg &Hoefgen (2009) for attributing market effects to individual programs include a number of approaches, all of them qualitative: self-report of spillover and free ridership; cross-sectional comparisons with other geographic regions; structured expert judging; and case studies. But attribution using a "preponderance of evidence" approach would likely be expensive and still yield arguable results. Attribution by nature focuses on individual program efforts, and we believe the market transformation evaluation discourse should be focused on the overlapping synergy among all programs and influences in the market. We realize we all have a "Shared Mission" of meeting the CPUC's very aggressive Strategic Plan goals. We do not wish to not invest resources in teasing apart which program entity contributed how much, but instead will plan to focus on whether all the market forces across the State of California have succeeded in transforming the market.
In lieu of the above results and recommendations, the RNC sub-program will carry forward the PPMs and MTIs that were in place during the 2010-2012 cycle.

c) Program Design to Overcome Barriers

Priority Barrier: Building Industry

Effective ~~January~~ July 1, 2014, 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 25 to 30 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, 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.

Overcoming Market Failure: CAHP

In a buyer's market, builders are looking to differentiate themselves from competition. This presents an 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 2013	Program Target 2014	Total
Single Family Units Paid	600	600	1200
Multi-family Units Paid	300	300	600

[LS13]

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 multifamily 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 ZNE 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.

The ZNE program element is designed primarily with the focus of accelerating the achievement of the ZNE goals envisioned by the Strategic Plan. The purpose of the ZNE element 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, EPIC, LBNL and other agencies to further assist the projects in advancing sustainability and achieving very high levels of energy efficiency.

Financial incentives and marketing support offered for the ZNE projects will be higher than those offered under the standard CAHP model. By providing strong encouragement for builders to move up on the energy efficiency scale with financial and non-financial incentives, the ZNE 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 ZNE program element. ZNE is the place to demonstrate innovative technologies and to help

drive the market for energy efficiency through the adoption and marketing of green standards. IOUs have already initiated preliminary research on policies and programs supporting residential ZNE programs in other states for potential new and innovative program design approaches to increase homeowner demand and marketplace change, consulting with relevant experts in this area. This research reveals a lack of other utility programs serving this market. Rather, ZNE currently exists in a piecemeal fashion throughout the country without a consolidated approach. IOUs will continue research in this area and report more complete findings by April 1, 2013.

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

Residential New Construction falling under Title 24 is covered by the California Advanced Homes Program. Factory-built housing will be covered by the ENERGY STAR® Manufactured Homes Program, where offered.

ii. Program delivery mechanisms

CAHP and ESMH are delivered via online program materials and dedicated account executives.

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 2013 - 2014 CAHP will continue to be refined as the state approached implementation of the 2013 Title 24 code changes (see CAHP Incentive Rationale section above for additional detail).

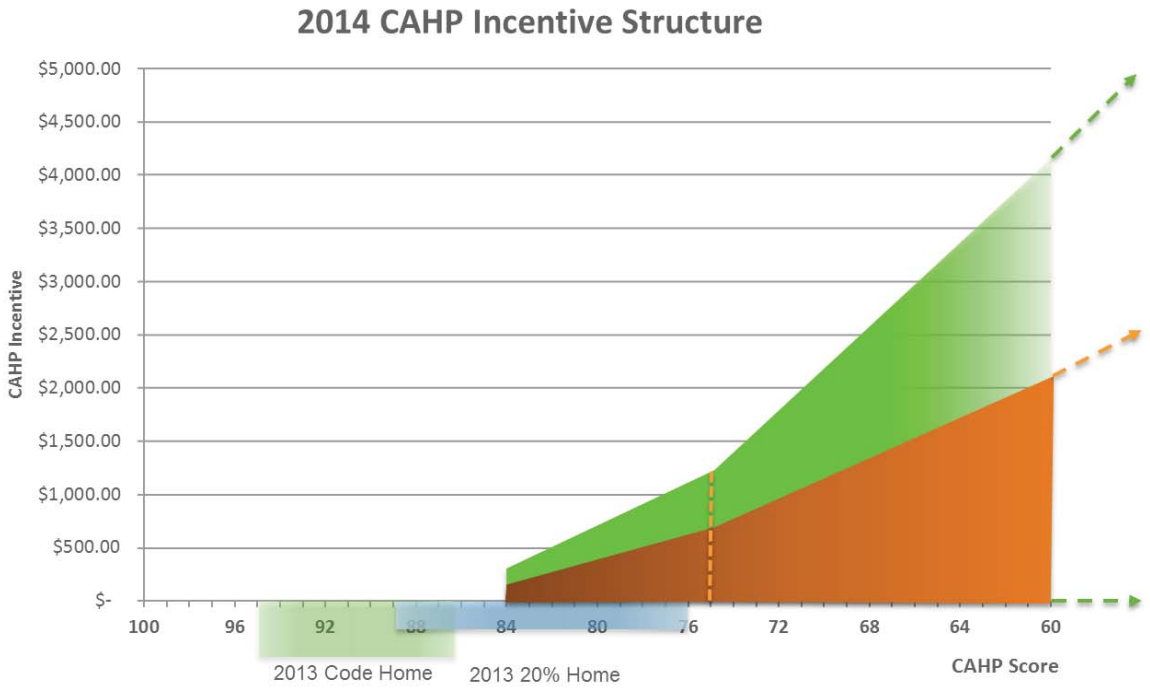
2014 CAHP-SF & Low-rise Incentive Structures

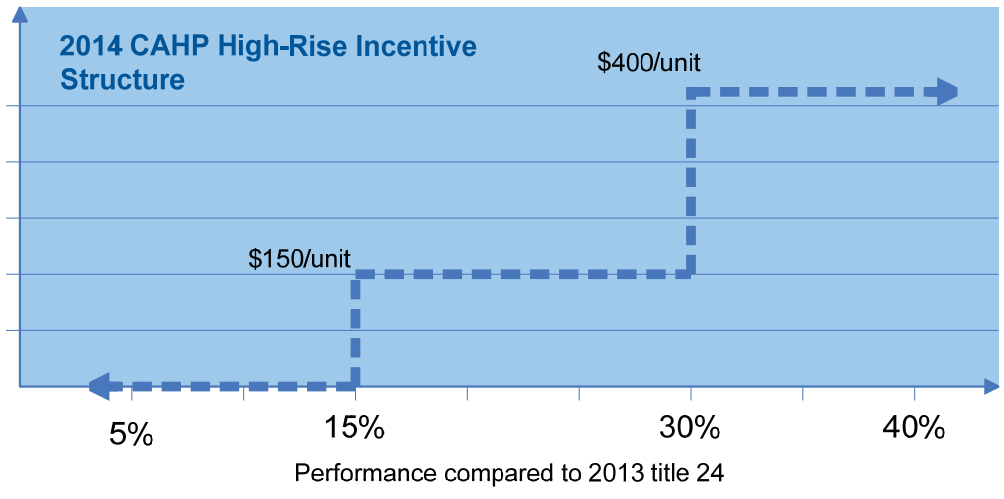
CAHP-SF

- $300 for program entry CAHP Score of 84
- $100 for each point up to 75
- $200 for each point thereafter

CAHP-MF Proposed (half of CAHP SF)

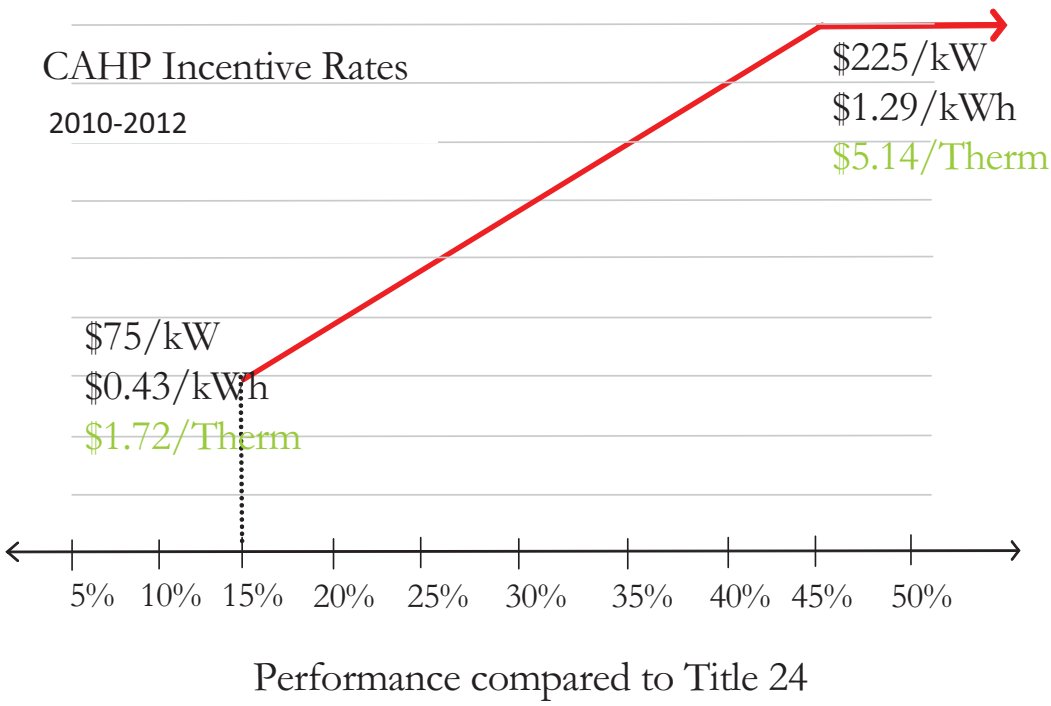
- $150 for program entry CAHP Score of 84
- $50 for each point up to 75
- $100 for each point thereafter





An incentive curve was developed to comprise 50 percent of the incremental builder cost on average across all climate zones based on an anticipated range of CAHP Scores. Since the cost curve increases exponentially relative to CAHP score, as is shown in the 2014 CAHP Incentive Structure Chart, the incentive curve also has a built-in escalation to match.

