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

May 31, 2013 Advice Letter SDG&E 2468-E/2185-G et.al.

To:

Megan Caulson
Regulatory Tariff Manager
San Diego Gas & Electric Company
8330 Century Park Court, Room 32C
San Diego, CA 92123-1548

Akbar Jazayeri
Vice President of Regulatory Operations
Southern California Edison Company
8631 Rush Street
Rosemead, California 91770

Leslie E. Starck
Senior Vice President
c/o Karyn Gansecki
Southern California Edison Company
601 Van Ness Avenue, Suite 2030
San Francisco, California 94102

Sid Newsom
Tariff Manager – GT14D6
Southern California Gas Company
555 West 5th Street
Los Angeles, CA 90013-1011

Mr. Brian Cherry
Vice President, Regulatory Relations
Pacific Gas and Electric Company
77 Beale Street, Mail Code B10C
P.O. Box 770000
San Francisco, California 94177

Gerald Lahr
Association for Bay Area Governments
101 8th Street
Oakland, CA 04612

Howard Choy, General Manager
County of Los Angeles Office of Sustainability
1100 North Eastern Avenue
Los Angeles, CA 90063-3200

Jody London
Jody London Consulting
P.O. Box 3629
Oakland, California 94609

Subject: Disposition partially approving advice letter requesting approval of the Energy Upgrade California Enhanced Basic/Modified Flex Path program.

Dear Messrs. Jazayeri, Cherry, Lahr, Choy, and Ms. Caulson, Starck, Newsom and London

The Energy Division (ED) has determined that SDG&E Advice Letter (AL) 2468-E/2185-G, SCE AL 2876-E, SoCalGas AL 4479-G, PG&E AL 4207-E/3376-G, BayREN AL 2 and SoCalREN AL 2 (the Joint AL) filed pursuant to Decision (D.) 12-11-015 (EE Decision), are approved in part.

The sections of the Joint AL determined to be in compliance Ordering Paragraph (OP) 5 of the EE Decision are approved effective May 30, 2013. Ordering Paragraph 5 requires the investor-owned utilities (IOUs)[1] and the Regional Energy Networks (RENs)[2] to file an AL with a revised Program Implementation Plan for a redesigned Energy Upgrade California (EUC) Basic Path program that meets certain requirements (See Attachment 1).

The Joint AL sections pertaining to requirements in the EE Decision at page 24 regarding streamlined quality assurance (QA) / quality control (QC) protocols for high performing contractors are non-compliant. The IOUs and RENs should file a separate Tier 2 advice letter, including these "streamlined QA/QC protocols," within 45 days of the date of this letter.

The Joint AL was timely filed on April 2, 2013. SolarCity filed a protest on April 22, 2013. On April 22, 2013, Building Performance Institute (BPI) and Efficiency First California, (Parties), timely filed comments. On April 29, 2013 the IOUs and RENs filed a joint reply to the protest and comments.

Attachment 1 contains a detailed discussion of the protests, comments, reply and ED's determination that the Joint AL is compliant with D.12-11-015, OP 5, and non-compliant with D.12-11-015 directives on page 24.

Please contact Nils Strindberg of the Energy Division staff at 415-703-5219 (ns2@cpuc.ca.gov) if you have any questions.

Sincerely,

Edward Randolph

Edward Randolph
Director, Energy Division
California Public Utilities Commission

cc: Service List A.12-07-001 et al.
Simon Baker, Energy Division
Hazlyn Fortune, Energy Division
Thad Culley, on behalf of SolarCity
Tiger Adolf, BPI
Conrad Asper, Efficiency First California

[1] Pacific Gas & Electric Company (PG&E), San Diego Gas & Electric Company (SDG&E), Southern California Edison Company (SCE), and Southern California Gas Company (SoCalGas).
[2] San Francisco Bay Area Regional Energy Network (BayREN), and Southern California Regional Energy Network (SoCalREN)

Attachment 1

Review and Analysis

I. Background

On April 2, 2013, the IOUs and RENs submitted revised Program Implementation Plans (PIPs) in a joint advice letter (Joint AL) for the Energy Upgrade California (EUC) Enhanced Basic/Modified Flex Path programs in compliance with EUC program-related directives in the D.12-11-015 (EE Decision).[3] The Joint AL requested approval for program changes directed in the EE Decision.

The EE Decision at OP 5 states that the IOUs and RENs:

> "shall submit a revised [PIP] for the EUC program to the Commission in a Tier 2 advice letter no later than April 1, 2013. The advice letter shall propose the geographic areas to be covered by the utilities and the [RENs] for the EUC program. The re-designed Basic path alternative must include a requirement for at least three energy-efficiency measures; a tiered incentive structure; and shall support the energy efficiency loading order and appropriate combustion safety testing."

The EE Decision (at p.24) further required the IOUs to work with the parties in the EUC working group "to determine final statewide aligned and streamlined [QA/QC] protocols for [HVAC] emergency replacements and high performing contractors ('streamlined QA/QC protocols')" and include them in the updated EUC PIP due no later than April 1, 2013.

II. Party Protest, Comments and Joint Reply Comments

SolarCity timely filed a protest on April 22, 2013. The Parties, Building Performance Institute (BPI) and Efficiency First California (Efficiency First) timely filed comments on April 22, 2013. On April 29, 2013 the IOUs and RENs timely filed a joint reply to the protest and comments.

In their protest, SolarCity urges the Commission to reject the proposals related to streamlined QA/QC protocols, but approve all other aspects of the advice filing. SolarCity, and the Parties argue that the Joint AL did not present a consistent or streamlined approach to QA/QC protocols, as required by the EE Decision. SolarCity recommends that the Commission direct the IOUs and the RENs to submit a subsequent Tier 2 advice letter to fully address these issues within ten days of the effective date of the Joint AL approval.

The IOUs and RENs counter that the redlined PIPs in their Joint AL have common elements that comprise a statewide, aligned HVAC emergency replacement protocol. The IOUs and RENs also maintain that they have aligned on allowing same-day emergency replacements of HVAC equipment, while permitting customers to include emergency replacements in their EUC program incentive applications at a future date. Regarding the streamlining of protocols for high performing contractors, the IOUs and RENs claim they will seek alignment where feasible and will continue discussions with the EUC Working Group to coordinate further. They suggest a period of at least

[3] The EE Decision language set a date of April 1, 2013, but this was changed to April 2, 2013, because the CPUC was closed due to a holiday.

sixty days after the Joint AL is approved as necessary to gain additional stakeholder input and to continue engaging the EUC Working Group about further protocol modifications.

The Parties suggested establishing a statewide definition for high performing contractors. The Parties urge the Commission to direct the EUC Working Group to establish a statewide definition for high performing contractors to be adopted by the IOUs and RENs. The IOUs and RENs, in their reply, agree to discuss this with the EUC Working Group in order to establish a statewide definition that would later be added to the PIPs via the PIP addendum process.

Additionally, Parties recommend that the Commission direct all IOUs and RENs to align their onsite QC sampling rates and QA procedures for high performing contractors with the U.S. Department of Energy's Home Performance with Energy Star process. The IOUs and RENs assert that replicating Energy Star's QA/QC procedures for high performing contractors is beyond the scope of the Joint AL requirements in the EE Decision. However, they indicated willingness to continue working on this issue through the EUC Working Group. The IOUs and RENs maintain that while their QA/QC procedures differ across service territories, their current approach is consistent with the tiered QA/QC program sampling rates approach already included in the *Home Performance with Energy Star Sponsor Guide.*

Parties assert that current combustion appliance safety (CAS) procedures are inconsistent across service territories. The Parties also request that BPI CAS testing protocols be adopted by all program partners. The IOUs and RENs maintain that the CAS protocols submitted in the Joint AL are consistent with those requested in Parties' comments.

Finally, BPI expresses concern about the RENs ventilation standard proposal to guide air leakage control. BPI suggests that applying appropriate building science principles and standards to air leakage is a superior approach. BPI's core concern is that standards for air leakage should inform any analysis of ventilation needs.

III. Discussion

Program Design (EE Decision, OP 5)

ED received no protests to the IOUs and RENs proposals for their EUC Enhanced Basic/Modified Flex Path program offerings or related program design directives pursuant to OP 5. ED reviewed the Joint AL and is confident that the IOUs and RENs proposals meet the requirements directed in OP 5. Thus ED approves, effective immediately, the portions of Joint AL filed pursuant to OP 5.

Streamlined QA/QC Protocols (EE Decision, p. 24)

ED finds merit in the concerns expressed by SolarCity and the Parties about whether the IOUs are in compliance with the directives on streamlined QA/QC protocols. ED believes that the IOUs offerings in these areas don't meet expectations for "final statewide aligned and streamlined protocols." For instance, the IOUs on-site verification sampling rates for high performing contractors vary across service territories for both pre- and post-retrofit QC and for other QA procedures. In addition, SCE does not disclose their sampling rates for either pre- or post-retrofit on-site QC.

In general, ED supports the proposal by Parties that high-performing contractors' on-site QC sampling rates and other QA procedures be aligned with Home Performance with Energy Star's rate for top-tier contractors. However, without the benefit of further investigation and further EUC Working Group input on these protocols, ED is not prepared to approve the streamlined QA/QC protocols as submitted. The procedures should be more streamlined and transparent across IOU and REN service territories than the current proposals.

ED also strongly supports Parties' recommendation that the IOUs coordinate with the EUC Statewide Working Group to seek additional input on how best to define high performing contractors. ED believes that the EUC Working Group should be involved in shaping the protocols for high performing contractors and defining high performing contractors. However, ED acknowledges that generating consensus on these issues may take time. Accordingly, ED rejects SolarCity's request for another advice filing within ten days of this disposition.

Therefore, ED directs the IOUs and RENs to work with the EUC Working Group to come up with a consistent statewide definition of high-performing contractors and (b) further streamline and increase transparency of the high-performing contractor QA/QC protocols. **The IOUs and RENs should file modified proposals reflecting the EUC Working Group input by Tier 2 advice letter no later than 45 days from the date of this disposition.**

The IOUs' emergency HVAC equipment replacement protocol proposals appear more aligned and streamlined statewide. However, again ED requests that the IOUs and RENs work with the EUC Working Group to further align these protocols and update their PIPs via PIP addendum process, if needed.

Other Issues

ED addresses two other concerns expressed in comments. First, BPI expressed a concern that the REN plan proposes a ventilation standard to guide air leakage control, rather than applying appropriate building science principles and standards for ventilation mitigation. ED has reviewed both the IOUs' and RENs' work papers for the revised EUC offering and has recently approved the IOUs' work papers. The IOUs and RENs confirmed in their reply comments a mutual agreement that the recently approved IOU work paper will apply to both parties. The IOU work papers include a provision for ventilation standards which obviates BPI's concern. Thus, with the approval of the IOUs' work paper, BPI's concern with the RENs' air sealing approach is moot.

Finally, ED supports Parties' positions on CAS testing requirements and encourages collaboration among the EUC Statewide Working Group, IOUs and RENs on establishing criteria for allowing additional certifications and standards for CAS testing requirements across service territories. The IOUs and RENs should update their PIPs, as needed, with consensus protocols via the PIP addendum process.

Clay Faber - Director
Regulatory Affairs
8330 Century Park Court
San Diego, CA 92123-1548

Tel: 858.654.3563
Fax: 858.654.1788
cfaber@semprautilities.com

April 2, 2013

ADVICE LETTER 2468-E/2185-G
(U902-E)

ADVICE NO. 2876-E
(Southern California Edison Company – U 338 E)

ADVICE NO. 4479-G
(Southern California Gas Company – U 904 G)

ADVICE NO. 3376-G/4207-E
(Pacific Gas & Electric Company – U 39 M)

ADVICE NO. 2
(Bay Area Regional Energy Network – U 941 M)

ADVICE NO. 2
(Southern California Regional Energy Network – U 940 M)

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

SUBJECT: REQEST FROM SAN DIEGO GAS AND ELECTRIC COMPANY, SOUTHERN CALIFORNIA EDISON COMPANY, SOUTHERN CALIFORNIA GAS COMPANY, PACIFIC GAS AND ELECTRIC COMPANY, THE SOUTHERN CALIFORNIA REGIONAL ENERGY NETWORK AND THE SAN FRANCISCO BAY AREA REGIONAL ENERGY NETWORK FOR ENERGY UPGRADE CALIFORNIA PROGRAM ENHANCED BASIC PATH PURSUANT TO DECISION 12-11-015

PURPOSE

San Diego Gas & Electric Company (SDG&E), Southern California Edison Company (SCE), Southern California Gas Company (SoCalGas), Pacific Gas and Electric Company (PG&E), the Southern California Regional Energy Network (SoCalREN), and the San Francisco Bay Area Regional Energy Network (BayREN) hereby submit this Tier 2 Advice Letter (AL) for the Enhanced Basic/Modified Flex[1] Path Energy Upgrade California (EUC) Program in compliance

[1] Enhanced Basic/Modified Flex" Path is a placeholder until the new program name is selected.

with the 2013-2014 Energy Efficiency (EE) Portfolio Decision (D.) 12-11-015 (EE Decision). In accordance with Ordering Paragraph (OP) 5, this AL is due by April 2, 2013[2].