~~The 2013-2014 calculated approach will be similar to the method used from 2010-2012:~~



~~[BC14]~~

~~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~~[BC15]. For a single family home a participant entry will require a CAHP score of 84, and eligible projects will receive $300 for reaching that threshold. For each point reduction below 84, the participant will receive an additional $100 [A16] until reaching a CAHP score of 75, after which the project will receive $200 for each additional point reduction.[A17] Low rise multifamily residential will follow the same scoring system as single family but half the incentives ($150 for entry @ 84, $50 per point to 75 and $100 per point below).

High Rise Residential participant entry will require 15% better than 2013 Title 24, at which point the project is eligible for a $150/unit. Units reaching 30% better than 2013 Title 24 will recieve $400/unit.

Single Family and Low Rise multifamily residential program participants will have the opportunity in the new incentive structure to receive additional point reductions of their CAHP score thereby increasing their incentives. Points are awarded based upon pre-determined energy efficiency measures not included in performance modeling.In line with the elements of the strategic plan, the approach rewards builders for undertaking whole house solutions where the entire structure can be considered as an integrated system.

Moreover, executing a net zero home remains a financial and technical challenge, the program will have customized incentives for homes that achieve ZNE.

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. 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, increased incentives for targeted ZNE, marketing support, 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 builders face in delivering more efficient homes.

The IOUs ~~support~~ are adjusting program incentive levels in conjunction with the more stringent Title 24 code taking effect in 2014. More efficient incentives will be critical in helping builders defray additional compliance costs associated with the stronger code. ~~However, the IOUs believe there is a need to explore the deadline for incentive adjustments. A date after March 2013 may be appropriate for a number of reasons, including:~~

- ~~Changing incentive levels *before* the new code takes effect may provide an added incentive for builders to rush to beat the code. Ideally, the incentive adjustments would be timed to coincide with the implementation of the new code so as to incentivize building under a more stringent Title 24.~~

~~A fast turnaround would prevent the IOUs from determining the ideal incentive structure. Given uncertainty about the market's response to the unprecedented updates to Title 24, extra care should be taken in calibrating incentive levels to their optimal value.~~

~~The IOUs will comply with the March 1, 2013 deadline for adjusting incentive levels, but propose January 1, 2014 as a preferred date.~~

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.

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 ZNE 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 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.

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[BC18][BD19].

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.[4] 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 localized platform. The common website will be maintained 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 2013-2014, 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)
- National Association of Home Builders (NAHB
- California Building Industry Association (CBIA)

[4] As discussed above, manufactured housing is not subject to Title 24 and uses the national HUD baseline.

- 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, SDG&E's Energy Innovation Center, SCE's Energy Education 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 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_2 legislation.

CAHP prides itself on its established close relationships and memberships with other groups involved with the building industry. These relationships make it possible to provide comprehensive services to our customers. Thus, CAHP will continue to seek out and coordinate synergies with, but not limited to, the following groups:

- California Energy Commission (CEC)
- 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)
- 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 2011 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 2010 - 2013 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.

Each IOU may pursue partnership efforts with local government entities 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. 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) <u>Program delivery and coordination</u>

i. Emerging Technologies (ET) program

Emerging technologies will chiefly be handled within the ZNE sub-element of CAHP. The IOUs are looking to partner with our ET and EPIC-funded Testing Facilities to pilot zero-net energy approaches. SCE is looking toward the construction of a demonstration home at its CTAC facility. [JT20] 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, EPIC, 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.

Specific workforce development efforts supporting Residential New Construction include training on topics including, but not limited to:

- Energy Pro
- CBECC-Res
- Title-24
- ~~Micropas~~
- CBECC-Com

SDG&E w[JT21]ill explore voluntary incentive-based approaches to encourage contractors and other industry professionals to complete the full bundle of Residential New Construction workforce development training. For professionals who complete the pre-requisite courses and pass a high-road skill standards test, such approaches may include (as applicable):

- Allowing marketing or advertising differentiation;
- An incentive bonus; and/or
- Providing preference to these professionals during bid evaluation process.

Residential New Construction workforce development training will be coordinated with the statewide IOU WE&T program. In addition to the trainings described above, SW IOU WE&T programs will continue to offer building-block courses that educate professionals

on the concepts that form the foundation of Residential New Construction programs. Those concepts include:

- Green building techniques;
- Codes and standards);
- Lighting and HVAC technologies;
- Energy cost management; and
- Food service equipment.

Contractor recruitment efforts will be conducted primarily by SW WE&T program implementers through:

- The network of contractors already participating in Residential EE programs;
- Direct outreach through industry organizations with locally active memberships (e.g. IHACI, USGBC, IFMA, AIA, BOMA, etc.);
- Workforce development departments (to target unemployed general contractors); and
- Community Based Organizations with a proven track-record of effective outreach to the hard-to-reach workforce.

iv. Program-specific marketing and outreach efforts

In 2013-2014, 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.

v. Non-energy activities of program

Where applicable, the ZNE program element will seek to identify new types of water savings technologies opportunities.

vi. Non-IOU programs

There may also be opportunities to partner with local AQMDs and County Integrated Waste Management Boards to encourage material recycling in ZNE and green programs.

vii. CEC work on codes and standards

The IOUs will continue to support code development work with the CEC and to test candidate technologies in the new construction programs.

viii. Non-utility market initiatives

The homebuilding industry is facing some of the worst times in its history[5]. 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[6]. 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. 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[7] 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.

As alluded to above, buyers are increasingly asking for green and energy efficiency and may pay more (up to $11,000) for such features.[8] 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.

- 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:

[5] Alan N. Nevin, CBIA Chief Economist and Principal, Market Pointe Realty Advisors, California Builder Magazine, January/February 2008

[6] California Industry Research Board (CIRB) Report, January 24, 2008

[7] 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

[8] Jan Dimeo, Builder. http://www.builderonline.com/business/surveys-reveal-home-buyer-wishes-for-energy-efficiency-and-beyond.aspx. Accessed 14 Mar 08

- Encourage the development of more below market rate low income units by developers,
- Increase participate in the RNC sub-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.

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 ZNE. Through financial incentives, design assistance, education and training, the IOUs will aggressively support high performance single family and multifamily building designs that exceed Title 24 standards in an overall performance design of 15% or greater. Energy savings and incentives will be based upon a sliding scale from 15% to 45% reduction in energy usage from Title 24 budget. Program focus will be on increasing the participation to a 30% threshold.

c) Best Practices

The Residential New Construction team has gathered information and past experience in successful low energy and ZNE existing projects to evaluate best practices. Thus far the research shows that while ZNE practices exist in piecemeal fashion throughout the state and nation, there are no other utility incentive programs targeting ZNE. RNC will continue to conduct further research and will disseminate its finding by April of 2013 in accordance with the program guidance. This information will be used to develop pilot projects that will demonstrate low energy homes and include home performance monitoring.

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.

- RNC has undergone substantial marketing material revisions and will continue to do so.

Program Services: Training

- Taking advantage of the slowdown 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 will be 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.

- 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 program will continue to work closely with these companies to promote a continued improvement and commitment to integrated design.

- The IOUs will explore the implementation of 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 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 35% better than Title 24, and encouraging ZNE projects, 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 ZNE 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. ZNE 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.

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.

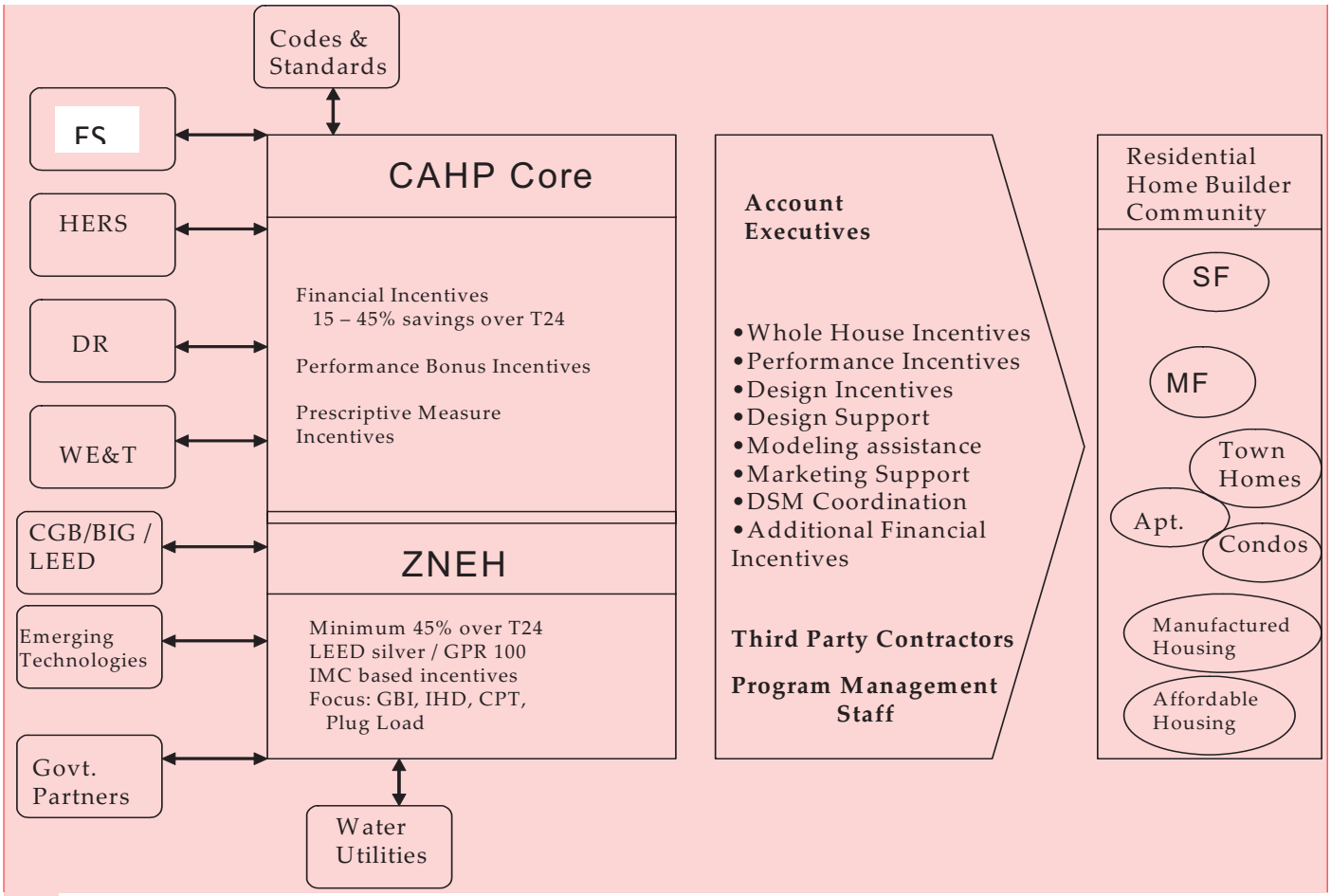
g) Pilots

During the course of the program cycle the IOUs may encounter the need to run pilot programs before an idea is introduced to the core program offerings. At that time the utility will submit the plans for such pilots.

h) EM&V

Under development in consultation with EM&V team.

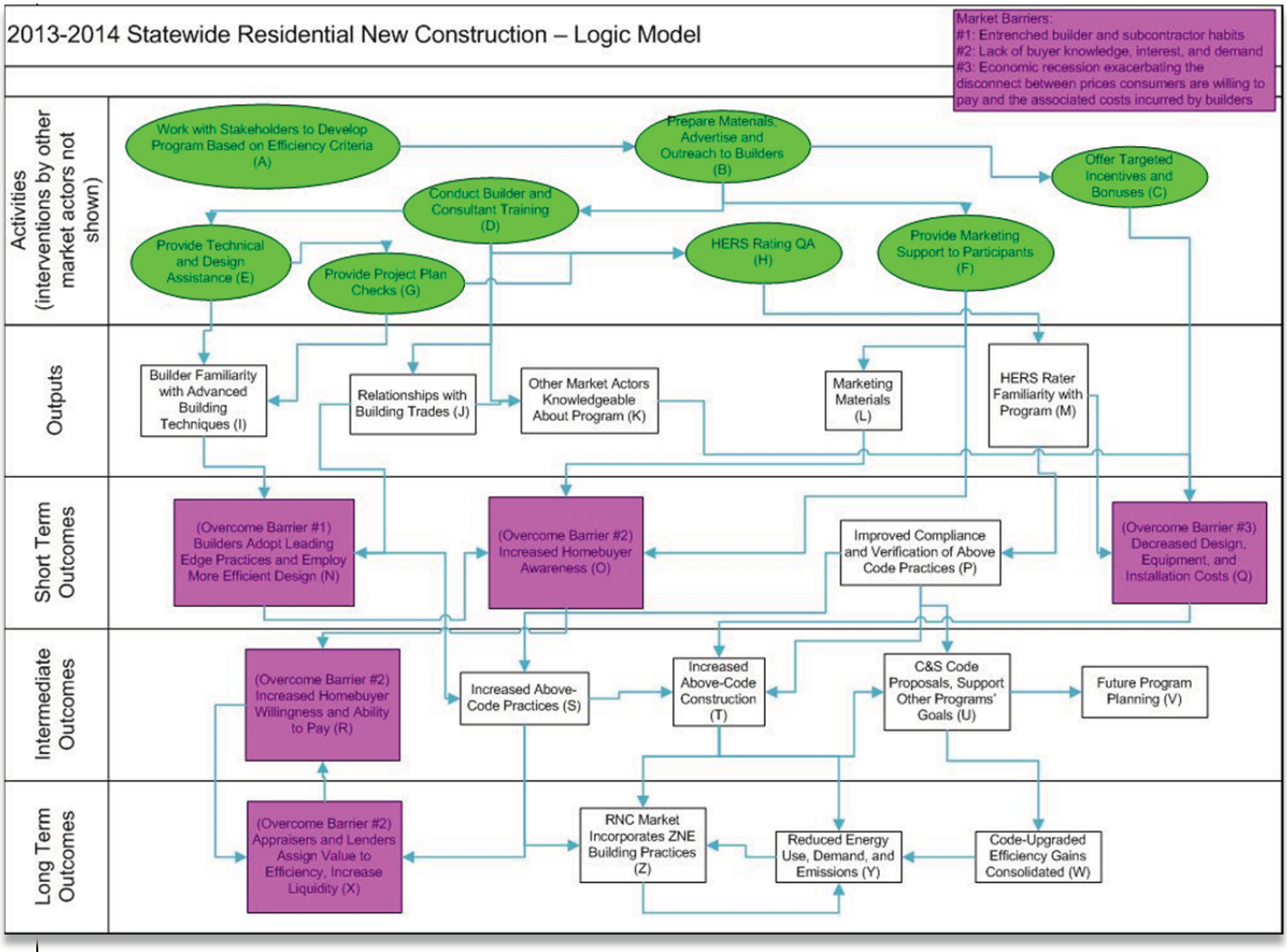
Diagram of Program

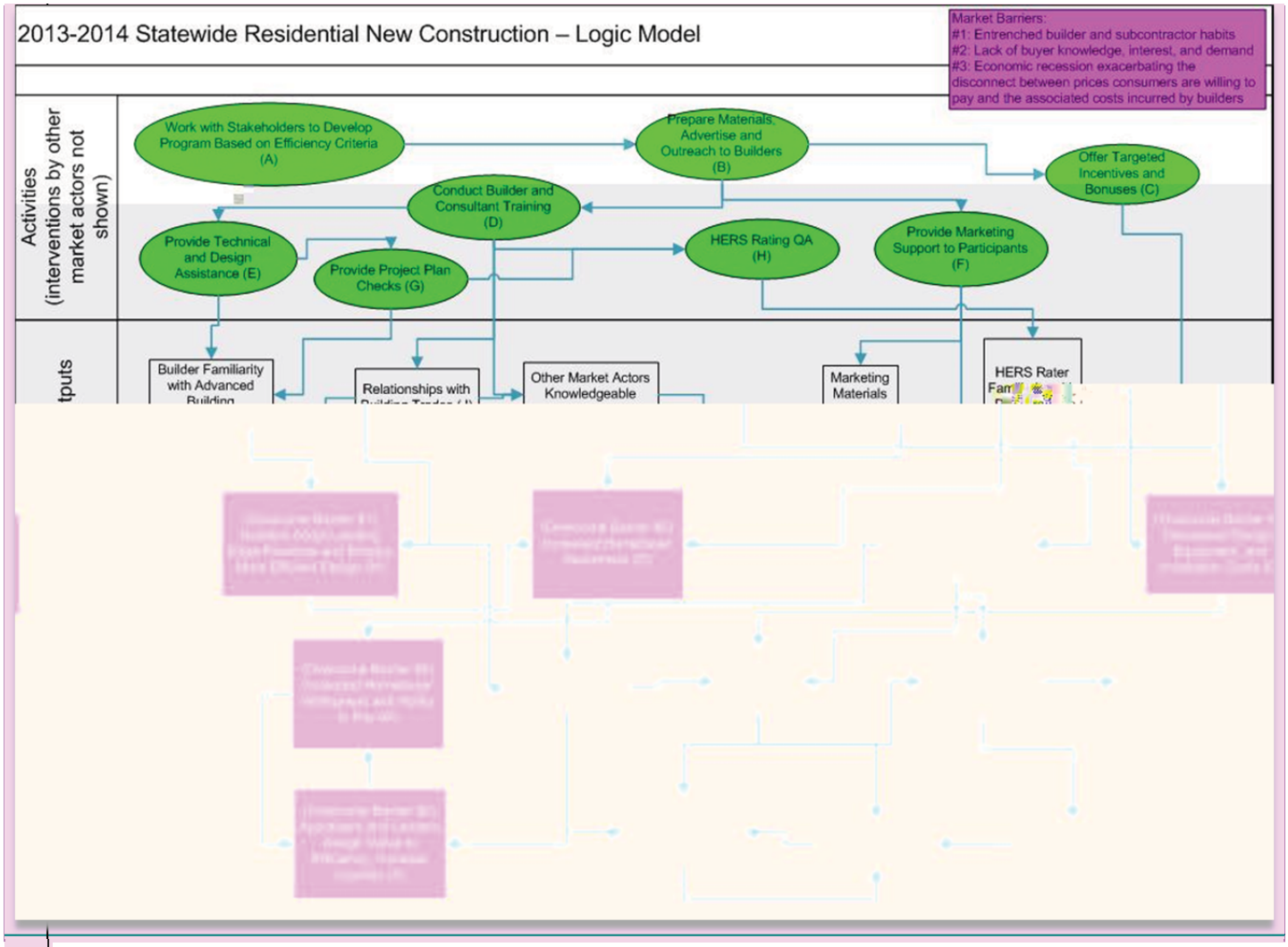

Codes &
Standards
FS
HERS
DR
WE&T
CGB/BIG /
LEED
Emerging
Technologies
Govt.
Partners
CAHP Core
Financial Incentives
15 – 45% savings over T24
Performance Bonus Incentives
Prescriptive Measure
Incentives
ZNEH
Minimum 45% over T24
LEED silver / GPR 100
IMC based incentives
Focus: GBI, IHD, CPT,
Plug Load
Water
Utilities
Account
Executives
•Whole House Incentives
•Performance Incentives
•Design Incentives
•Design Support
•Modeling assistance
•Marketing Support
•DSM Coordination
•Additional Financial
Incentives
Third Party Contractors
Program Management
Staff
Residential
Home Builder
Community
SF
MF
Town
Homes
Apt.
Condos
Manufactured
Housing
Affordable
Housing

[BC22]