The Joint IOUs[3] and RENs[4] EUC Enhanced Basic/Modified Flex Path Program Implementation Plan (PIP) are shown in Attachment A of this AL. The revised redline EUC subprogram PIPs for each IOU and REN is shown in Attachments A1 – A6. In great part, the IOUs and RENs have reached consensus on a modification of the former Basic Path that adheres to the CPUC's directives and guidelines, is structured to reach moderate-income consumers, broaden the program's contractor base, and drive greater, deeper energy savings. The IOUs' and RENs' specific programs are detailed in their respective redline EUC subprogram PIPs.[5]

BACKGROUND

On July 2, 2012, the IOUs filed their 2013-2014 EE Portfolio Application (A.12-07-001, A.12-07-002, A.12-07-003, A.12-07-004) and submitted supporting testimony and PIPs. On July 16, 2012, the BayREN and SoCal REN filed their motions for approval of their portfolios including draft Program Implementation Plans. On September 5, 2012, in response to the Scoping Memo, the IOUs filed updates to several of its PIPs and the RENs filed supplemental information as directed by the Scoping Memo. The Commission approved the IOUs' and RENs' 2013-2014 portfolios with modifications in the EE Decision. The EE Decision requires the IOUs and the RENs to file a joint advice letter to modify the EUC program's Basic Path design and PIPs.

Program Implementation Plan

The IOUs and RENs are providing a joint PIP which describes the common elements of the Enhanced Basic/Modified Flex Path offering as well as noting any differences. Also included with this AL are attachments of the IOUs' and RENs' revised redlined PIPs. All parties (IOUs and RENs) have utilized their respective PIPs filed with their January 14, 2013 Compliance advice letters as a starting point to facilitate the requested decision revisions. PG&E also incorporated into its PIP updates served to parties on February 14, 2013. The revised PIPs reflect requirements in the EE Decision as well as guidance provided by the EUC Working Group, the Energy Division and EUC stakeholders. Similarly, the RENs filed amended PIPs on January 14, 2013, revised to reflect Commission directives, Energy Division guidance, and EUC stakeholder recommendations gathered through the Scoping Memo process, the EE Decision, and rigorous stakeholder input.

The EE Decision (OP 5) requires the IOUs and RENs to submit a revised PIP for the EUC program to the Commission in a Tier 2 Advice Letter no later than April 2, 2013 proposing: (1) geographic areas to be covered by the IOUs and RENs; and (2) a re-designed Basic Path alternative which includes a requirement for at least three energy-efficiency measures and a tiered incentive structure that supports the energy efficiency loading order and includes appropriate Combustion Appliance Safety (CAS) testing protocols.

---

[2] This advice letter is being filed on April 2 as April 1 is a CPUC State holiday.
[3] The Investor-owned Utilities (IOUs) are SDG&E, SCE, SCG and PG&E.
[4] The RENs are SoCalREN and the BayREN.
[5] Only the EUC subprogram revisions are being filed in this advice letter. Once approved, these revisions will be consolidated with other PIP revisions filed by IOUs and RENs in separate advice letters that are pending approval by the Commission.

Upon approval of the Advice Letter, the IOUs and RENs will submit the updated EUC PIPs, including all necessary revisions, to Energy Division for posting on the Commission's EEGA website at http://eega.cpuc.ca.gov/.

SCE Tables 11 and 14 are confidential. The public redacted version is included. The confidential version of Tables 11 and 14 are being provided to the Energy Division under PU Code 583 and General Order No. 66C. Public disclosure restricted.

(1) **Program Description**

The IOUs and RENs will offer, within their respective areas, a statewide design of the Enhanced Basic/Modified Flex Path as a replacement to the existing Basic Path and the Enhanced Basic/Modified Flex Path will be marketed with the EUC Advanced Path. The IOUs and RENs have developed a pick list, or menu of eligible measures for the Enhanced Basic/Modified Flex Path that demonstrate strong consistency across all programs, to the extent that differences in existing work papers currently under review by CPUC allow. To market the Enhanced Basic/Modified Flex Path to customers, the IOU and REN measures will be awarded points based upon existing and post-upgrade conditions and diagnostic testing (if required for any specific measure). Customers will be required to install at least 1 of 3 base measures, a minimum of 3 measures total and achieve a minimum point threshold of 100 points that equates to 10% energy savings. This simple, menu-driven, flexible design is expected to greatly increase the volume of projects over the original Basic Path. Both the IOU and REN program designs associate the project points with tiered incentive dollar values. To encourage customers to more fully adhere to the loading order, customers are eligible for additional bonus points for installing additional base measures, i.e. when installing 1 or 2 additional base measures beyond the required one measure, customers will receive bonus points for each additional base measure installed.

(2) **Geographic areas to be covered by the IOUs and RENs:**

a. <u>San Diego Gas and Electric</u>
SDG&E will offer the Enhanced Basic/Modified Flex Path in the SDG&E service territory.

b. <u>SCE</u>
For all areas in its territory, SCE will offer the EUC Advanced Path. For areas not covered, by the SoCalREN, including the territory shared with City of Long Beach, PG&E, SDG&E, and Southwest Gas, SCE will over the Enhanced Basic/Modified Flex Path. In areas without a participating Natural Gas-IOU, SCE will offer the electric-only EUC Enhanced Basic/Modified Flex Path.

c. <u>SoCalGas</u>
For those areas outside of the SCE and SoCalGas shared territory (including the territory shared with municipalities, PG&E and SDG&E), SoCalGas will be offering the EUC Advanced Path. The gas only EUC Enhanced Basic/Modified Flex Path and EUC Advanced Path programs will be offered solely by SoCalGas within the municipalities unless there is an agreement between the SoCalREN and the specific municipality.

d. PG&E
PG&E will not offer the Enhanced Basic/Modified Flex Path in the nine Bay Area counties of Alameda, Contra Costa, Marin, Napa, San Mateo, San Francisco, Santa Clara, Solano and Sonoma, since those areas will be covered by the BayREN. PG&E will offer the Enhanced Basic/Modified Flex Path in other parts of PG&E service territory.

e. SoCalREN
SoCalREN has clearly established its territory as being that of the combined service territories of SCE and SoCalGas for all of the SoCalREN services; however, for the Flex Path incentives, SoCalREN will start by implementing Enhanced Basic Modified Flex Path only within L.A. County and will expand into other counties within the SoCalREN territory as the program shows success. Future SoCalREN expansion will be negotiated with SCE and SoCalGas and based on program performance metrics to be jointly determined. SoCalGas will administer Enhanced Basic Modified Flex Path in municipal electric utility territories; SCE will administer Enhanced Basic Modified Flex Path in municipal gas territories. SCE and SoCalGas will administer Enhanced Basic Modified in territories that are joint with PG&E and SDG&E as relevant.

f. BayREN
BayREN's programs will operate in PG&E service areas in the following jurisdictions of local governments in the San Francisco Bay Area: Alameda County, City and County of San Francisco, County of Contra Costa, County of Marin, County of Napa, County of San Mateo, County of Santa Clara, County of Sonoma, and County of Solano.

Work Paper Approval and Reporting Savings

Energy savings reported for EUC will be based on the work paper(s) approved by Energy Division. To date, the IOUs and RENs have submitted two work papers to CPUC Energy Division for review and approval. The IOUs and RENs presume that the savings assumptions approved in the workpaper(s) will apply to all parties. The IOUs and RENs will align on post eligible conditions for eligible measures once the work paper process has concluded. The IOUs and RENs expect that approval of any work paper will be expedited due to the close collaboration between the parties and ED.

The March 1, 2013 Disposition Letter from Energy Division on the use of EnergyPro to model savings does not materially affect the IOUs' submitted workpaper for Enhanced Basic/Modified Flex Path since the workpaper is based on eQuest. However, insofar as the RENs have not been included in the IOU-Energy Division effort to develop the eQuest tool, the REN workpapers were based upon hybridized EnergyPro models and could be affected. The Disposition Letter reduces electric and gas savings as follows:

Table A: Pre-Retrofit Adjustment Factors, Original + Modified

	Electric Energy and Demand		Natural Gas Energy	
	Original	Modified	Original	Modified
Heated and Cooled Homes	0.25	0.4	0.63	0.8
Heated Only Homes	1.0	1.0	0.63	0.8

Such reductions bring the savings assumptions between Enhanced Basic/Modified Flex Path and Advanced Path as proposed by the IOUs into closer alignment, but retains the modeled percent improvement between old and new. Thus the Disposition Letter does not address the incentive gap between Enhanced Basic/Modified Flex Path and Advanced Path. This means that contractors will be financially rewarded for pursuing Advanced Path jobs, given the greater potential for cash incentives. The same scope of work in Enhanced Basic/Modified Flex Path would earn a customer roughly 3 times the cash incentive in the Advanced Path.

This gap will need to be addressed to ensure Enhanced Basic/Modified Flex Path is a market success. If the IOU workpaper is adopted, the incentive gap between Advanced and Enhanced Basic/Modified Flex and Advance Path jobs would threaten the Enhanced Basic/Modified Flex Path with irrelevance. Similarly, if the REN work paper is adopted, and the savings are reduced by 20% to 60%, the Enhanced Basic/Modified Flex Path would also be non-viable. That is, retaining the same incentive level with a 50% reduction in savings threatens program cost-effectiveness and program viability from an administrative standpoint; reducing the incentive proportionally threatens market acceptance and program viability from a customer standpoint.

The IOUs and RENs are developing a joint proposal to share with Energy Division on this issue and will modify PIPs accordingly, once the work paper(s) have been approved.

EFFECTIVE DATE

SDG&E believes this filing is subject to Energy Division disposition and should be classified as Tier 2 (effective after disposition) pursuant to GO 96-B. SDG&E respectfully requests that this filing be approved and become effective on May 2, 2013, which is 30 days after the date filed.

PROTEST

Anyone may protest this Advice Letter to the California Public Utilities Commission. The protest must state the grounds upon which it is based, including such items as financial and service impact, and should be submitted expeditiously. The protest must be made in writing and must be received no later than April 22, 2013, which is 20 days of the date this Advice Letter was filed with the Commission. There is no restriction on who may file a protest. The address for mailing or delivering a protest to the Commission is:

CPUC Energy Division
Attention: Tariff Unit
505 Van Ness Avenue
San Francisco, CA 94102

Copies of the protest should also be sent via e-mail to the attention of the Energy Division at EDTariffUnit@cpuc.ca.gov. A copy of the protest should also be sent via both e-mail and facsimile to the addresses shown below on the same date it is mailed or delivered to the Commission.

For SDG&E:
Attn: Megan Caulson
Regulatory Tariff Manager
8330 Century Park Court, Room 32C
San Diego, CA 92123-1548
Facsimile No. (858) 654-1879
E-mail: MCaulson@semprautilities.com

For SCE:
Akbar Jazayeri
Vice President of Regulatory Operations
Southern California Edison Company
8631 Rush Street
Rosemead, California 91770
Facsimile: (626) 302-4829
E-mail: AdviceTariffManager@sce.com

Leslie E. Starck
Senior Vice President
c/o Karyn Gansecki
Southern California Edison Company
601 Van Ness Avenue, Suite 2030
San Francisco, California 94102
Facsimile: (415) 929-5540
E-mail: Karyn.Gansecki@sce.com

For SoCalGas:
Sid Newsom
Tariff Manager – GT14D6
555 West 5th Street
Los Angeles, CA 90013-1011
Facsimile: (213) 244-4957
E-mail: snewsom@SempraUtilities.com

For PG&E:
Brian K. Cherry
Vice President, Regulatory Relations
Pacific Gas and Electric Company
77 Beale Street, Mail Code B10C
P.O. Box 770000
San Francisco, California 94177
Facsimile: (415) 973-7226
E-mail: PGETariffs@pge.com

For BayREN: Gerald Lahr
Association for Bay Area Governments
101 8th Street
Oakland, CA 04612
Facsimile: (510) 433-5508
E-mail: jerryl@abag.ca.gov

For SoCalREN: Howard Choy, General Manager
County of Los Angeles Office of Sustainability
1100 North Eastern Avenue
Los Angeles, CA 90063-3200
Facsimile: - (323) 267-2006
E-mail: HChoy@isd.lacounty.gov

Jody London
Jody London Consulting
P.O. Box 3629
Oakland, California 94609
Facsimile: 510-459-0667
E-mail: jody_london_consulting@earthlink.net

NOTICE

A copy of this filing has been served on the utilities and interested parties shown on the attached list, including interested parties in A.12-07-001, A.12-07-002, A.12-07-003, A.12-07-004 and R.09-11-014, by providing them a copy hereof either electronically or via the U.S. mail, properly stamped and addressed.