Program Logic Model

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




2013-2014 Statewide Residential New Construction – Logic Model
Market Barriers:
#1: Entrenched builder and subcontractor habits
#2: Lack of buyer knowledge, interest, and demand
#3: Economic recession exacerbating the disconnect between prices consumers are willing to pay and the associated costs incurred by builders
Activities (interventions by other market actors not shown)
Work with Stakeholders to Develop Program Based on Efficiency Criteria (A)
Prepare Materials; Advertise and Outreach to Builders (B)
Offer Targeted Incentives and Bonuses (C)
Conduct Builder and Consultant Training (D)
Provide Technical and Design Assistance (E)
Provide Project Plan Checks (G)
HERS Rating QA (H)
Provide Marketing Support to Participants (F)
tputs
Builder Familiarity with Advanced Building
Relationships with
Other Market Actors Knowledgeable
Marketing Materials
HERS Rater

[LS23]

Attachment A2 – Clean Version

Residential New Construction PIP
California Advanced Homes Program (CAHP)

Residential New Construction PIP

1. **Program Name:** California Advanced Homes Program (CAHP)
   Program Type: Statewide Core

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) <u>Describe program</u>

   CAHP is part of the statewide Residential New Construction (RNC) sub-program offering. The RNC sub-program represents one-sixth of the CalSPREE core offering. CAHP encourages single and multi-family builders of all production volumes to construct homes that perform above and beyond what is required by California's Title 24 energy efficiency standards. Program qualification is based upon a home's CAHP Score which is a simple scale ranging from 0-250 , zero being no energy use at all with 250 being extremely high. The scoring is derived from the CA HERS Design Rating system. A CAHP score of 84 correlates with 10-20 percent above 2013 Title 24 code compliance with significant fluctuation by climate zones and building type. Projects that do not meet the 2013 Title 24 Standards (less than 0 percent better than code) will not be eligible for participation in the program. Generally, we expect CAHP participants to exceed 2013 Title 24 code by at least 10 percent. Through this plan, multi-family low rise and single-family projects are generally approached in the same way. Due to the delay in the development of the software needed to calculate building performance and incentives for high-rise residential buildings, the program will incorporate a simple, two-tier deemed incentive structure for high rise residential buildings as follows:

   - $150/unit achieving 15%-29.9% above 2013 Title 24
   - $400/unit achieving 30% or better above 2013 Title 24.

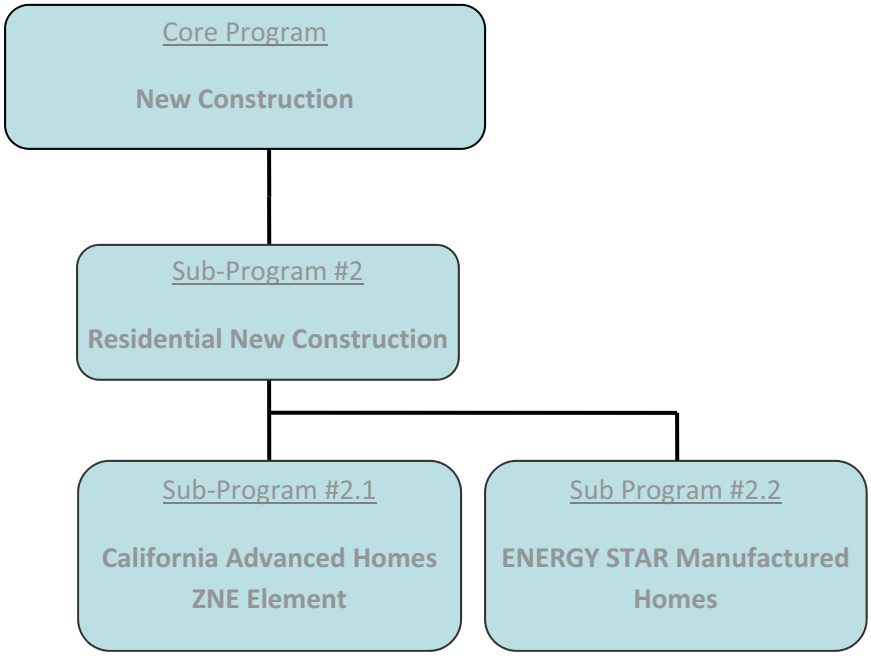
   The structure of the Residential New Construction program elements is as follows:

   CalSPREE Program (Core)
   1. Residential New Construction Sub-Program
      - .1 Single-family/Multi-family Sub-Program (CAHP)
        - .1.1 ZNE Homes Sub-Program
      - .2 Manufactured Homes Sub-Program for Sempra and Southern California Edison

   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 recognize them for their achievements.



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 ZNE sub-element. Together these elements seek to raise plug load efficiency, focus on whole-house solutions, drive occupant behavior through in-home monitoring and visual display tools, and leverage market demand for green building standards. CAHP is also coordinated with demand response programs, Emerging Technology, and the New Solar Homes Partnership (NSHP).

As explored in greater detail below, CAHP will incorporate a ZNE sub-element to adopt the following strategies toward achieving the Strategic Plan goals. As program technologies and approaches are developed and demonstrated in ZNE, they will be incorporated into the CAHP.

- Raise plug load efficiency (ZNE)

- 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 (ZNE)
- Encourage incorporation of Green Building Standards (ZNE)
- 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.

To further help make ZNE a reality in the residential sector, utilities will:

1. Integrate successful ZNE strategies and activities proven through program and/or pilot projects during the 2013-2014 Transition Period. The residential new construction program will absorb and enhance existing residential programmatic elements aimed at delivering ZNE best practices to the marketplace, potentially including but not limited to:
2. Project consultations that pair projects with experts capable of driving unique designs to ZNE;
3. Provide education opportunities to key architectural, engineering, and other design professionals (see WE&T plans); and
4. Explore cost effective ZNE solutions that consider the intersection of building and community energy use

b) <u>List measures</u>

CAHP Program measures, known savings. All IOUs[1].

- Marketing assistance as feasible and appropriate for builders who achieve ENERGY STAR® certification.
- Calculated incentives.

c) <u>List non-incentive customer services</u>

- Technical support to Energy Analysts and Design Teams[2]
- 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

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.

Coordination activities include:

[1] Savings per appliance will be consistent across all IOUs.

[2] 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.

- 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.[3]
- CAHP would treat market-rate units using the standard calculated approach and claim all energy savings.

Zero Net Energy (ZNE)

The ZNE 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, ZNE will help educate the industry on how to achieve energy-efficient, green homes.

The ZNE program element will consist of projects that have used advanced modeling techniques to project total kBTU usage and demonstrates a plan to offset said usage with onsite generation over the course of 12 months. This portion of the program will provide customized financial incentives that intend to cover a portion of the verified incremental cost for a portion of the homes, at levels that may vary. This incentive will only apply to the energy efficiency measures of the home and will explicitly exclude the cost of renewable energy generation. The Emerging Technology program may also fund the purchase, installation, and monitoring of candidate technologies. The ZNE program element will also provide support in the form of soft-cost design support to help design teams meet their energy and environmental objectives. This portion of the program works closely with home builders seeking assistance in the development of sustainable design and construction, green building practices and emerging technologies.

The ZNE program element, in conjunction with WE&T programs, offers educational opportunities to builders, architects and other Residential construction stakeholders. 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 this element of the 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

[3] See, http://www.hcd.ca.gov/hpd/hrc/plan/he/, accessed 25 Apr 08.

materials, and other green building features into the unique parameters of the project. Specific product recommendations will not be provided.

- Energy Modeling Support: Provide support and recommendations for Title 24 energy performance modeling to estimate actual building usage and give the project credit for energy efficiency measures that are difficult or uncommon to model.

- Plan and Specification Review: Provide comments on the construction documents at various stages to give feedback on clarity of green building specifications.

- Green Feature Cost Assessment: Provide cost-benefit analyses or value engineering assistance to evaluate specific green building features under consideration for inclusion in the project.

Rating System Documentation Support: Assess and identify project credit/ certification goals, identify and assign rating system tasks to members of the design team, guide the team in system process and timing, assist team in understanding and/or documenting credit achievement. This aid will enhance - but not supplant - participants' efforts to pursue project specifications, designs, calculations, modeling and other necessary services.

The minimum threshold for acceptance in the ZNE program element will be a whole building performance with advanced modeling showing the total kBTU usage of the home as well as the method of generating the offsetting kBTUs.

CAHP Incentive Rationale: The IOUs crafted the new incentive structure to meet a number of sometimes conflicting goals. Multiple stakeholders were consulted in the incentive structure change process including builders, regulatory authorities, program implementation staff, HERS Raters, energy consultants and other departments within the utilities that work with residential energy efficiency. The objectives of this effort were as follows:

1. Incentives must be equitable across climates zones and building types
2. Incentives must be high enough to drive builder participation - targeting 50 percent incremental builder costs, as directed by the CPUC
3. Incentives and program implementation costs must be low enough to maintain similar levels of program cost effectiveness
4. Incentives should be simple and transparent to communicate and implement

An early analysis for the new incentive structure show both single family and multifamily low-rise incentives to be, on aggregate, 32 percent higher than if the program had used the old incentive system. An incentive increase was deemed necessary and appropriate to continue to drive builder participation and to meet the 50 percent incremental builder cost target as directed by the CPUC. With the energy code upgrade, many of the most cost effective building measures that formerly could be used to show improvement above code are now included in the code standard. The remaining energy efficiency improvement measures are more expensive for the builders to implement.

Additionally, incentive differentiation between building types was necessary to meet the goals stated above. To create simplicity and transparency, the program is changing from awarding incentives relative to energy savings, to awarding per-living unit. Therefore, the

program assigned lower incentive levels for multifamily low-rise buildings since they achieve lower per-unit savings. Both single family and multifamily low-rise incentives were crafted to match 50 percent incremental builder costs using cost-research specific to the building type. Additionally, the single family to multifamily low-rise incentive difference was set to match per-unit incentive differences from the 2008-code based program. Multifamily high-rise employs energy savings calculations from a different energy code than low-rise and single family (commercial code for high-rise versus residential code for low-rise and single family). Program redesign researchers were unable to perform full analysis on high-rise prototypes due to significant delays in the implementation of the state's commercial-code energy simulation software. Therefore, expected energy savings could not be researched in advance to confirm that continuing the current per-savings incentives calculations would be sufficient to move the market. Initial assessments indicated that it would not be sufficient. Additionally, unlike single family and multifamily low-rise, there does not exist a multifamily high-rise whole building California HERS score framework. Therefore, the program could not apply the same CAHP-Score concept for this building sector. For this building sector, a simplified two-tier system was designed to match incentive levels from the current program so we could be confident incentives would move the market to participate for the remainder of this program cycle. This will provide adequate time to research and develop a long term solution that more closely matches the other building types in the program.

The CAHP scoring system is based upon the CA HERS whole-house design rating system which is a 'Miles-per-gallon' type of rating system that ranges from 250 to 0, representing its Time Dependent Valuation (TDV) energy use, normalizing relative to a reference home built to meet the Title 24 2008 prescriptive (Package D) requirements. The reference home has a score of exactly 100, while zero net energy (ZNE) is 0. The score is based on TDV Energy use including all energy end uses from both regulated and non-regulated loads and therefore directly supports California's regulatory goals. Additionally, the simulation protocols are nearly identical to those for Title 24 compliance. Additionally, since the reference building is static, the score framework can be maintained through 2020 and beyond. Therefore the CA HERS whole-house design rating was selected as the best option for CAHP. The CAHP Score is closely derived from the CA HERS design rating in intention and in mathematical construct. The CAHP Score will determine a home's incentive amount. A lower CAHP Score will yield a higher incentive. To facilitate calculation in approved single-family code-compliance software, the TDV energy use of the CAHP score's baseline reference building is side-calculated from the 2013 Energy Code Standard design results in an effort to approximate the appropriate 2008 Package D reference building. In addition, the large-home scale-back equation has been eliminated so that the efficiency program is inclusive of the entire new construction market. Additionally, the program eliminated design rating credit for installing solar photovoltaic energy. The IOUs will continue to coordinate with the California Energy Commission as the CA HERS design rating's rule set and technical standards are finalized.

The program's most ambitious goal for the 2013-2014 transition period is to promote the early adoption of reach as well as future code elements into the builders' standard practices.

CAHP plans to accomplish this through the strategic creation of CAHP Points which reduce participants CAHP Score thereby increasing their incentive. CAHP Points are given for the following:

- 5 points – Future Code Preparation measures (bundle per Codes & Standards recommendation)
- High R-value Walls R-21 + 4 and 2x6 (0.051 U-value or better)
    1. Heating and Cooling Distribution Efficiency
    2. Ducts and Air-handler in conditioned space (DCS)/Ductless, or see your utility for other options
    3. High Performance Water Heating
    4. Tankless gas or Condensing gas storage water heater, or see your utility for other options
    5. Quality Insulation Installation (QII)
    6. ACH3 at 50Pa (IECC minimum)
- 3 points – DOE Zero Energy Ready Home
- 5 points – Low Energy Use bonus (<(100,000 kTDV/year (Production market attainable absolute energy goal)
- 5 points – Ultra Low Energy Use bonus (<(60,000 kTDV/year) (Correlated to the approximately Energy output of a 3.5 kW PV panel)

The goal of the proposed point system is entice builders to exceed the Title 24 EE targets. CAHP has offered similar bonuses in the past for Energy Star, the Green Point Rating system, kW reduction and New Solar Homes Program (NSHP) Tier II. The CAHP bonus points are crafted in conjunction with Codes & Standards and Emerging Technologies to (1) Act as market softeners for future code measures, (2) Promote energy efficiency targets that get buildings ZNE Ready and (3) Promote other energy efficiency targets that are recognized as high performing nationwide.

In conjunction with the rollout of the 2013 Title 24 Standards, CAHP incentives will no longer be based upon the percentage better than code sliding scale. The new CAHP Score contains the following improvements:

1. It moves towards Zero Net Energy.
2. It's Easier to understand because:
    - **i.** The smaller the number the better the score (the closer you get to zero, the closer you are to zero energy).
    - **ii.** The single score provides adequate information for a builder to understand their overall energy use in a fashion to which they are already accustomed (RESNET Score).
    - iii. It is a static scoring system that will be the same through 2020, which provides a steady target for our ZNE goals. A score of 100 equates to a 2008 Title 24 baseline home.
3. When combined with CAHP Points, the proposed system facilitates the creation of new packages as new technologies and systems are developed to achieve the higher levels of efficiency needed to surpass the 2013 Title 24 Standards.

In recognition of the need for a new program strategy to support ENERGY STAR®, the IOUs propose to shift from an incentive-based approach to a strategy based on ENERGY STAR® marketing support.

To accomplish this, the IOUs propose to offer marketing support/collateral to CAHP builders who successfully apply for ENERGY STAR® certification. Credits of $40/single family lot and $10/multifamily unit, redeemable in the form of ENERGY STAR® marketing collateral, will be awarded to builders who demonstrate compliance with ENERGY STAR® standards. This marketing support will provide a valuable resource for builders and sales agents in communications with potential homebuyers, which will help in realizing the value of the home's energy efficient characteristics during sale.

5. Program Rationale and Expected Outcome

a) Quantitative Baseline and Market Transformation Information

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

Below are the approved PPMs and metric types for the New Construction Statewide Program (Resolution E-4385, Appendix. A, p. 36).

Table 3

SW PROGRAM / Sub-Program	PROGRAM PERFORMANCE METRIC (PPM)	Metric Type
NEW CONSTRUCTION		
California Advanced Homes Program (CAHP)	1. Number and percentage of committed CAHP participant homes (applied and accepted) with modeled, ex-ante savings exceeding 2008 T24 units (Single family (SF) and multi-family (MF)) by 15%-19%, by 20%-29%, 30%-39%, and 40+%.	2a
	2a. Percentage of (current year SF CAHP program paid units)/ (SF building permits within service territories from the previous year) 2b. Percentage of (current year MF CAHP program paid units)/ (MF building permits within service territories from the previous year)	2a
	3. Number and percentage of CAHP participant new homes verified* by IOUs' HERS which exceed Title 24 (T24) building standards (SF and MF) by 15%-19%, 20%-29%, 30%-39%, 40%+. * The IOUs use the existing HERS Rater infrastructure to verify HERS measures and other building characteristics as required by CA Title 24 and the CEC. The IOUs do not perform the verification inspections and do not certify HERS raters. Note: HERS inspection protocol for production builders does not require inspection of 100% of homes; there is a sampling protocol. For more information on HERS inspection please see http://www.energy.ca.gov/HERS/index.html	2b

b) Market Transformation Information

Resolution E-4385 identifies a preliminary list of objectives and market transformation indicators (MTIs) for statewide energy efficiency programs and subprograms. These MTIs will be presented at a public workshop to allow for public comments and discussion before being finalized. The Resolution further directs the Joint Utilities to work collaboratively with Energy Division staff to select a subset of these MTIs for data collection, tracking and reporting as part of the 2010-2012 energy efficiency evaluation, monitoring and verification (EM&V) activities.

Bullet 1) A description of the market, including identification of the relevant market actors and the relationships among them;

The MT elements described here follow guidelines and terminology explained in Rosenberg & Hoefgen's (2009) *Market Effects and Market Transformation: Their Role in Energy Efficiency Program Design and Evaluation.*

<<paper is available here http://uc-ciee.org/downloads/mrkt_effts_wp.pdf >>

Ideally, information about a market would come from a variety of sources, including existing studies and newly-commissioned studies. Rosenberg & Hoefgen (2009) recommend that California should "Commission initial market characterization research for those products and services for which the structure of the market and the motivations of the market actors

are not well understood or documented, at least in terms of their response to the product in question." Due to a lack of time, the following market information draws heavily upon qualitative analyses made by the program managers based upon information they have obtained through experience in implementing the program. We look forward to an opportunity to develop a better understanding of these markets through future commissioned studies, in conjunction with ED and other market transformation stakeholders.

The Residential New Construction market consists of several key players including builders, designers, subcontractors, HERS raters, local cities, manufacturers, real estate agents, financing agencies, and home buyers. The RNC sub-program is located upstream, targeting builders and subcontractors early in the design stage of the production process. Upstream of the IOU's RNC influence are local cities' permitting rules and associated costs. Downstream of the RNC sub-program are real estate agents, financing agencies, and home buyers. The RNC sub-program works directly with builders, designers, subcontractors, HERS raters, builder sales staffs, and manufacturers via equipment recommendations at the design stage.

Bullet 2) Identification of the key barriers and opportunities to advancing demand-side management technologies and strategies;
The key barriers and opportunities to be addressed through a market transformation initiative would ideally draw upon a market characterization study. Due to lack of planning time, the following market barriers and opportunities are drawn from qualitative analyses made by the program managers.

Key RNC market barriers include A) entrenched builder and subcontractor habits, B) a lack of buyer knowledge, interest, and demand, and C) an ensuing disconnect between the price buyers are willing to pay and the related increased builder costs of incorporating DSM technologies, energy efficient equipment, and advanced building practices. Opportunities to address these barriers include education and outreach to builders, subcontractors, and buyers to increase demand and alter builder habits; design assistance to improve builder knowledge and maximally cost-effective strategies; and incentives to bridge the gap of builder costs and buyer demand.

Bullet 3) A description of the proposed intervention(s) and its/their intended results, and specify which barriers each intervention is intended to address;
To address Barrier A, the following intervention is proposed:
Builders and subcontractors will be offered training and design assistance to facilitate the acceptance and incorporation of new technologies and building practices including DSM. Market habits will only change in response to proof that new and improved methods are both feasible and help businesses achieve their goals and improve their bottom lines. By providing appropriate training and design assistance, CAHP will push builders and subcontractors past outdated building practices and better equip them with the skills needed to reach 2020 ZNE.
To address Barrier B, the following intervention is proposed:
Builder sales staffs will be provided training and marketing support on the advantages of EE homes that incorporate DSM technologies. Financing mechanisms will be explored to reduce buyer costs and increase demand. CAHP will also work with builders' sales offices to improve buyers' brand awareness of both CAHP and ENERGY STAR, building an

association and increased interest for buyers. To achieve this, sales staff will be trained as well as provided marketing aids describing the benefits of purchasing energy efficient homes. Furthermore, the statewide CAHP team commissioned an extensive study on recommendations of how to best increase buyer interest. Program staff will review these findings during Q1 of 2013 and use them to further refine strategies to overcome Barrier B.