Address changes should be directed to SDG&E Tariffs by facsimile at (858) 654-1879 or by email to SDG&ETariffs@semprautilities.com.

CLAY FABER
Director – Regulatory Affairs

Attachments

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) #: 2468-E/2185-G

Subject of AL: SDG&E, SCE, SoCalGas, and PG&E, SoCalREN and BayREN's Request for Energy Upgrade California Program Enhanced Basic Path Pursuant to Decision 12-11-015

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

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

If AL filed in compliance with a Commission order, indicate relevant Decision/Resolution #:
D.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: 5/2/12

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.

General Order No. 96-B
ADVICE LETTER FILING MAILING LIST

cc: (w/enclosures)

Public Utilities Commission
DRA
S. Cauchois
R. Pocta
W. Scott
Energy Division
P. Clanon
S. Gallagher
D. Lafrenz
M. Salinas
CA. Energy Commission
F. DeLeon
R. Tavares
Alcantar & Kahl LLP
K. Cameron
American Energy Institute
C. King
APS Energy Services
J. Schenk
BP Energy Company
J. Zaiontz
Barkovich & Yap, Inc.
B. Barkovich
Bartle Wells Associates
R. Schmidt
Braun & Blaising, P.C.
S. Blaising
California Energy Markets
S. O'Donnell
C. Sweet
California Farm Bureau Federation
K. Mills
California Wind Energy
N. Rader
Children's Hospital & Health Center
T. Jacoby
City of Chula Vista
M. Meacham
City of Poway
R. Willcox
City of San Diego
J. Cervantes
G. Lonergan
M. Valerio
Commerce Energy Group
V. Gan
CP Kelco
A. Friedl
Davis Wright Tremaine, LLP
E. O'Neill
J. Pau
Dept. of General Services
H. Nanjo
M. Clark
Douglass & Liddell
D. Douglass
D. Liddell
G. Klatt
Duke Energy North America
M. Gillette
Dynegy, Inc.
J. Paul
Ellison Schneider & Harris LLP
E. Janssen
Energy Policy Initiatives Center (USD)
S. Anders
Energy Price Solutions
A. Scott
Energy Strategies, Inc.
K. Campbell
M. Scanlan
Goodin, MacBride, Squeri, Ritchie & Day
B. Cragg
J. Heather Patrick
J. Squeri
Goodrich Aerostructures Group
M. Harrington
Hanna and Morton LLP
N. Pedersen
Itsa-North America
L. Belew
J.B.S. Energy
J. Nahigian
Luce, Forward, Hamilton & Scripps LLP
J. Leslie
Manatt, Phelps & Phillips LLP
D. Huard
R. Keen
Matthew V. Brady & Associates
M. Brady
Modesto Irrigation District
C. Mayer
Morrison & Foerster LLP
P. Hanschen
MRW & Associates
D. Richardson
Pacific Gas & Electric Co.
J. Clark
M. Huffman
S. Lawrie
E. Lucha
Pacific Utility Audit, Inc.
E. Kelly
San Diego Regional Energy Office
S. Freedman
J. Porter
School Project for Utility Rate Reduction
M. Rochman
Shute, Mihaly & Weinberger LLP
O. Armi
Solar Turbines
F. Chiang
Southern California Edison Co.
M. Alexander
K. Cini
K. Gansecki
H. Romero
TransCanada
R. Hunter
D. White
TURN
M. Hawiger
UCAN
M. Shames
U.S. Dept. of the Navy
K. Davoodi
N. Furuta
L. DeLacruz
Utility Specialists, Southwest, Inc.
D. Koser
Western Manufactured Housing
Communities Association
S. Dey
White & Case LLP
L. Cottle
Interested Parties In:
A.12-07-001
A.12-07-002
A.12-07-003
A.12-07-004
R.09-11-014

Attachment A: Energy Upgrade California Enhanced Basic/Modified Flex Path Program

Name: Energy Upgrade California Enhanced Basic/Modified Flex Path

Program Type: Statewide Core

1.) Background:

A basic path or gateway program for energy efficiency upgrades is fundamental to market penetration and transformation, by providing a program that:

- introduces home energy efficiency awareness and promotes multi-sector education
- is priced to reach moderate-income homeowners
- allows for whole home upgrades to be installed over time

A program timed and priced to fit middle-income consumers also creates leads for a contractor-led marketplace to progressively drive deeper energy savings in households where immediate available discretionary income is limited. Moreover, such a program is able to capture a market in which equipment failure or some other trigger event is the decision driver (and energy savings is a consequential, not primary and objective).

In the 2010-2012 program cycle, the Energy Upgrade California (EUC) Basic Path represented only 4% of the statewide volume among the four Investor Owned Utilities (IOUs): Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), San Diego Gas and Electric Company (SDG&E), and Southern California Gas Company (SoCalGas). The Basic Path had been targeted to make up the volume of the program; however, due to low program uptake during the 2010-2012 program cycle, there was a clear need for program redesign.

ARRA-Funded Pilots of Basic Path Alternatives

Three alternate Basic Path or "Flex Path" programs were piloted by local governments using grant funds under the American Recovery and Reinvestment Act (ARRA), in order test alternate program designs and drivers, and identify viable program corrections to the EUC Basic Path. Each offered consumers a comprehensive menu of energy efficiency measures ranked by a point system aligned to calculated energy and gas savings. A qualifying minimum threshold of 100 points ensured meaningful energy savings. Each program featured distinctive salient traits that appear to account for differing performance, and provide lessons that may be germane to the Commission's consideration of this Advice Letter.

Sonoma County and Alameda County offered nearly identical programs, launched in October and September 2012, respectively. Both pilots engaged contractors previously certified as Energy Upgrade California Advanced Path contractors. AlamedaFlex offered a single flat incentive of $1,500 for a 2-measure minimum package that accounted for at least 100 points. Sonoma Flex also applied a 2-measure minimum, with a qualifying threshold of 150 points (for a $1,500 incentive), and progressive additional incentives based upon incremental measure and point increases.

Los Angeles County's Flex Path Program also offered a prescriptive, points based, menu driven program that required a qualifying threshold of 100 points ($1500 incentive), and allowed consumers to undertake multiple Flex Path projects. The program (launched in January 2012) engaged all EUC participating contractors in good standing. This resulted in a significantly larger contractor pool than that of SonomaFlex or AlamedaFlex, and one that employed Basic as well as Advanced Path participating contractors.

The Flex Path pilot completed more than 1800 projects in 9 months of operation. After 5 and 6 months, respectively, uptake between the SonomaFlex and AlamedaFlex pilots was limited. LA County's Flex Path stimulated participation among specialty contractors who forged new business models through cross-specialty alliances, while Advanced Path contractors in the Sonoma and Alameda pilots appeared to have adopted the strategy of "upselling" Basic Path projects to Advanced Path upgrades. Program performance analysis indicates that contractors, as the key program delivery channel, were very successful in selling Flex Path to middle-income homeowners.

2.) Commission Direction:

The Commission Decision (D.)12.11.015 directs the IOUs, Southern California Regional Energy Network (SoCalREN) and San Francisco Bay Area Regional Energy Network (BayREN) to work collaboratively to develop a redesigned Basic Path model consistent with EE Decision. More specifically, the IOUs and RENs have worked to meet the Commission's directives, which state in D.12-11-015, in pertinent part:

"Our ultimate goal, with the EUC Flex Path and Basic Path program designs, is to have a coordinated set of program offerings, where consumers see a consistent set of marketing and outreach as well as program designs that are not confusing or conflicting." (p. 22)

> "We also want a comprehensive program approach that leads to deep and lasting energy savings, helping consumers save energy and money." (p. 23)
>
> "…REN proponents and the IOUs work together to design a programmatic approach that covers all of the geographic areas of the IOU service territories with a seamless set of offerings" (p. 23)
>
> "…the best way to accomplish our goals is to require a cooperative design and implementation approach that involves all parties with an interest in EUC" (p. 23)
>
> "…will also require that the program design developed jointly by the RENs and IOUs should have the following characteristics, at a minimum, (pp. 24-25)
>
> - the program shall require that each project include at least three qualifying energy efficiency measures;
> - the program shall also include scaled or tiered incentives, as recommended by TURN, such that greater incentives are available for greater levels of energy savings;"
> - the program shall support the energy efficiency loading order that provides that building envelope improvements generally occur first, followed by

"right-sized" central Heating, Ventilation, and Air-Conditioning (HVAC) and hot water system improvements, and then other major permanent systems such as lighting; and

- the program shall support appropriate combustion safety testing protocols.

"The offerings by the RENs and the IOUs need not be identical, since it may be worthwhile to test various program offerings and their appeal to different types of consumers. However, the programs should be able to be marketed under one umbrella to avoid customer confusion." (p. 25)

3.) Description of Enhanced Basic/Modified Flex Path:

The IOUs, SoCalREN and BayREN, consistent with D.12-11-015, propose replacing the existing IOU EUC Basic Path and REN Flex Path programs with alternate models that:

1. Meet the Commissions criteria for both Customer and Contractor Eligibility.
2. Require a minimum of three (3) measures, under a framework that supports the loading order, incentivizes additional measures, encourages more robust savings, and serves as a foundation for whole-home energy efficiency upgrades.
3. Maintains standards of quality and safety.
4. Reflect a common design, avoid public confusion, and meet the objective of the 2013-2014 Energy Efficiency Transition Period to test market and transformative drivers.
5. Can be offered seamlessly across all territories.
6. Compliments the EUC Advanced Path for comprehensive home performance energy upgrades.

The Enhanced Basic/Modified Flex has a mix of Base and Flex energy efficiency measures to allow a contractor to tailor each project to the needs of the customer. The new program will be delivered through existing EUC participating contractors and, further, will broaden and diversify the service pool by recruitment of specialty contractors. Moreover, eligible upgrades have been specifically designed to support the loading order and foster deeper or further retrofits, and all work will include appropriate combustion safety testing at test-in and test-out.

The comprehensive menu of point-based measures effectively streamlines the project development process in replacing preliminary modeling simulations and multiple visits to the retrofit property. A rebate amount can easily be determined during the contractor's first visit. This enhances the ease of program adoption for both the customer and the contractor, and promotes the ability of the Enhanced Basic/Modified Flex Path to scale the EUC Program more rapidly.

Measures

Measures may vary somewhat regionally and across IOU and REN service territories, but the following measures demonstrate strong consistency across all programs, to the extent that differences in existing workpapers currently under review by CPUC allow:

Base Measures:

Required Base Measure	Measure	Post-Upgrade Condition
REN: Base Measures		
1A	**Attic Insulation & Attic Air Sealing**	≥ R-44; Sealed Attic Top Plate
1B	**Duct Insulation & Sealing OR Duct Replacement**	Leakage ≤ 6 %; Insulation ≥ R-8
1C	**Whole House Air Sealing**	ASHRAE 62.2 ≤ ACHn ≤ 130% ASHRAE 62.2

Measure	Post-Upgrade Condition
IOU: Base Measures	
Attic Insulation & Attic Air Sealing	Insulation to R-30 or greater (R-38 in climate zones 1 and 11-16); Sealed attic plane
Duct Sealing OR Duct Replacement	Seal to ≤ 10% for existing systems and ≤ 6% for duct replacement
Whole Building Air Sealing	≥ 30% or ≥ 15% leakage reduction from vintage table defaults

Flex Measures:

Required Base Measure	Measure	Post-Upgrade Condition
REN: Flex Measures – Envelope		
1C	**Floor Insulation**	≥ R-19
1C	**Wall Insulation**	≥ R-13
1C	**High Performance Windows**	EnergyStar or equivalent; U-factor ≤ 0.40; SHGC ≤ 0.25
1A	**Attic Radiant Barrier**	Continuous Rolled or Prelaminated Radiant Barrier

Measure	Post-Upgrade Condition
IOU: Flex Measures – Envelope	
Floor Insulation	≥ R-19
Wall Insulation	≥ R-13
High Performance Windows	TBD, Phase 2
Attic Radiant Barrier	N/A

Required Base Measure	Measure	Post-Upgrade Condition
REN: Flex Measures – DHW		
N/A	**Gas Water Heater**	Gas Storage Heater; ≥ 0.67 EF
		Gas On-Demand Tankless Heater; ≥ 0.88 EF
N/A	**Electric Water Heater**	Electric Storage Water Heater; ≥ 0.93 EF
		Electric Heat Pump Water Heater; ≥ 2.0 EF

Measure	Post-Upgrade Condition
IOU: Flex Measures – DHW	
Gas Water Heater	Gas Storage Heater EF ≥ 0.62; 0.67 for PG&E and SDG&E
	Gas On-Demand Tankless Heater; EF ≥ 0.82
Electric Water Heater	Electric Storage Water Heater; EF ≥ 0.93
	Electric Heat Pump Water Heater; ≥ 2.0 EF PG&E and SCE, not SDG&E