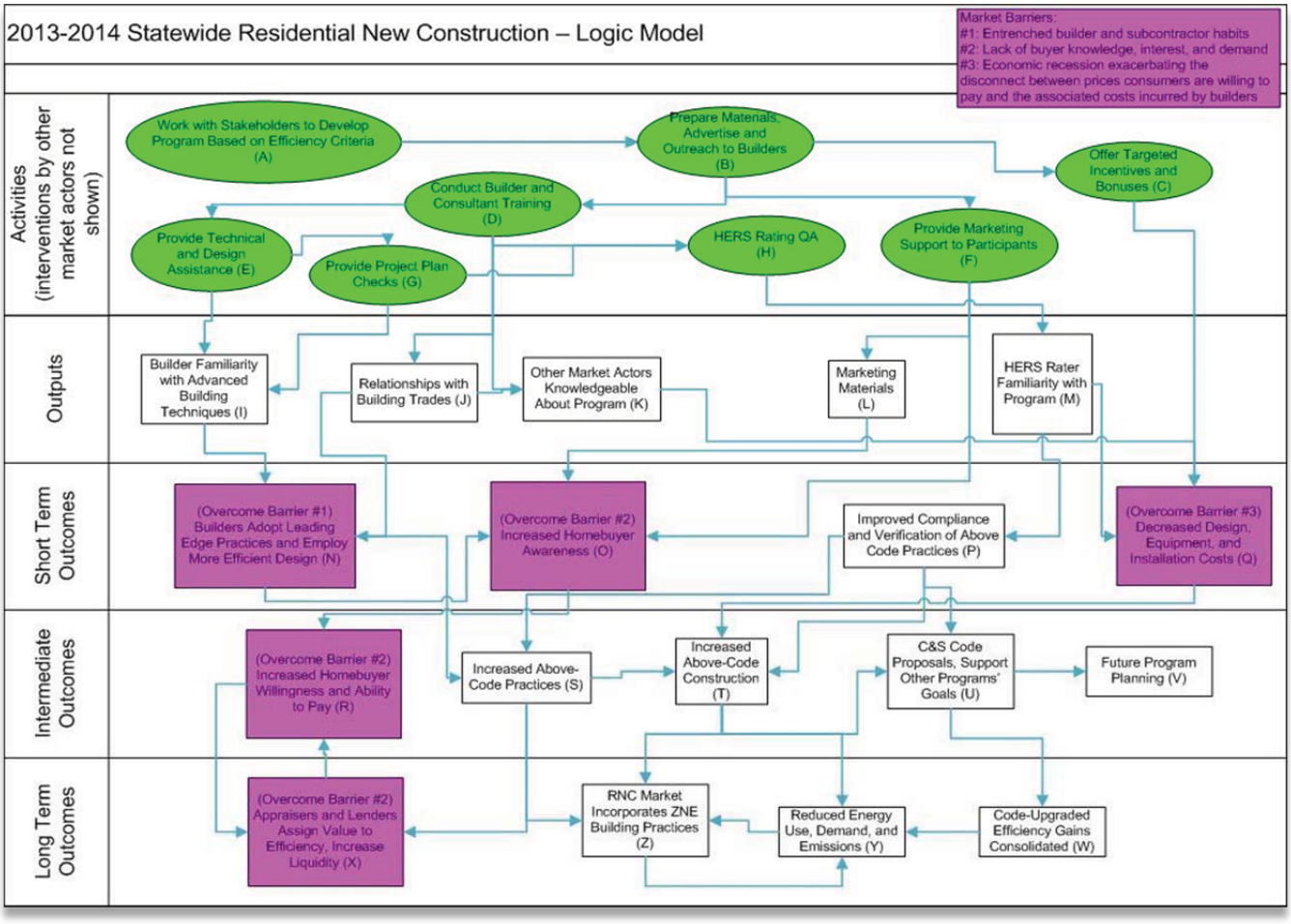
To address Barrier C, the following intervention is proposed:
Incentives will target a reduction in the cost to builders of incorporating EE measures and DSM technologies. This tactic will support the financial disconnect through a reduction of demand-side costs. Additionally, training and education of builders' sales staff will lead to increased buyer awareness of CAHP benefits. This will support the disconnect through an increase of consumer demand and associated market prices. Barrier C interventions will also be bolstered by lessons learned from the buyer interest/marketing study mentioned above.

Market transformation interventions can be expected to take 2, 5 or even 10 yrs before effects can be quantified. We propose the following that these would be the results that can be seen in the market at various time intervals:

After 2 years of implementation builders and subcontractors should feel significantly more confident in accepting new technologies and advanced building practices. By this time they should be familiar with IOU design assistance procedures and how to maximize the incentives and minimize the increased costs. Sales staffs should be well-versed in the advantages of participant homes.

After 5 years, builders and subcontractors should be very confident in advanced EE technologies, building practices, and DSM. At this time the market should be nearing ZNE building practices. Financing mechanisms should be in place to improve buyer demand. After 10 years, the RNC market should be exclusively building ZNE developments. At this point the program focus will be devoted to education and outreach, helping the industry competes with the less efficient existing market. Financing mechanisms will continue to play a role.

Bullet 4) A coherent program, or "market," logic model that ensures a solid causal relationship between the proposed intervention(s) and its/their intended results; and
In this example below, "Portfolio Program Elements" are the market transformation interventions that are specifically directed to the market barriers. "Outcomes" are the outputs of the MT interventions, which are the market effects and reductions in market barriers than can be seen in the short-, mid-, and long-term. Please note that the long term outcomes are "sustainable," which is what the market should look like after the market intervention has ended.



Bullet 5) Appropriate evaluation plans and corresponding Market Transformation Indicators and PPMs based on the program logic model. (The IOUs should be prepared to start tracking proposed Market Transformation Indicators immediately in order to establish a baseline, and in cases where the logic model calls for metrics to be differentiated in terms of the sequence and timeframe in which they are expected to be relevant – i.e., leading vs. intermediate vs. lagging indicators of change – each metric should be identified as such).

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

Summative evaluation - Market Effects

The market transformation program's theory and logic model will be used to guide the evaluation efforts. The scope of the market effects study should be defined by the MT program's scope. The timeline for specific market effects that are to be evaluated should be defined by the MT program theory. Among other indicators, the program theory may specify

changes in market characteristics that can be evaluated, such as 1) Spillover, 2) attitudes, awareness and knowledge, 3) reductions in specific market barrier, 4) current pricing and product availability, and 5) other market milestones. We will make the following distinction between program "spillover" and market effects: spillover is energy savings not directly tracked by the program, whereas market effects are broader and would include spillover as well as meaningful changes in the structure or functioning of the market.

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

Program Performance Metrics: Please see Section 5, Table 3, above.

Market Transformation Indicators:
Per Resolution E-4385, a subset of market transformation indicators (MTIs) for statewide energy efficiency programs and subprograms were presented at a public workshop on November 7, 2011, to allow for public comments and discussion before being finalized. Per Energy Division Guidance received in December, 2012, the MTI outcomes from that public workshop were compiled in a Joint IOU matrix which is found in Appendix F in SDGE's January 14, 2013 compliance filing.

Attribution: Outside of California, most guidelines for evaluating market transformation acknowledge that it is very difficult to attribute market effects to any single program, and nearly impossible to partition out the respective contributions of several coordinated programs on market effects and market transformation. In California, the Framework (Sebold et al., 2001) emphasizes that attribution of market effects to programs bears further research. Others (R&H, 2009; Keating & Prahl (MT Workshop) suggest that declaring the program's strategic intent through the market transformation initiative's theory and logic model is key to establishing future claim on transformation effects. The methods proposed by Rosenberg &Hoefgen (2009) for attributing market effects to individual programs include a number of approaches, all of them qualitative: self-report of spillover and free ridership; cross-sectional comparisons with other geographic regions; structured expert judging; and case studies. But attribution using a "preponderance of evidence" approach would likely be expensive and still yield arguable results. Attribution by nature focuses on individual program efforts, and we believe the market transformation evaluation discourse should be focused on the overlapping synergy among all programs and influences in the market. We realize we all have a "Shared Mission" of meeting the CPUC's very aggressive Strategic Plan goals. We do not wish to not invest resources in teasing apart which program entity contributed how much, but instead will plan to focus on whether all the market forces across the State of California have succeeded in transforming the market.
In lieu of the above results and recommendations, the RNC sub-program will carry forward the PPMs and MTIs that were in place during the 2010-2012 cycle.

c) Program Design to Overcome Barriers

Priority Barrier: Building Industry

Effective July 1, 2014, 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 25 to 30 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, 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.

Overcoming Market Failure: CAHP

In a buyer's market, builders are looking to differentiate themselves from competition. This presents an 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 2013	Program Target 2014	Total
Single Family Units Paid	600	600	1200
Multi-family Units Paid	300	300	600

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 multifamily 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 ZNE 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.

The ZNE program element is designed primarily with the focus of accelerating the achievement of the ZNE goals envisioned by the Strategic Plan. The purpose of the ZNE element 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, EPIC, LBNL and other agencies to further assist the projects in advancing sustainability and achieving very high levels of energy efficiency.

Financial incentives and marketing support offered for the ZNE projects will be higher than those offered under the standard CAHP model. By providing strong encouragement for builders to move up on the energy efficiency scale with financial and non-financial incentives, the ZNE 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 ZNE program element. ZNE is the place to demonstrate innovative technologies and to help

drive the market for energy efficiency through the adoption and marketing of green standards. IOUs have already initiated preliminary research on policies and programs supporting residential ZNE programs in other states for potential new and innovative program design approaches to increase homeowner demand and marketplace change, consulting with relevant experts in this area. This research reveals a lack of other utility programs serving this market. Rather, ZNE currently exists in a piecemeal fashion throughout the country without a consolidated approach. IOUs will continue research in this area and report more complete findings by April 1, 2013.

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

Residential New Construction falling under Title 24 is covered by the California Advanced Homes Program. Factory-built housing will be covered by the ENERGY STAR® Manufactured Homes Program, where offered.

ii. Program delivery mechanisms

CAHP and ESMH are delivered via online program materials and dedicated account executives.

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

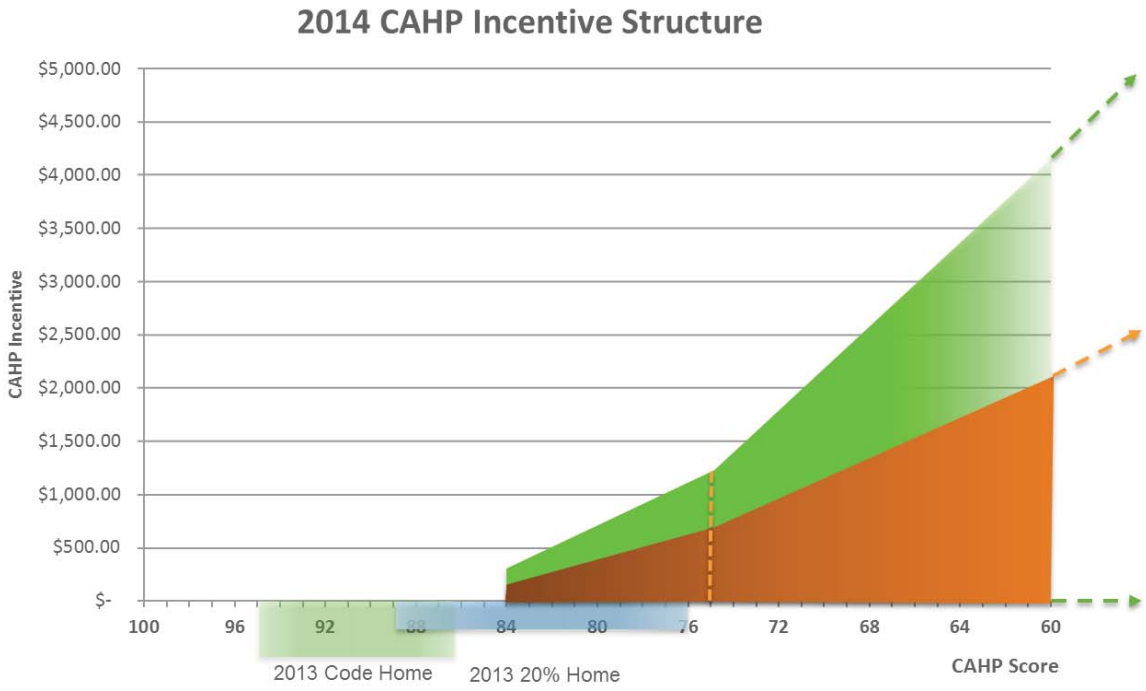
Incentive Structure

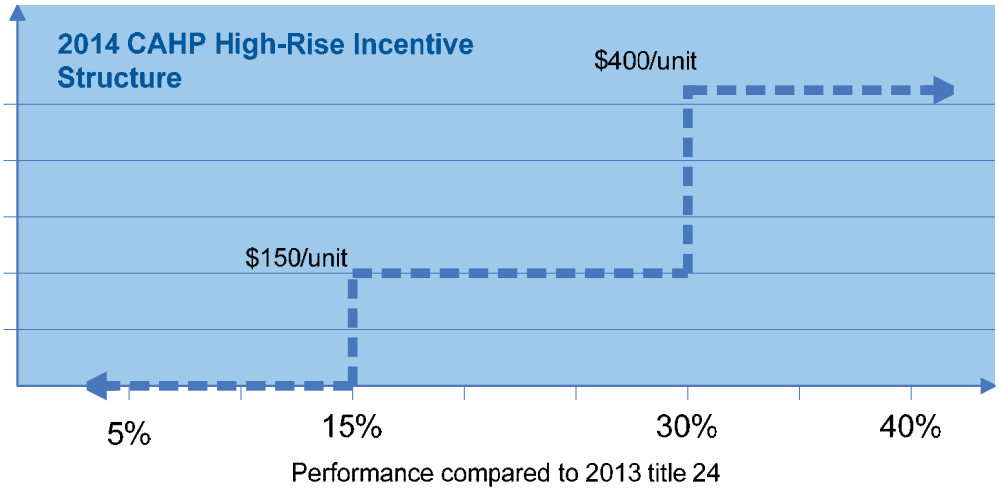
The pay-for-performance incentive structure for the 2013 - 2014 CAHP will continue to be refined as the state approached implementation of the 2013 Title 24 code changes (see CAHP Incentive Rationale section above for additional detail).

2014 CAHP-SF & Low-rise Incentive Structures

CAHP-SF
- $300 for program entry CAHP Score of 84
- $100 for each point up to 75
- $200 for each point thereafter

CAHP-MF Proposed (half of CAHP SF)
- $150 for program entry CAHP Score of 84
- $50 for each point up to 75
- $100 for each point thereafter





An incentive curve was developed to comprise 50 percent of the incremental builder cost on average across all climate zones based on an anticipated range of CAHP Scores. Since the cost curve increases exponentially relative to CAHP score, as is shown in the 2014 CAHP Incentive Structure Chart, the incentive curve also has a built-in escalation to match.

For a single family home a participant entry will require a CAHP score of 84, and eligible projects will receive $300 for reaching that threshold. For each point reduction below 84, the participant will receive an additional $100 until reaching a CAHP score of 75, after which the project will receive $200 for each additional point reduction. Low rise multifamily residential will follow the same scoring system as single family but half the incentives ($150 for entry @ 84, $50 per point to 75 and $100 per point below).

High Rise Residential participant entry will require 15% better than 2013 Title 24, at which point the project is eligible for a $150/unit. Units reaching 30% better than 2013 Title 24 will recieve $400/unit.

Single Family and Low Rise multifamily residential program participants will have the opportunity in the new incentive structure to receive additional point reductions of their CAHP score thereby increasing their incentives. Points are awarded based upon pre-determined energy efficiency measures not included in performance modeling. In line with the elements of the strategic plan, the approach rewards builders for undertaking whole house solutions where the entire structure can be considered as an integrated system.

Moreover, executing a net zero home remains a financial and technical challenge, the program will have customized incentives for homes that achieve ZNE.

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. 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, increased incentives for targeted ZNE, marketing support, 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 builders face in delivering more efficient homes.

The IOUs are adjusting program incentive levels in conjunction with the more stringent Title 24 code taking effect in 2014. More efficient incentives will be critical in helping builders defray additional compliance costs associated with the stronger code.

How CAHP program supports CEC's NSHP, Tier II

CAHP supports the revised NSHP Tier II (30% < T24) and the goals of the CEC.

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 ZNE 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 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.

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.

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.[4] 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 localized platform. The common website will be maintained 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 2013-2014, 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.

[4] As discussed above, manufactured housing is not subject to Title 24 and uses the national HUD baseline.

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)
- National Association of Home Builders (NAHB
- California Building Industry Association (CBIA)
- 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, SDG&E's Energy Innovation Center, SCE's Energy Education

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 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_2 legislation.

CAHP prides itself on its established close relationships and memberships with other groups involved with the building industry. These relationships make it possible to provide comprehensive services to our customers. Thus, CAHP will continue to seek out and coordinate synergies with, but not limited to, the following groups:

- California Energy Commission (CEC)
- 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)
- 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 2011 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 2010 - 2013 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.

Each IOU may pursue partnership efforts with local government entities 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. 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 ZNE sub-element of CAHP. The IOUs are looking to partner with our ET and EPIC-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, EPIC, 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.

Specific workforce development efforts supporting Residential New Construction include training on topics including, but not limited to:

- Energy Pro
- CBECC-Res
- Title-24
- CBECC-Com

SDG&E will explore voluntary incentive-based approaches to encourage contractors and other industry professionals to complete the full bundle of Residential New Construction workforce development training. For professionals who complete the pre-requisite courses and pass a high-road skill standards test, such approaches may include (as applicable):

- Allowing marketing or advertising differentiation;
- An incentive bonus; and/or
- Providing preference to these professionals during bid evaluation process.

Residential New Construction workforce development training will be coordinated with the statewide IOU WE&T program. In addition to the trainings described above, SW IOU WE&T programs will continue to offer building-block courses that educate professionals on the concepts that form the foundation of Residential New Construction programs. Those concepts include:

- Green building techniques;
- Codes and standards);
- Lighting and HVAC technologies;
- Energy cost management; and
- Food service equipment.

Contractor recruitment efforts will be conducted primarily by SW WE&T program implementers through:

- The network of contractors already participating in Residential EE programs;
- Direct outreach through industry organizations with locally active memberships (e.g. IHACI, USGBC, IFMA, AIA, BOMA, etc.);
- Workforce development departments (to target unemployed general contractors); and
- Community Based Organizations with a proven track-record of effective outreach to the hard-to-reach workforce.

iv. Program-specific marketing and outreach efforts

In 2013-2014, 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.

v. Non-energy activities of program

Where applicable, the ZNE program element will seek to identify new types of water savings technologies opportunities.

vi. Non-IOU programs

There may also be opportunities to partner with local AQMDs and County Integrated Waste Management Boards to encourage material recycling in ZNE and green programs.

vii. CEC work on codes and standards

The IOUs will continue to support code development work with the CEC and to test candidate technologies in the new construction programs.

viii. Non-utility market initiatives

The homebuilding industry is facing some of the worst times in its history[5]. 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[6]. 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. 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[7] 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.

As alluded to above, buyers are increasingly asking for green and energy efficiency and may pay more (up to $11,000) for such features.[8] 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.

- 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.

[5] Alan N. Nevin, CBIA Chief Economist and Principal, Market Pointe Realty Advisors, California Builder Magazine, January/February 2008

[6] California Industry Research Board (CIRB) Report, January 24, 2008

[7] 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

[8] Jan Dimeo, Builder. http://www.builderonline.com/business/surveys-reveal-home-buyer-wishes-for-energy-efficiency-and-beyond.aspx. Accessed 14 Mar 08

- 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 RNC sub-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.