Required Base Measure	Measure	Post-Upgrade Condition
REN: Flex Measures – HVAC*		
1B	**Gas Furnace**	Gas Furnace; ≥ 0.95 AFUE
1B	**High Efficiency AC**	Central AC; ≥ 15 SEER; ≥ 11 EER
N/A	**Right-Size HVAC Kicker**	AC Unit
		Heat Pump
1B	**Buried Ducts Kicker**	Fully Buried Ducts

Measure	Post-Upgrade Condition
IOU: Flex Measures – HVAC*	
Gas Furnace	Gas Furnace; ≥ 0.92 AFUE; 0.95 for PG&E in future
High Efficiency AC	Central AC; ≥ 14 SEER; ≥ 12 EER
Right-Size HVAC Kicker	N/A until QI work paper approval
	N/A until QI work paper approval
Duct Insulation**	Insulation ≥ R-8

* If selecting to install any HVAC measures, customer must select duct replacement/duct sealing plus one qualifying envelope measure

** The IOUs will not offer a buried ducts kicker.

Additional Stand-Alone Measures:

Required Base Measure	Measure	Post-Upgrade Condition
REN: Additional Flex Measures		
N/A	**Variable Speed Pool Pump**	Title 20 Compliant Variable Speed Pump & Controller (Existing condition can be single or dual speed)
N/A	**EnergyStar Lighting**	N/A (Upstream Incentive Program)

Measure	Post-Upgrade Condition
*IOU: Stand Alone Measures**	
Variable Speed Pool Pump	Variable-Speed Pool Pump and Motor (Plug Load and Appliances Program (PLA)
EnergyStar Lighting	N/A (Upstream Incentive Program)
Refrigerators	PLA catalog
Dishwashers	PLA catalog; not offered by PG&E
Clotheswashers	PLA catalog
Whole House Fan	PLA catalog; not offered by PG&E
Refrigerator/ Freezer Recycling	Appliance Recycling Program

*Note: For the IOU Additional Stand-Alone Measures, the list provided is an example set of measures that can be added-on to the whole house retrofit package. The fully inclusive list, provided uniquely by each IOU, is drawn from the Deemed offerings to residential customers.

Disposition of ARRA Flex Path Five-Point Measures

All five-point measures offered in the ARRA Flex Path program will be eliminated. However, these measures do offer value to homeowners as best practices and the chart below describe the proposed disposition of each five-point measure. Required measures below will not get any points but savings will be claimed by the respective IOU or REN.

Flex Path Five-Point Measures to be Removed	Flex Path Requirement	Proposed Disposition
Programmable Thermostat	Energy Efficient Programmable Thermostat(s); Serves Entire Conditioned Area	Add the following statement to all HVAC equipment measures and duct sealing and insulation measure(s): "Recommend replacement of a manual thermostat with digital, setback programmable model"
Low Flow Showerheads with TCV	Low Flow Showerheads ≤ 1.5 gpm; Bathroom Faucet Aerators ≤ 1.5 gpm; Kitchen Faucet Aerators ≤ 2.2 gpm	Add the following statement to program participation requirements (1 of 3 Base Measures; minimum three measures, etc.): "All projects require installation of a thermostatic shut-off valve on all showers in the home except when installing a tankless water heating system"
Hot Water Pipe Wrap	Minimum First 5ft of Hot Water Pipe Wrapped	Add the following statement, consistent with code: "Must include pipe wrap for first five feet of exposed pipes"
Sealing of can lights or Replacement with Sealed ENERGY STAR Fixtures	EnergyStar CFL or LED Fixture(s); Permanently Installed	Add the following statement to Attic Insulation and Sealing: "It is highly recommended that all incandescent recessed can lighting fixtures be replaced with ENERGY STAR® CFL fixtures or ENERGY STAR® LED fixtures"

5.) Program delivery and coordination

The IOUs and RENs will offer, within their respective territories, a statewide design of the Enhanced Basic/Modified Flex Path as a replacement to the existing Basic Path and marketed with the EUC Advanced Path. The IOUs and RENs will utilize the existing EUC infrastructure per each respective attached redlined EUC PIP, and work together to coordinate marketing efforts and messaging. The RENs, having been defined as regional entities in 12-11-015 (p. 13), propose to operate the modified EUC Enhanced Basic/Modified Flex Path program in the geographic areas they serve:

a. San Diego Gas and Electric

SDG&E will offer the Enhanced Basic/Modified Flex Path in the SDG&E service territory.

b. SCE

For all areas in its territory, SCE will offer the EUC Advanced Path. For areas not covered, by the SoCalREN, including the territory shared with City of Long Beach, PG&E, SDG&E, and Southwest Gas, SCE will over the Enhanced Basic/Modified Flex Path. In areas without a participating Natural Gas-IOU, SCE will offer the electric-only EUC Enhanced Basic/Modified Flex Path.

c. SoCalGas

For those areas outside of the SCE and SoCalGas shared territory (including the territory shared with municipalities, PG&E and SDG&E), SoCalGas will be offering the EUC Advanced Path. The Gas Only EUC Enhanced Basic/Modified Flex Path and EUC Advanced Path programs will be offered solely by SoCalGas within the municipalities unless there is an agreement between the SoCalREN and the specific municipality.

d. PG&E

PG&E will not offer the Enhanced Basic/Modified Flex Path in the nine Bay Area counties of Alameda, Contra Costa, Marin, Napa, San Mateo, San Francisco, Santa Clara, Solano and Sonoma, since those areas will be covered by the BayREN. PG&E will offer the Enhanced Basic/Modified Flex Path in other parts of PG&E service territory.

e. SoCalREN

SoCalREN has clearly established its territory as being that of the combined service territories of SCE and SoCalGas for all of the SoCalREN services; however, for the Flex Path incentives, SoCalREN will start by implementing Enhanced Basic Modified Flex Path only within L.A. County and will expand into other counties within the SoCalREN territory as the program shows success. Future SoCalREN expansion will be negotiated with SCE and SoCalGas and based on program performance metrics to be jointly determined. SoCalGas will administer Enhanced Basic Modified Flex Path in municipal electric utility territories; SCE will administer Enhanced Basic Modified Flex Path in municipal gas territories. SCE and SoCalGas will administer Enhanced Basic Modified in territories that are joint with PG&E and SDG&E.

f. BayREN

BayREN's programs will operate in PG&E service areas in the following jurisdictions of local governments in the San Francisco Bay Area: Alameda County, City and County of San Francisco, County of Contra Costa, County of Marin, County of Napa, County of San Mateo, County of Santa Clara, County of Sonoma, and County of Solano."

The IOUs have been working closely with the EUC Working Group and its constituent stakeholders, including SolarCity, Efficiency First (formerly CPBCA), BPI, and others to streamline and align emergency equipment replacement procedures. All IOUs have emergency equipment replacement procedures in place, and will continue to work closely with the Working Group to align them to the greatest extent possible.

Similarly, the IOUs and RENs have been in discussions with the EUC Working Group regarding their suggestions for high performing contractors. The IOUs share a commitment to making the QC process as transparent as possible, and for rewarding high performing contractors for their high quality work with expedited inspections, mentoring opportunities, witness quality-control, and lower inspection rates.

6.) Participation

Customers will be required to install at least 1 of 3 base measures, supplemented to attain the 3-measure and point thresholds built into the programs, with additional motivation for installing additional base measures. This simple, menu-driven, flexible design is expected to greatly increase the volume of projects over the original Basic Path. Contractors will be trained and encouraged to develop work scopes that include more building envelope measures and go beyond core systems. The 2013-2014 Energy Efficiency Transition Period gives the IOUs and RENs the opportunity to test a program design targeted at achieving a higher volume of retrofits, meeting the Commission's program criteria, and demonstrably supporting the loading order.

To market the program to customers, both IOU and REN measures will be awarded points based upon existing and post-upgrade conditions and diagnostic testing (if required for any specific measure). The SoCalREN and BayREN program designs and models are nearly identical, differing only for adjustment of certain point allocations (based on average energy savings) due to climate zone distinctions, and the inclusion of a Home Upgrade Advisor element in the BayREN Program.

Both the IOU and REN program designs associate the project points with tiered incentive values. The RENs also introduce a bonus measure for right-sizing of HVAC equipment to support the energy efficiency loading order for core systems, and to test market acceptance of this approach outside a formal Quality Installation (QI) requirement. Until the HVAC QI workpaper is complete, the incremental, claimable energy savings for right-sizing of HVAC equipment, the IOUs are unable to offer this measure.

Some of the IOUs are developing a software tool and web application that the participating contractor can use to calculate project points and percentage of energy savings based on basic characteristics of each home, vintage, and climate zone. This software tool is developed with strong engineering-supported savings in consideration of installed measure, including interactive effects and standard DEER and RASS assumptions.

The RENs' data tracking systems will not support the IOUs' web application. The RENs do not anticipate developing such a tool at this time and favor a points based, prescriptive menu approach as will be further described in the redline PIPs. The RENs prefer a deemed, fixed point approach for its simplicity of message to the customer.

Regional Approaches:

PG&E/BayREN

To market the program at launch, PG&E and the BayREN will both use a points-based menu approach based upon existing and post-upgrade conditions and diagnostic testing (if required for any specific measure). During the 2013-2014 program cycle, PG&E is exploring the possibility of developing a web application for participating contractors to use to calculate savings based on specific characteristics of each home, vintage, and climate zone. The tool and its underlying calculations would be shared with BayREN. In addition, there would be continuing discussions among the parties on ancillary issues such as data-sharing and reporting.

SoCalGas and SCE

SoCalGas and SCE would like to pilot a calculated, customized-point approach to test systems already under development. However, for consistency of program design, SCE and SoCalGas are willing to adopt a fixed-point approach, but ask ED to provide guidance on which approach they prefer. In order to ensure seamless program offerings, the IOUs and RENs do not want competing approaches in the same territory. Once perfected, the IOUs are prepared to share their database and web-based tool with the RENs if the ED should direct all parties to use a customized approach.

SDG&E

SDG&E has developed a software tool and web application that a participating contractor can use to calculate project points based upon percentage of savings determined using basic characteristics of each home, vintage, and climate zone. This software tool is developed with strong engineering-supported savings in consideration of installed measure, including interactive effects and standard DEER and RASS assumptions.

Participation Process

1. Select a participating contractor or participating rater.
2. Participating contractor or participating rater performs a combustion appliance safety CAS testing (pre-and post- installation).
3. Determine a scope of work:
    a. Select a minimum of one of three base measures.
    b. Select additional base or other flex measures for a minimum of three total measures.
    c. If selecting to install any HVAC measures, in addition to duct replacement/duct sealing, customer must select one qualifying envelope measure.
    d. Select any stand-alone measure(s) if desired (stand-alone measures do not count towards three measure minimum or marginal savings).
4. Participating contractor or participating rater performs a combustion appliance safety CAS testing (pre-and post- installation) and install measures.
5. Participating contractor or participating rater to submit project information for Quality Assurance/Quality Control (QA/QC) as applicable to measures installed.
6. Incentive paid to customer, or if designated by customer, to participating contractor.

Combustion Appliance Safety/Zone Testing (CAS/CAZ):

The Enhanced Basic/Modified Flex Path will require the same CAS/CAZ as is currently required for the 2010 - 2012 Basic and Advanced Path safety protocols, and as directed by the March 18, 2013 Guidance Letter, consistent with the Building Performance Institute (BPI) standards. The

program requires that all contractors perform Combustion Appliance Safety (CAS) testing both prior to work commencing and at work completion. This is done to identify any combustion safety issues prior to the job scope and bid being finalized.

CAS Testing Providers

The current CAS protocols, as implemented by the IOUs in the 2010-2012 programs, require the tests to be performed by a BPI Building Analyst (BPI BA). Other certifications, including the North American Technician Excellence (NATE) certification and the Home Energy Rating System (HERS) as implemented by Residential Energy Services Network (RESNET) have been proposed as supplemental, commensurate providers for CAS training and certification.

The IOUs and RENs are committed to creating a process to open the market to additional qualified providers. Evaluating more CAS protocols that may increase the number and types of providers is consistent with a desire to transform the market for deep energy reductions, and may reduce any appearance of unfairly privileging one provider over others. Doing so may also positively influence the number of jobs and providers able to perform the work in California.

To this end, the IOUs and RENs will work together in a stakeholder process to establish provider-neutral criteria for allowable CAS protocol providers. The IOUs and RENs commit to a speedy, effective process for evaluating other providers' CAS protocols, training, and certification programs, to determine if they meet those standards. Until that process is completed, the EUC Enhanced Basic/Modified Flex Path will continue to utilize the existing policy of using BPI BA and BPI protocols for both test-in and test-out CAS/CAZ testing.

Diagnostic Testing

When appropriate, diagnostic testing will be required to ensure the installation of measures meet the program specifications. For instance, a duct blaster test will be required when duct sealing and a blower door test will be required for air sealing.

7.) Program Eligibility Requirements

Customer Requirements:

- Owns or rents a single –family detached home
- Receives gas or electric service from an IOU
- Home meets pre-upgrade standards, which vary by measure
- Uses a participating contractor(s) to perform the upgrade
- Ensures applicable permits are obtained and abides by all local, state and federal requirements (HVAC permit numbers will be required)

Participating Contractor/ Participating Raters:

Participating contractors or participating raters shall be the primary point of contact for customers and are responsible for submission of all required program documentation. Participating raters can assess a home, generate a scope of work, and in some instances, perform

combustion appliance safety testing. Participating contractors install all measures in accordance with EUC QA/QC and Measures Installation Standards as stipulated in applicable program standards, and in accordance with applicable contractor participation agreements.

Participating Contractor Requirements

Only EUC participating contractors may install the measures in the Enhanced Basic/Modified Flex Path. Participating contractors must be certified and licensed according to all applicable federal, state and local laws. Participating contractors shall meet, and provide sufficient evidence and supporting documentation for the following minimum requirements:

- Contractor State Licensing Board (CSLB) license in the appropriate specialty;
- Bonding and in good standing;
- Insurance to EUC Program minimum standards;
- Execution of a contractor participation agreement;
- Completion of all utility training course requirements as applicable, including Participation Workshop, and if not BPI-certified, must attend equivalent training per program requirements;
- Ensure a BPI-certified Building Analyst (BA) conducts Combustion Safety and Carbon Monoxide Protection and all other minimum Health and Safety Requirements specified in the BPI Technical Standards for Building Analyst Professional until other CAS test certifications are approved. This work may be subcontracted to a third party;
- Ensure HVAC and all other permits will be pulled on all work that is appropriate per local, state, and federal jurisdiction requirements; and
- Additional IOU requirements, as appropriate.

8.) Energy Savings:

Energy savings reported for EUC will be based on the workpaper(s) approved by Energy Division. To date, the IOUs and RENs have submitted two workpapers to CPUC Energy Division for review and approval. The IOUs and RENs presume that the savings assumptions approved in the workpaper(s) will apply to all parties. The IOUs and RENs will align on post eligible conditions for eligible measures once the workpaper process has concluded. The IOUs and RENs expect that approval of any workpaper will be expedited due to the close collaboration between the parties and ED.

The IOUs engineers submitted a workpaper based on eQuest after IOU collaboration with Energy Division engineering. The workpaper analysis eliminates custom modeling for each project, but allows, via a combination of deemed values, a custom modeled SOW for each project. This lowers the contractor's cost, and streamlines Quality Control. The goal is for participating contractors be able to spend more time selling and installing jobs, and less time creating custom simulations. In addition, SCE, SoCalGas and SDG&E are developing web-based tools for contractors to use based on the savings levels found in their workpaper. PG&E is considering developing a similar web based tool based on the same underlying dataset as the other IOUs.

The IOUs will continue to develop their workpaper analysis, adding additional measures and refining the baseline assumptions, consistent with the approach they have taken at the direction of the CPUC and its consultants. This Phase Two is expected to produce results by late Q2 2013

on the baseline recalibration, with additional measures following periodically as needed and prioritized by the Statewide EUC team.

The RENs did not have the benefit of working with the Energy Division technical staff on developing workpapers, were not engaged as part of the eQuest development process, and as noted above, seek further direction from the Energy Division and Commission based upon the data in the 1 March, 2013 Disposition Letter.

Based upon available knowledge, the RENs took a hybrid approach using EnergyPro, DEER and RASS data; a similar approach to what was used to determine energy savings for Basic Path. The RENs offer a simple prescriptive approach designed to engage more homeowners, but will work with Energy Division to refine reported savings based on climate zone and key characteristics of each home.

The March 1, 2013 Disposition Letter from ED on the use of EnergyPro to model savings does not materially affect IOUs workpaper for Enhanced Basic/Modified Flex Path since the work paper is based on eQuest. However, the Disposition Letter would affect the REN workpaper as it is based on EnergyPro models. The Disposition Letter reduces electric savings as follows:

Table A: Pre-Retrofit Adjustment Factors, Original + Modified

	Electric Energy and Demand		Natural Gas Energy	
	Original	**Modified**	Original	**Modified**
Heated and Cooled Homes	0.25	**0.4**	0.63	**0.8**
Heated Only Homes	1.0	**1.0**	0.63	**0.8**

Such reductions bring the savings assumptions between Enhanced Basic/Modified Flex Path and Advanced as proposed by the IOUs into closer alignment, but retain the modeled percent improvement between old and new. Thus the Disposition Letter does not address the incentive gap between Enhanced Basic/Modified Flex Path and Advanced. This means that contractors will be financially rewarded for pursuing Advanced Jobs, given the greater potential for cash incentives. The same scope of work in Enhanced Basic/Modified Flex Path would earn a customer roughly 3 times the cash incentive in Advanced.

This gap will need to be addressed to ensure Enhanced Basic/Modified Flex Path is a market success. If the IOU workpaper brings the savings assumptions between Enhanced Basic/Modified Flex Path and Advanced as proposed by the IOUs into closer alignment, but retain the modeled percent improvement between old and new. Thus the Disposition Letter does not address the incentive gap between Enhanced Basic/Modified Flex Path and Advanced. This means that contractors will be financially rewarded for pursuing Advanced Jobs, given the greater potential for cash incentives. The same scope of work in Enhanced Basic/Modified Flex Path would earn a customer roughly 3 times the cash incentive in Advanced.

If the IOU work paper is adopted, the incentive gap between Advanced and Enhanced Basic/Modified Flex Path jobs threaten the Enhanced Basic/Modified Flex Path with irrelevance.

Similarly, if the REN workpaper is adopted, and the savings are reduced by 20% to 60%, the Enhanced Basic/Modified Flex Path would also be non-viable. That is, retaining the same incentive level with a 50% reduction in savings threatens program cost-effectiveness and program viability from an administrative standpoint; reducing the incentive proportionally threatens market acceptance and program viability from a customer standpoint.

9.) Incentives:

The Enhanced Basic/Modified Flex Path incentives will be tiered, driven by the customer's desired SOW. Incentives will begin at $1,000 for 100 points which will be equivalent to 10% site energy savings. The incentive tier increase at each 50 point incremental improvement, to encourage deeper energy retrofits. Each 50 point increment will equate to an additional $500 incentive. The incentives align with Advanced Path incentives for similar saving percentages, but the Enhanced Basic/Modified Flex Path will max out at 250 points (a $2,500 incentive).

To encourage customers to more fully adhere to the loading order, customers are eligible for additional bonus points for installing additional base measures. When installing 1 or 2 additional base measures beyond the required one measure, customers will receive bonus points for each additional base measure installed.

Participation Level: Points	Incentive Amount
100 Points	**$1,000**
150 Points	**$1,500**
200 Points	**$2,000**
250 Points	**$2,500**

10.) QA/QC Requirements:

QA/QC will be performed by the IOUs or the RENs per program QA/QC process and protocols. To ensure quality, participating contractors will be trained on installation specification requirements and will validate measures installed with diagnostic testing, where appropriate. The Enhanced Basic/Modified Flex Path will not require a pre-project submittal. All test-in data can be submitted with post project package submittal as long as pre-retrofit conditions are clearly documented for verification purposes. There will be 100% application desktop review for completed upgrades and there will be tiered or sample-based in-field quality assurance.

Attachment A1: SDG&E Energy Upgrade California Enhanced Basic/Modified Flex Path Program Implementation Plan

1) SDG&E EUC PIP Redline
2) SDG&E EUC PIP Clean

Attachment A2: SCE Energy Upgrade California Enhanced Basic/Modified Flex Path Program Implementation Plan

1) SCE EUC WHRP Public Redline PIP Redline
2) SCE EUC WHRP Public Clean PIP Clean
3) SCE EUC Table 11 and Table 14 Confidential

Attachment A3: SoCal Gas Only Energy Upgrade California Enhanced Basic Flex Path Program Implementation Plan

1) SoCalGas EUC PIP Redline
2) SoCalGas EUC PIP Clean
3) SoCalGas EUC Tables

Attachment A4: PG&E Energy Upgrade California Enhanced Basic/Modified Flex Path Program Implementation Plan

1) PG&E EUC PIP Redline
2) PG&E EUC PIP Clean
3) PG&E EUC PIP Tables

Attachment A5: SoCalREN Energy Upgrade California Enhanced Basic /Modified Flex Path Program Implementation Plan

1) Flex Path PIP for April 1 AL_Final Redline
2) Flex Path PIP for April 1 AL_Final Clean

Attachment A6: BayRen Energy Upgrade California Enhanced Basic /Modified Flex Path Program Implementation Plan

1) BayREN PIP Revised_4-2-13 Redline
2) BayREN PIP Revised_4-2-13 Clean

Attachment A1.1: SDG&E EUC Enhanced Basic/Modified Flex Path PIP
(Redline)

1) **Sub-Program Name:** Energy Upgrade California (EUC)

2) **Sub-Program ID number:** SDG&E 3208 - 3209

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

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

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

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

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

8) **Projected Sub-Program Budget**

   Table 1. Projected Sub-Program Budget, by Calendar Year
   [Refer to Attachment 2 to this PIP]

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

   a) **Sub-Program Description and Theory:**
   According to a report released by the Office of the Vice President, "homes in the United States generate more than 20 percent of our nation's carbon dioxide emissions, making them a significant contributor to global climate change."[1] The challenge of addressing residential emissions has been a significant topic for California stakeholders and was addressed when D.09-09-047 acknowledged, "Improving the energy efficiency of all

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

households is necessary to achieve the target outcome for the 2020 existing residential *Strategic Plan* goals."[2]

The Office of the Vice President report also identifies three market barriers to comprehensive residential retrofits:

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

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

1) Offer a statewide entry level simple, and flexible based ~~approached~~ approach using a deemed/ performance hybrid (*Enhanced Basic/Modified Flex Path*[3]) and a comprehensive and flexible performance based approach (*Advanced Path*) whole house incentives to help build the home performance contracting industry and offer customers and building owners and managers an easy entry point on the path to home performance (barrier 1);
2) Educate customers on the house-as-a-system concept and to encourage behavior changes that increase residential energy efficiency (barrier 1);
3) Educate contractors on the benefits of learning how to properly sell and install whole house measures as part of coordinated WE&T efforts (barrier 1& 3);
4) Offer incentives that influence customers to undertake comprehensive residential retrofits (barrier 1); and
5) Coordinate with relevant utility financing programs and external funding and financing mechanisms at the county, state and federal levels (barrier 2).

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

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

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

[3] Final name of path to be determined. SDG&E will file a PIP amendment once statewide consensus has been reached regarding a name for this path.

5) Time burden for tenants and owners;
6) Impact on rental income; and
7) Business policy/ profit incentive from replacing equipment on burn-out and unwillingness to negate remaining life in building components requiring capital outlay.

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

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

Other considerations to meet all income strata and address split incentives for property owners and tenants may include a direct install strategy, as well as prescriptive rebates through the existing MFEER Program. While programs will be coordinated and integrated, their respective policies, and procedures will be followed in the delivery of

services. Efforts at operational efficiencies would be made to streamline eligibility, income verification, and installation of measures.
Despite the noted barriers, the multifamily sector presents a significant opportunity for whole building energy efficiency programs with a deep energy reduction approach. A whole building offering has the potential to achieve deep energy savings because:

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

The Energy Upgrade California (EUC) is a Market Transformation orientated program and is a continuing program which began in the 2010-2012 residential energy efficiency portfolio of the four California Investor Owned Utilities (IOUs) – Pacific Gas & Electric Company (PG&E), Southern California Edison (SCE), San Diego Gas & Electric Company (SDG&E) and Southern California Gas Company (SoCalGas).

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

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

EUC is designed to build customer and contractor[4] awareness of the house-as-a-system approach to residential retrofits and the many corresponding benefits of improving the

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

energy savings potential and comfort of their dwelling. It promotes the idea that energy efficiency measures are most effective when taking into account interactive effects of measures.

EUC moves customers from a prescriptive, widget or single-measure based approach to energy efficiency to one of deeper, comprehensive energy retrofits that respect the energy efficiency loading order [5], and which takes the approach that a house is a series of interdependent systems that must be considered holistically.

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

Customer outreach and education efforts for EUC will be coordinated with other IOU Demand Side Management (DSM) program offerings (e.g.,), Energy Advisor, Plug Load and Appliance (PLA), Comprehensive HVAC, SmartAC and other Residential Demand Response programs, Energy Savings Assistance Program, California Solar Initiative (CSI)) to leverage multiple customer touch points.

For single family residences, the whole house approach of EUC promotes two paths, a ~~prescriptive~~ streamlined hybrid deemed/ performance based option (~~*Basic Path*~~*Enhanced Basic/ Modified Flex Path)* and a comprehensive, measured performance based approach (*Advanced Path)*. ~~These complimentary paths will be presented to customers[6] as one comprehensive offering.~~

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

---

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

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

In sum, these paths will provide an ideal platform to utilize the concept of continuous energy improvement for residential customers; tracking and encouraging a logical sequence of energy improvements made by customers over time, creating an ongoing, actionable dialogue with each customer regarding their energy use.