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 ZNE. Through financial incentives, design assistance, education and training, the IOUs will aggressively support high performance single family and multifamily building designs that exceed Title 24 standards in an overall performance design of 15% or greater. Energy savings and incentives will be based upon a sliding scale from 15% to 45% reduction in energy usage from Title 24 budget. Program focus will be on increasing the participation to a 30% threshold.

c) <u>Best Practices</u>

The Residential New Construction team has gathered information and past experience in successful low energy and ZNE existing projects to evaluate best practices. Thus far the research shows that while ZNE practices exist in piecemeal fashion throughout the state and nation, there are no other utility incentive programs targeting ZNE. RNC will continue to conduct further research and will disseminate its finding by April of 2013 in accordance with the program guidance. This information will be used to develop pilot projects that will demonstrate low energy homes and include home performance monitoring.

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.
- RNC has undergone substantial marketing material revisions and will continue to do so.

Program Services: Training

- Taking advantage of the slowdown 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 will be 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.

- 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 program will continue to work closely with these companies to promote a continued improvement and commitment to integrated design.

- The IOUs will explore the implementation of 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) <u>Innovation</u>

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 35% better than Title 24, and encouraging ZNE projects, 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 ZNE 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. ZNE 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.

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.

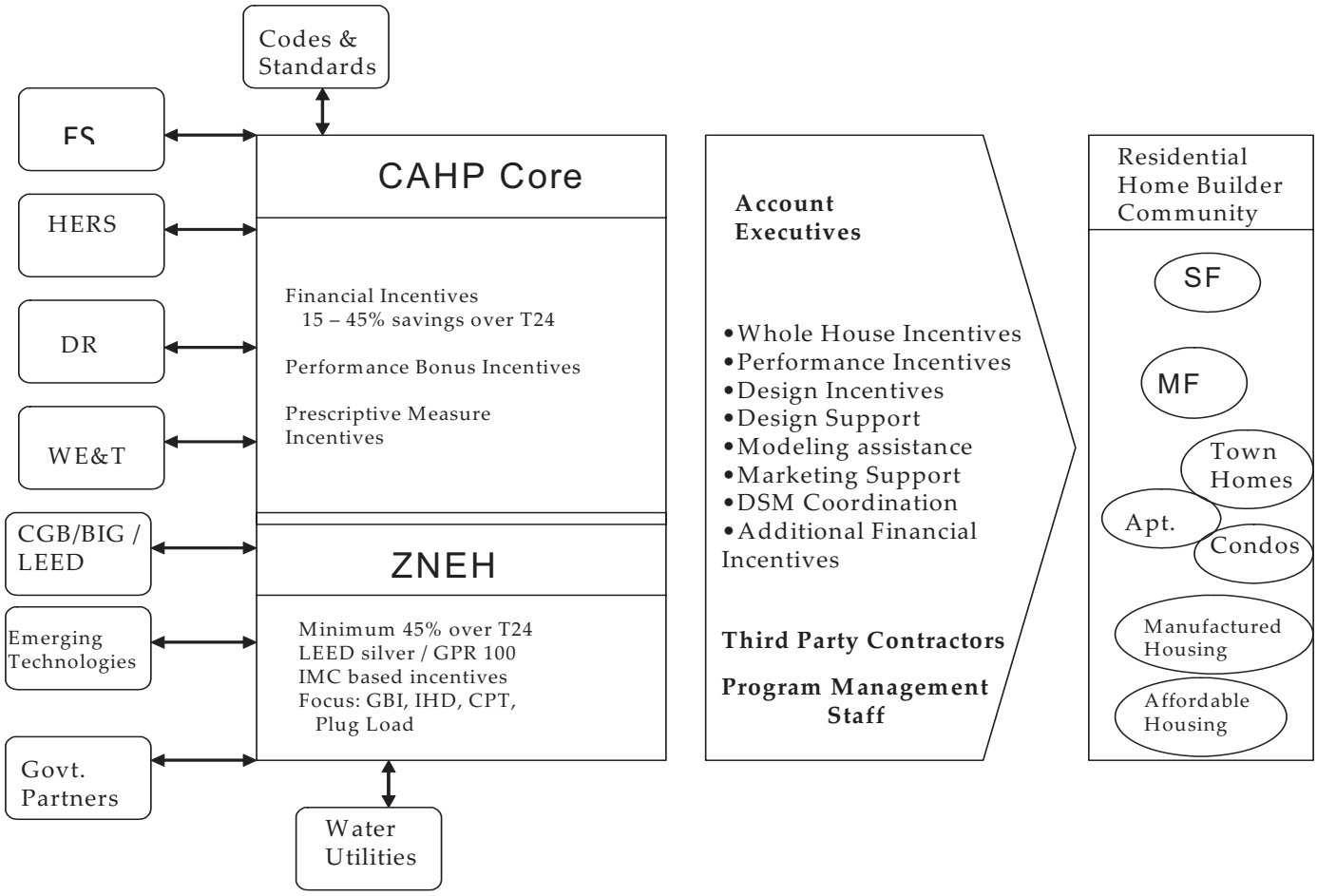
g) Pilots

During the course of the program cycle the IOUs may encounter the need to run pilot programs before an idea is introduced to the core program offerings. At that time the utility will submit the plans for such pilots.

h) EM&V

Under development in consultation with EM&V team.

Diagram of Program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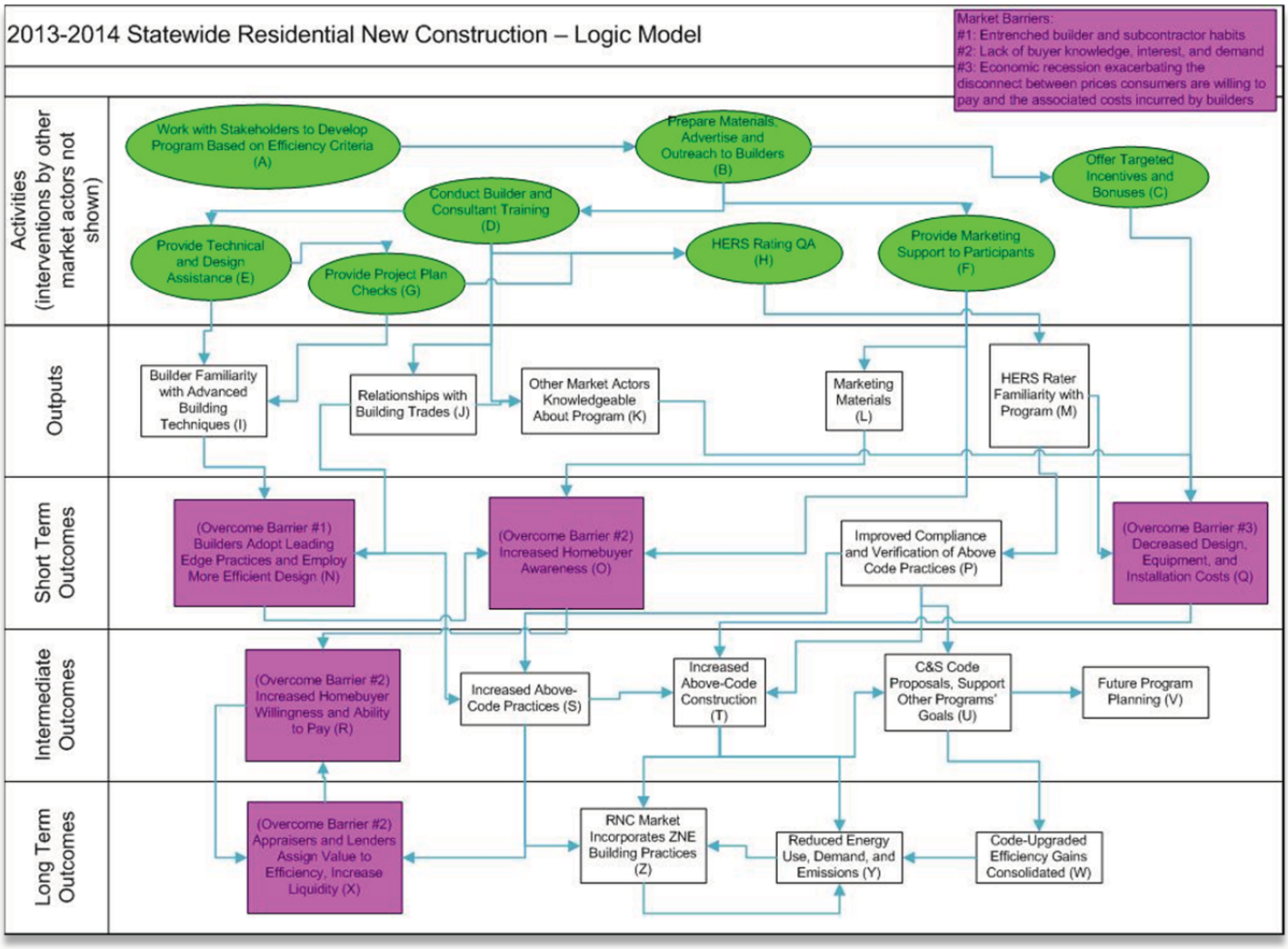
ES
HERS
DR
WE&T
CGB/BIG / LEED
Emerging Technologies
Govt. Partners
CAHP Core
Financial Incentives
15 – 45% savings over T24
Performance Bonus Incentives
Prescriptive Measure Incentives
ZNEH
Minimum 45% over T24
LEED silver / GPR 100
IMC based incentives
Focus: GBI, IHD, CPT, Plug Load
Water Utilities
Account Executives
•Whole House Incentives
•Performance Incentives
•Design Incentives
•Design Support
•Modeling assistance
•Marketing Support
•DSM Coordination
•Additional Financial Incentives
Third Party Contractors
Program Management Staff
Residential Home Builder Community
SF
MF
Town Homes
Apt.
Condos
Manufactured Housing
Affordable Housing

Program Logic Model

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



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