EUC *Advanced Path*

EUC *Advanced Path* offers customers a customized path to comprehensive whole house energy efficiency that drives the customer to deep retrofits. *Advanced Path* solutions will require Participating Contractors to obtain higher levels of expertise than those who perform the ~~*Basic Path*~~*Enhanced Basic/ Modified Flex Path* installations. Customers can also participate in *Advanced Path* by using a Participating Rater. The *Advanced Path* requires diagnostic "test-in" and "test-out" whole house assessments. The "test-in" assessments will generate a comprehensive work scope and the "test-out" assessments will be used to document that specified improvements have been properly sized and installed. ~~The *Advanced Path* will build off of the pre-set measures of the *Basic Path* and:~~

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

EUC ~~*Basic Path*~~*Enhanced Basic/ Modified Flex Path*

A basic path or gateway program for energy efficiency upgrades is fundamental to market penetration and transformation, by providing a program that introduces home energy efficiency awareness, education, is scaled to reach moderate-income homeowners, and allows for whole home upgrades to be installed in phases over time. A program timed and sized to fit middle-income consumers also creates a leads-generated marketplace to progressively drive deeper energy savings in households where immediate available discretionary income is limited and, in a majority of cases, equipment failure or some other trigger event is the sole motivation (and energy savings is a consequential, not intentional, objective).

The *Enhanced Basic/Modified Flex Path* will enable EUC to scale more rapidly. The goal of EUC is to produce consistent incentives tied to post-project results. This path also may facilitate competitive bidding among contractors by providing a common measure cost estimate template for customers. The higher volume of projects and increased contractor competition is also likely to lower incremental project costs.

The *Enhanced Basic/Modified Flex Path* is expected to capture a substantial percentage of current Advanced Path projects and greatly accelerate the total number of EUC

upgrades performed as many more HVAC contractors bring routine HVAC jobs into the program.

Participating contractors will utilize a web-based tool via their laptop, tablet, or phone application to generate an estimated scope of work with the customer. This application will allow participating contractors to change potential statements of work (SOWs) directly with the customer and provide real time savings and incentives estimates. The participating contractor will not need to develop a modeling simulation and have to return to the customer's home with the potential incentive amount. This, in turn, enhances the ease of program adoption for both the customer and contractor.

The *Enhanced Basic/Modified Flex* has a mix of energy efficiency measures to allow a contractor to tailor each project to the needs of the customer, while supporting the energy efficiency loading order. It will also include combustion safety testing at test-in and test-out to ensure that each home with a tightened building shell remains properly vented.

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

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

The ~~*Basic Path*~~*Enhanced Basic/ Modified Flex Path* will also educate contractors and customers on the benefits of implementing comprehensive whole house retrofits on existing buildings that will provide systematic reductions in energy use. The ~~*Basic Path*~~*Enhanced Basic/ Modified Flex Path* will help to:

- Utilize no-cost (to customer) surveys (Energy Advisor) as an entry point to identify opportunities for efficiency improvements[7];
- Offer targeted marketing campaigns to engage participants that receive stand-alone EE rebates for completing qualified home improvement measures;
- Promote completion of retrofits based on preferred building science loading order;

[7] The Energy Advisor provides residential customers with entry-level energy surveys online, over the phone, or by mail. The surveys are not intended to serve as an audit but are meant to provide consistent messaging and an easy on-ramp to EUC. The Energy Advisor surveys are also an ideal link between the California Solar Initiative (CSI) and EUC WHRP. This synergy will be discussed later in the document.

- Offer incentives to encourage progression along a preferred approach towards comprehensive retrofits;

- Continuously engage customers over time as they progress toward a home performance approach;

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

- Offer a holistic path towards home performance by aggregating key elements of a dwelling into its core elements: building envelope and fixed lighting; heating, cooling and hot water, and appliances;

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

The EUC ~~*Basic Path*~~*Enhanced Basic/ Modified Flex Path* offers a flexible but comprehensive approach to delivering ~~prescriptive pre-set~~ retrofit solutions to Californians by recognizing the essential interplay and relationships between groups necessary in the delivery of a successful program.

EUC *Multifamily Path*

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

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

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

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

assist multifamily owners and property managers to evaluate specific property and advise the program that best suits the needs of particular buildings.

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

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

The IOU's will organize and convene a workshop on lessons learned and best practices in their multifamily pilot programs in late 2013 or early 2014 and notice the workshop to the service list and RENs for this proceeding.

~~**SoCalGas Gas Only Whole House Retrofit Program 2013-2014**~~
~~SoCalGas will continue implementing a "gas only" Whole House Retrofit program that will service those customers that are in a municipal electric service provider territory. This enables SoCalGas to reach out to approximately 1.7 million customers who are not eligible for the joint SCE/SoCalGas Energy Upgrade California Whole House program. Due to our single fuel utility effort, we can only substantiate the therm savings for our program hence the difference in the incentive amounts from the other IOU incentives. SoCalGas will look for additional partnership opportunities with municipalities' EE programs to maximum savings to shared customers.~~

~~SoCalGas will also continue its efforts to implement a joint program with SDG&E that would result in a shared application and single streamlined process for our contractors and the customers. Additionally, besides QA/QC shared costs, SoCalGas will look for other synergies between our programs in our joint PG&E/SoCalGas service territories (i.e.; one shared application, processing).~~

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

Table 2: Projected Sub-Program Net Energy and Demand Impacts, by Calendar Year ***[Refer to Attachment 2 to this PIP]***

c) **Program Non-Energy Objectives**:
Table 16: Non-Energy Objective
[Refer to Attachment 2 to this PIP]

d) **Cost Effectiveness/Market Need**:

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

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

The EUC seeks to address these barriers through:

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

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

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

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

The IOUs during the 2013-2014 cycle recommend the Commission remove the EUC from the EE portfolio cost effective analysis and to work with commission staff and

relevant stakeholders to develop meaningful cost effective metrics during the 2013-2014 cycle that aligns MT goals of EUC towards the *Strategic Plan*.

VALUE PROPOSITION

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

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

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

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

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

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

Energy savings reported for EUC *Revised Basic/ Modified Flex Path* will be based on the workpaper(s) approved by Energy Division. To date, the IOUs and RENs have submitted two workpapers to CPUC Energy Division for review and approval. The IOUs and RENs presume that the savings assumptions approved in the workpaper(s) will apply to all parties. The IOUs and RENs will align on post eligible conditions for eligible measures once the workpaper process has concluded. The IOUs and RENs expect that approval of any workpaper will be expedited due to the close collaboration between the parties and ED.

The IOUs engineers submitted a workpaper based on eQuest after IOU collaboration with Energy Division engineering. The workpaper analysis eliminates custom modeling for each project, but allows, via a combination of deemed values, a custom modeled SOW for each project. This lowers the

contractor's cost, and streamlines Quality Control. The goal is for participating contractors be able to spend more time selling and installing jobs, and less time creating custom simulations. SDG&E has developed a web-based tool for contractors to use based on the savings levels found in the workpaper.

The IOUs will continue to develop their workpaper analysis, adding additional measures and refining the baseline assumptions, consistent with the approach they have taken at the direction of the CPUC and its consultants. This Phase Two is expected to produce results by late Q2 2013 on the baseline recalibration, with additional measures following periodically as needed and prioritized by the Statewide EUC team.

The 1 March 2013 Disposition Letter from ED on the use of EnergyPro to model savings does not materially affect the IOUs workpaper for *Enhanced Basic/Modified Flex Path* since the work paper is based on eQuest. However, the Disposition Letter would affect the REN workpaper as it is based on EnergyPro models. The Disposition Letter reduces electric savings as follows:

Table A: Pre-Retrofit Adjustment Factors, Original + Modified

	Electric Energy and Demand		Natural Gas Energy	
	Original	**Modified**	Original	**Modified**
Heated and Cooled Homes	0.25	**0.4**	0.63	**0.8**
Heated Only Homes	1.0	**1.0**	0.63	**0.8**

This brings the savings assumptions between *Enhanced Basic/Modified Flex Path* and *Advanced Path* as proposed by the IOUs into closer alignment, but retains the modeled percent improvement between old and new. Thus the Disposition Letter does not address the incentive gap between *Enhanced Basic/Modified Flex Path* and *Advanced Path*. This means that contractors will be financially rewarded for pursuing *Advanced Path* jobs, given the greater potential for cash incentives. The same scope of work in *Enhanced Basic/Modified Flex Path* would earn a customer roughly 3 times the incentive in *Advanced Path*.

This gap will need to be addressed to ensure *Enhanced Basic/Modified Flex Path* is a market success. If the IOU workpaper brings the savings assumptions between *Enhanced Basic/Modified Flex Path* and *Advanced Path* as proposed by the IOUs into closer alignment, but retains the modeled percent improvement between old and new. This means that contractors will be financially rewarded for pursuing *Advanced Path* projects, given the greater potential for cash incentives.

If the IOU work paper is adopted, the incentive gap between *Advanced Path* and *Enhanced Basic/Modified Flex Path* jobs threatens the *Enhanced Basic/Modified*

Flex Path with irrelevance. Similarly, if the REN workpaper is adopted, and the savings are reduced by 20% to 60%, the *Enhanced Basic/Modified Flex Path* would also be non-viable. That is, retaining the same incentive level with a 50% reduction in savings threatens program cost-effectiveness and program viability from an administrative standpoint; reducing the incentive proportionally threatens market acceptance and program viability from a customer standpoint.

The IOUs and RENs are developing a joint proposal to share with Energy Division on this issue and will modify PIPs accordingly, once the work paper(s) have been approved

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

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

~~b.~~a. Indicate work paper status for program measures:

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

10) Program Implementation Details

In addition to traditional marketing efforts, the IOUs will work through service providers and vendors to engage qualified tradespersons in the crafts that they have chosen and will continue to invite input from stakeholders to further develop additional ways to meet program objectives.

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

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

2) Driving customer demand for energy efficient homes via collaborative consumer education and outreach, using easy to understand messaging and including efforts such as the promotion of home energy improvements and "green" labeling

around the time of purchase and sale of a home. This is a critical timing in the market that can be leveraged. The Joint Center for Housing Studies estimates that home buyers spend more than $6,000 per year on home improvements in the first two years after buying homes. In subsequent years, the annual average outlay drops to $2,500.[8]

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

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

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

The program will employ a number of integrated delivery strategies:

1) Educate contractors and residential customers on the concept of home performance;
2) Coordinate with existing residential program offerings (e.g. ESAP, HVAC, HEER, Energy Advisor and MFEER) within the utility portfolios;
3) Provide robust quality assurance and quality control protocols that encourage quality installation and drive contractors to obtain additional training and qualifications;
4) Provide robust EM&V feedback loops to inform program enhancements;
5) Integrate with marketing efforts of the broadened statewide "Energy Upgrade California" brand, when launched, and deliver complementary marketing messaging to drive customer demand and contractor participation;
6) Coordinate contractor training, marketing and outreach efforts with local governments, as appropriate; and

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

7) Develop an incentive structure that drives customers to undertake comprehensive residential retrofits.

Statewide Informal EUC Working Group

Given the ambitious market transformation goals of EUC, it's relatively new entrance into the IOU EE portfolio, and its challenges during the first two years of rollout, the IOUs during the 2013-2014 transition cycle are committed to providing the leadership and working with CPUC, CEC, local government staff, as well as relevant stakeholders to convene a statewide EUC Working Group to address relevant and significant issues for adoption in the 2015 IOU program cycle. The IOU's seek a cooperative design and implementation approach that involves all parties with an interest in EUC.

The Working Group will be co-chaired by one IOU, determined by IOU consensus, and one non-utility co-chair selected by the Working Group. The Working Group co-chairs will solicit views and direction from Commission staff on the Working Group operations. The Working group may choose to form subgroups and/or hold stakeholder outreach meetings as necessary.

The Working Group will be composed of all former EUC Steering Committee members, the REN's, EUC Contractors, and other interested stakeholders and implementers, including the EUC implementers, Commission, and CEC staff, and CCSE as the statewide marketing and outreach coordinator.

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

In this regard, the IOU's will hire a market transformation consultant to assist with improvements to the long-term EUC design and to support a constructive IOU engagement in the AB758 process. The Working Group IOU co-chair will be the lead IOU for this contract. Members of the EUC Working Group will be offered the opportunity to substantively shape the work scope and priorities of the market transformation consultant. Timelines and general framework for the market transformation consultant will begin at the first meeting of the Working Group in January 2013.

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

1. Role of local governments
2. Software standards
3. Data collection standards
4. Home Assessment standards
5. Home Assessment reporting standards
6. HERS II Ratings and alignment with EUC Programs

7. Contractor certification standards
8. QA/QC standards
9. Streamlined project reporting and programmatic best practices
10. Integration of HVAC programs
11. Engagement of California Real Estate Market
~~12. Future of Basic Path~~
~~13~~12. Identification of Market Transformation Milestones and Metrics
~~14~~13. Cost effectiveness metrics aligned with Market Transformation goals.
~~15~~14. Long term incentive structure
~~16~~15. Applicable AB758 issues

In addition, the Working Group will provide substantive contributions to program design and implementation plans on the following items to be included in an updated PIP to be filed by a Tier 2 Advice Letter not later than April 1, 2013:

1. Final statewide aligned and streamlined protocols regarding heating, ventilation and air-conditioning (HVAC) emergency replacements and high performing contractors.
2. Final program design and implementation of Enhanced Basic/ Flex-Path

a) **Timelines:**
Table 5: Sub-Program Milestones
[Refer to Attachment 2 to this PIP]

b) **Geographic Scope**:
Table 6: Geographic Regions Where the Program Will Operate
[Refer to Attachment 2 to this PIP]

c) **Program Administration**
Table 7: Program Administration of Program Components
[Refer to Attachment 2 to this PIP]

d) **Program Eligibility Requirements:**

i. Customers:

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

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

Per program requirements, process, and protocol, for all EUC projects, customers must install a minimum of three energy efficiency measures which support the energy efficiency loading order and must perform appropriate combustion safety testing.

Enhanced Basic/ Revised Flex Path Participation

SDG&E has developed a software tool and web application that a participating contractor can use to calculate project points based upon percentage of savings determined using basic characteristics of each home, vintage, and climate zone. This software tool is developed with strong engineering-supported savings in consideration of installed measure, including interactive effects and standard DEER and RASS assumptions.

Customers will be required to install at least 1 of 3 base measures, supplemented to attain the 3-measure and point thresholds built into the programs, with additional motivation for installing additional base measures. This simple, menu-driven, flexible design is expected to greatly increase the volume of projects over the original Basic Path. Contractors will be trained and encouraged to develop work scopes that include more building envelope measures and go beyond core systems. The 2013-2014 Energy Efficiency Transition Period gives the IOUs and RENs the opportunity to test a program design targeted at achieving a higher volume of retrofits, meeting the Commission's program criteria, and demonstrably supporting the loading order.

Participation Process

1. Select a participating contractor or participating rater.
2. Participating contractor or participating rater performs a combustion appliance safety CAS testing (pre-and post- installation).
3. Determine a scope of work:
    a. Select a minimum of one of three base measures.
    b. Select additional base or other flex measures for a minimum of three total measures.
    c. If selecting to install any HVAC measures, in addition to duct replacement/duct sealing, customer must select one qualifying envelope measure.
    d. Select any stand-alone measure(s) if desired (stand-alone measures do not count towards three measure minimum or marginal savings).
4. Participating contractor or participating rater performs a combustion appliance safety CAS testing (pre-and post- installation) and install measures.
5. Participating contractor or participating rater to submit project information for Quality Assurance/Quality Control (QA/QC) as applicable to measures installed.

6. Incentive paid to customer, or if designated by customer, to participating contractor.

Table 8: Customer Eligibility Requirements (Joint Utility Table)
[Refer to Attachment 2 to this PIP]

ii. Contractors/Participants:

Participating Contractor Requirements for ~~Basic Path~~*Enhanced Basic/ Modified Flex Path* and *Advanced Path*

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

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

Participating Rater Requirements for All EUC Paths
Participating Energy Upgrade Raters must meet all requirements as a Participating Contractor and must be both HERS II certified and hold an active BPI Building Analyst certification or BPI MF Building Analyst certification as may be applicable. EUC ~~*Basic Path*~~*Enhanced Basic/ Modified Flex Path* and

Advanced Path projects submitted by a Participating Rater must utilize a EUC Participating Contractor for installation of the measures specified by the Participating Rater.

Table 9: Contractor/Participant Eligibility Requirements (Joint Utility Table**)**
[Refer to Attachment 2 to this PIP]

e) **Program Partners:**

a. **Manufacturer/Retailer/Distributor partners:**
Table 10: Manufacturer/Retailer/Distributor Partners
[Refer to Attachment 2 to this PIP]

b. **Other key program partners**:
Table 15: Energy Division, California Energy Commission, local governments, BPI and other standards bodies, as well as other partners
[Refer to Attachment 2 to this PIP]

f) **Measures and incentive levels**:

***Advanced Path* Incentives**
Incentives for the *Advanced Path* will be paid based upon modeled site savings energy utilizing any CEC approved simulation modeling software approved by IOUs. Incentives for *Advanced Path* are designed to encourage customers to reach for deep energy savings. *Advanced Path* incentives are for both gas and electric measures provided by the customers' participating utility program.[9]
Currently, Energy Pro simulation modeling software is the only approved software for use with EUC. During the 2013-2014 transition cycle, the IOUs will work collaboratively with the CEC and other stakeholders to identify potential approaches to adequately broaden the allowable software under the EUC while containing costs required for needed Commission Staff reviews.

Savings/ Participation Level: % Reduction	**Incentive Amount**
~~*Basic Package: 10%*~~	~~*$1,000*~~
10%	**$1,000**

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

15%	**$1,500**
20%	**$2,000**
25%	**$2,500**
30%	**$3,000**
35%	**$3,500**
40%	**$4,000**
45%+	**$4,500**

~~Basic Path~~Enhanced Basic/ Modified Flex Path **Incentives**

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

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

SDG&E has developed a software tool and web application that a participating contractor can use to calculate project points based upon percentage of savings determined using basic characteristics of each home, vintage, and climate zone. This software tool is developed with strong engineering-supported savings in consideration of installed measure, including interactive effects and standard DEER and RASS assumptions.

The *Enhanced Basic/Modified Flex Path* incentives will be tiered, driven by the customer's desired SOW. Incentives will begin at $1,000 for 100 points which will be equivalent to 10% site energy savings. The incentive tier increase at each 50 point incremental improvement, to encourage deeper energy retrofits. Each 50 point increment will equate to an additional $500 incentive. The incentives align with *Advanced Path* incentives for similar saving percentages, but the *Enhanced Basic/Modified Flex Path* will max out at 250 points (a $2,500 incentive).

To encourage customers to more fully adhere to the loading order, customers are eligible for additional bonus points for installing additional base measures. When installing 1 or 2 additional base measures beyond the required one measure, customers will receive cumulative bonus points of 15 and 20 for each additional base measure installed.

100 Points	$1,000
150 Points	$1,500
200 Points	$2,000
250 Points	$2,500*

In no case, regardless of any bonus points customers may receive, may customers participating in *Enhanced Basic/ Modified Flex Path* be eligible for incentives over $2,500.

***Multifamily Path* Incentives**

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

Ten Year Stepwise Incentive Structure

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

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

Table 11: Summary Table of Measures, Incentive Levels and Verification Rates
[Refer to Attachment 2 to this PIP]

Permitting Requirements

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

Qualified Measures

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

1. Greater cross marketing of HEER and EUC customers.

2. Work with EnergySoft to find solutions to pool pump modeling.
3. Incorporate lighting and appliance options as a more predominate feature in standard assessment reports to customers.

~~Required *Basic Path~~* ***Enhanced Basic/ Modified Flex Path*** **Measures Installed Per Measures Installation Standards:**

Base Measures:

Measure	Post-Upgrade Condition
Attic Insulation & Attic Air Sealing	Insulation to R-30 or greater
Duct Sealing OR Duct Replacement	Seal to ≤ 10% for existing systems and ≤ 6% for duct replacement
Whole Building Air Sealing	≥ 30% or ≥ 15% leakage reduction from vintage table defaults

Flex Measures

Measure	Post-Upgrade Condition
Flex Measures – Envelope	
Floor Insulation	≥ R-19
Wall Insulation	≥ R-13
High Performance Windows	TBD, Phase 2

Measure	Post-Upgrade Condition
Flex Measures – DHW	
Gas Water Heater	Gas Storage Heater EF ≥ 0.62; 0.67 for PG&E and SDG&E
	Gas On-Demand Tankless Heater; EF ≥ 0.82
Electric Water Heater	Electric Storage Water Heater; EF ≥ 0.93
	Electric Heat Pump Water Heater; ≥ 2.0 EF PG&E and SCE, not SDG&E

Measure	Post-Upgrade Condition
Flex Measures – HVAC*	
Gas Furnace	Gas Furnace; ≥ 0.92 AFUE; 0.95 for PG&E in future
High Efficiency AC	Central AC; ≥ 14 SEER; ≥ 12 EER
Right-Size HVAC Kicker	N/A until QI work paper approval
	N/A until QI work paper approval
Duct Insulation	Insulation ≥ R-8

* If selecting to install any HVAC measures, customer must select duct replacement/duct sealing plus one qualifying envelope measure

Additional Stand-Alone Measures:

Measure	Post-Upgrade Condition
Stand Alone Measures*	
Variable Speed Pool Pump	Variable-Speed Pool Pump and Motor (Plug Load and Appliances Program (PLA)
EnergyStar Lighting	N/A (Upstream Incentive Program)
Refrigerators	PLA catalog
Dishwashers	PLA catalog
Clotheswashers	PLA catalog
Whole House Fan	PLA catalog
Refrigerator/ Freezer Recycling	Appliance Recycling Program

*Note: For the IOU Additional Stand-Alone Measures, the list provided is an example set of measures that can be added-on to the whole house retrofit package.

Required or Recommended Measures

Required measures below will not get any points but savings will be claimed.

Measure	Measure Requirement	Program Requirment
Low Flow Showerheads with TCV	Low Flow Showerheads ≤ 1.5 gpm; Bathroom Faucet Aerators ≤ 1.5 gpm; Kitchen Faucet Aerators ≤ 2.2 gpm	All projects require installation of a thermostatic shut-off valve on all showers in the home except when installing a tankless water heating system
Hot Water Pipe Wrap	Minimum First 5ft of Hot Water Pipe Wrapped	Must include pipe wrap for first five feet of exposed pipes
Sealing of can lights or Replacement with Sealed ENERGY STAR Fixtures	EnergyStar CFL or LED Fixture(s); Permanently Installed	It is highly recommended that all incandescent recessed can lighting fixtures be replaced with ENERGY STAR® CFL fixtures or ENERGY STAR® LED fixtures

~~Attic Insulation~~
~~Duct Test and Seal~~
~~Domestic Hot Water Pipe Insulation~~
~~Thermostatic Shut-Off Valve~~
~~Low-Flow Shower Head~~

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

Window Upgrade
Other Measures as may be modeled and allowed by IOUs per regional market needs

Advance Path Ineligible Measures

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

Multifamily Building Eligible Measures

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

g) **Additional Services:**

Table 12: Additional Service
[Refer to Attachment 2 to this PIP]

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

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

Marketing, Education and Outreach plans

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

2) **Target Audiences**

   EUC marketing and outreach aims to include all stakeholders in the retrofit process, throughout the life of the program. This will help to ensure that all audiences receive consistent information and will enable a more informed dialogue about program specifics, in an effort to continuously engage stakeholders in the energy efficiency retrofit process. The initial target group is comprised of the following audiences listed below and are based on the results of the statewide market survey research.

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

3) **Keys to Success**

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

   - Continue to utilize a statewide brand and message; and a creative envelope for EUC marketing efforts to avoid market confusion;
   - Co-brand where feasible;

- Coordinate with local governments;
- Engage contractors, stakeholders and local governments in generating customer demand; and
- Provide collateral pieces to participating contractors to assist in lead generation and education;
- Employ expanded community based marketing approach; and
- Use a variety of innovative marketing strategies such as time of sale assessment vouchers.

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

Specific workforce development efforts supporting EUC include the following:

- CEC/EDD: California Clean Energy Workforce Training Program Community college programs;
- Third party programs; and
- IOU training offerings (IOU trainings will serve as backup if required. IOU courses do not duplicate modules available in the marketplace but will serve backup role in the event that a market need is identified and best served by the IOU Energy Training Centers).

EUC will be coordinated with the statewide IOU WE&T program, local government residential retrofit and contractor training programs that are tied directly to workforce education and training efforts on a state and federal level.

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

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

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

Contractor recruitment efforts will be conducted primarily by third party program implementers – a model that has proven successful in statewide IOU HVAC programs in the 2010-2012 program cycle. Program implementers will continue to primarily recruit contractors through:

- The network of contractors already participating in IOU HVAC, insulation and weatherization programs;
- Direct outreach through trade groups with locally active memberships;
- Workforce development departments (to target unemployed general contractors).

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

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

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

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

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

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

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

   Table 13: Post-implementation Audits
   [Refer to Attachment 2 to this PIP]

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

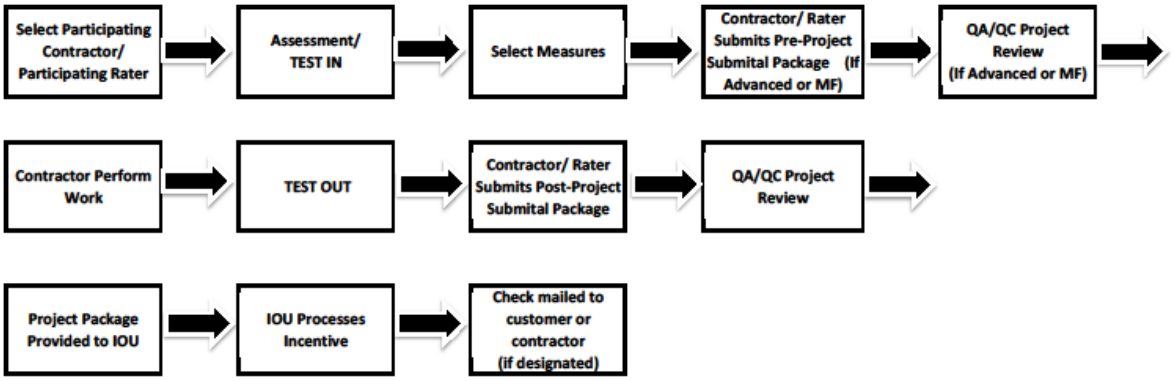
Payment of customer incentives will be tied to the contractor's delivery of full job required program documentation. Program implementers will randomly select a minimum of 5 percent of each participating contractor's reported retrofits for onsite job verification and review 100 percent of the job data inputs from contractors. Verifications will include homeowner interviews, intensive visual checklist inspections, and selective retesting of key items. A subset of these energy savings estimates may later be validated against the first year's after-retrofit utility bills plus climate data and homeowner interviews as needed to identify changes in other factors affecting energy use. ~~IOUs~~ IOUs, and where applicable, RENs, will collaborate to develop QA/QC plans and documents that reflect statewide uniformity to the greatest extent possible. QA/ QC documents and standards will be updated regularly with contractor input and will include:

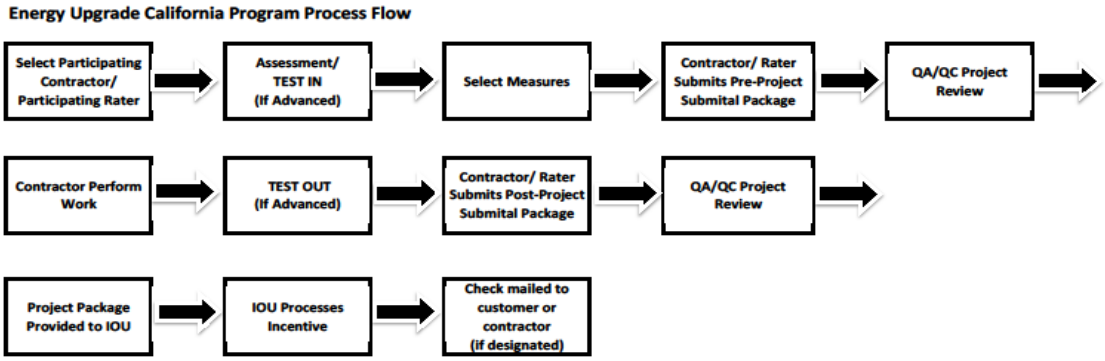
1. QA/QC Process and Protocols
2. Minimum installation standards for all allowable measures
3. Emergency and Fast Track equipment replacement protocols.
    a. Exhibit A attached includes existing and continuing IOU Emergency and Fast Track protocols.
4. Permitting requirements
    a. EUC shall support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

Table 14: Quality Assurance Provisions
[Refer to Attachment 2 to this PIP]

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

Energy Upgrade California Program Process Flow

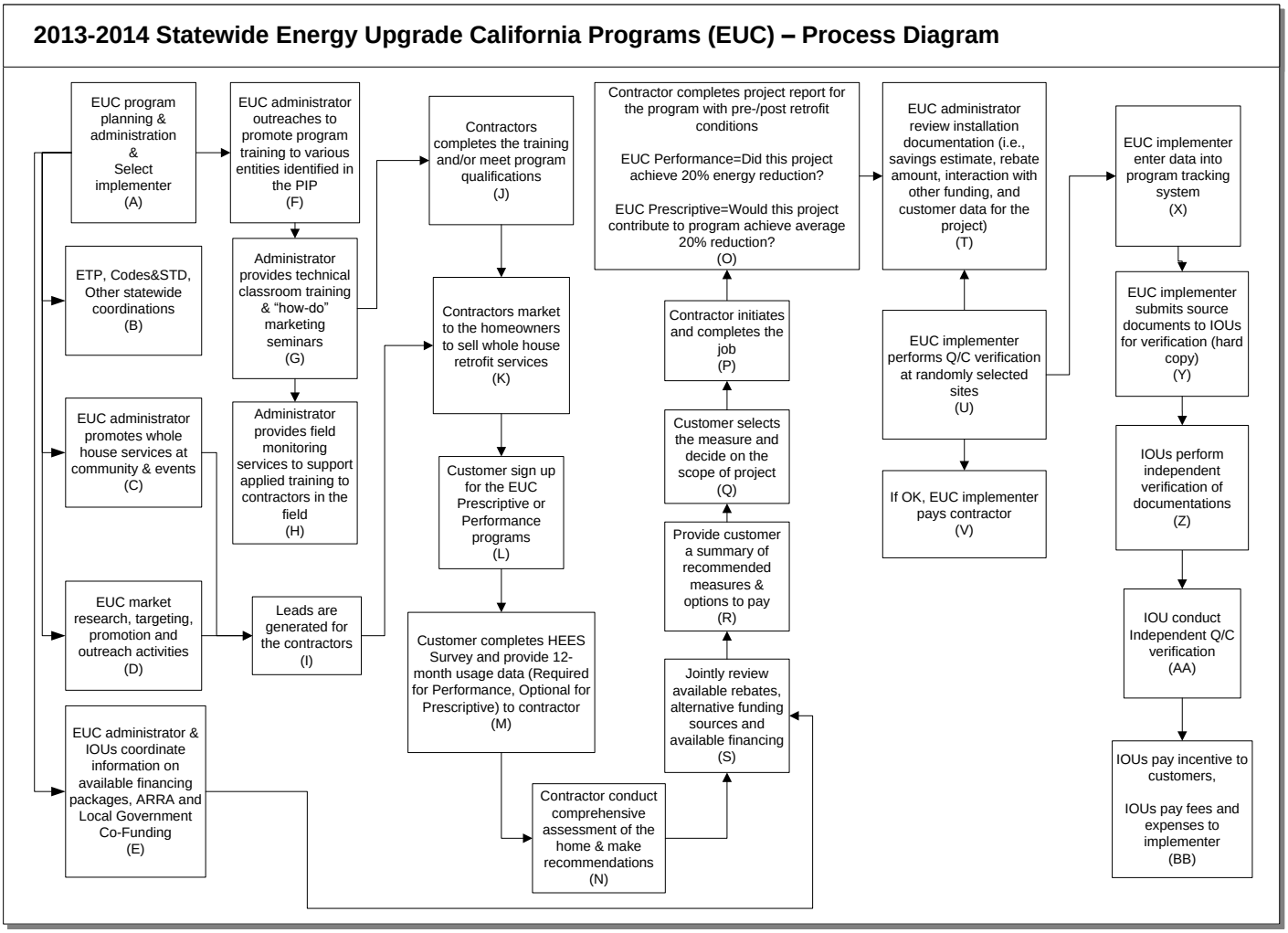




m) **Cross-cutting Sub-program and Non-IOU Partner Coordination:**

Table 15: Cross-cutting Sub-program and Non-IOU Partner Coordination
[Refer to Attachment 2 to this PIP]

n) **Logic Model:**



11) Additional Sub-Program Information

a) **Advancing Strategic Plan Goals and Objectives**:
The EUC is consistent with the requirements of the *Strategic Plan*. It addresses the Whole-House Strategy of the *Strategic Plan* by influencing contractors and customers to implement comprehensive home retrofit energy efficiency measures through either the ~~*Basic Path*~~*Enhanced Basic/ Modified Flex Path* on-ramp, *Advanced Path* or *Multifamily Path*.

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

effective, high efficiency appliances, water heaters and HVAC upgrades. The *Strategic Plan* further states that a similar approach must be developed for multifamily housing. The program will help to achieve the following goals identified in Section 2 of the *Strategic Plan*:

Table 6. Whole House Alignment with California Long Term Energy Efficiency *Strategic Plan*			
Residential and Low Income Goal 2: Existing Homes			
Goal Number	**Strategy**	**EUC Strategy**	**Integrated Programs & Activities**
2-1	Deploy full-scale Whole-House programs.	Monitor performance of selected lower energy homes. Design implement, monitor and continuously improve full-scale programs for whole-house energy efficiency and renewable energy retrofits.	Programs: EUC, Solar, Demand Response, MFEER, Plug Loads, ESAP Marketing: Customer segmentation and local coordination EM&V: Studies to provide early feedback and establish baselines
2-2	Promote effective decision-making to create widespread demand for energy efficiency measures.	Continue to offer Energy Advisor programs online, by mail, and over-the-phone to provide customers with information to promote effective decision-making, in combination with other segment specific marketing outreach and educational activities.	Programs: Energy Advisor EUC, MFEER Marketing: Customer and contractor education to promote building efficiency and appropriate EE behaviors in a segmented manner
2-3	Manage research into new/advanced cost-effective innovations to reduce energy use in existing homes.	Coordinate with Emerging Technologies and other programs to integrate market-ready technologies into the Whole House offering when appropriate. Promote commercialization of home energy management tools including AMI-based monitoring and display tools	Programs: Emerging Technologies, Demand Response, Solar, and others
2-4	Develop financial products and programs such as on-bill financing to encourage demand for energy efficiency building products, home systems, and appliances.	Ensure that customers are aware of the most effective and attractive financing packages that are available to them.	Programs: EUC Coordination: Local government partnerships and other state/federal financing entities
2-5	Increase Title 24 compliance through specific measures leading to aggressive statewide enforcement.	Partner with local governments to expedite the permitting process to decrease the barriers to entry in the home performance industry.	Coordination: Local government partnerships

b) Integration

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

The IOUs have identified IDSM as an important priority. The IOUs plan to monitor the progress of other IDSM efforts and to work closely to identify comprehensive integration approaches that feed into the overall statewide strategy and to implement best practices as rapidly as practical.
The statewide EUC is a platform for integration of solutions to the residential customer and is intended to provide an easy entry point for customers and contractors that ultimately integrate other programs for whole house and customer solutions. As awareness of the cost-effective opportunities in whole house retrofits grows through training and education efforts, customers will be presented with the ability to integrate Demand Response and properly-sized onsite generation.

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

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

- EUC links and information on IOU CSI sites;
- Links to EUC landing pages from Energy Advisor;
- Targeted messaging during and after each survey;
- Information about EUC incentives; and
- Educational information that encourages customers to “reduce then produce.”

In addition, any contractors who work onsite with customers can provide delivery channels for DR programs information or installation of DR technology. EUC will also serve as a platform to integrate technology advancements in DR and Advanced Metering. IDSM efforts will be part of an ongoing conversation with customers to enhance program offerings and increase their participation in DSM efforts over time.

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

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

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

One of the major benefits of comprehensive home retrofits is improved indoor air quality. Residents will notice more consistent temperatures throughout their home and in many cases, improved indoor air quality.
The embodied energy in water distribution will become an increasingly important part of utility programs. The consumer education process in the house-as-a-system approach will provide an opportunity for local governments to present customers with information on non-energy savings inherent in comprehensive retrofits.
[Refer to Attachment 2 to this PIP]

c) **Leveraging of Resources**:

<u>Local Governments</u>

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

Over the course of the last few years, SDG&E has worked closely with each local government to ensure local programs are closely coordinated and achieve the highest level of collaboration and consistency across the region. Building off the lessons learned over the course of the last few years as well as the unique authorities afforded local governments, SDG&E and the local government program advisory group has developed the following list of key roles that local governments will play to advance Energy Upgrade California during the transition cycle.

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

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

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

4. Coordinate workforce education and training program activities;

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

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

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

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

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

EUC will coordinate IOU incentives and marketing outreach with local government efforts in neighborhood outreach and contractor recruitment. This effort allows for multiple levels of engagement that, through coordination with local entities, will reach to a neighborhood level that will drive awareness and market adoption.

~~**ii. PG&E**~~

~~During the development and implementation of the 2010-2012 Whole House Program PG&E partnered and coordinated closely with recipients of American Recovery Reinvestment Act (ARRA), State Energy Program (SEP), and Energy Efficiency & Conservation Block Grant (EECBG) statewide and within the PG&E service territory. In the 2013-2014 Transition Period, PG&E plans to continue to work with and leverage these partners as described in further detail in the Local Government PIP.~~

~~**iii. SoCalGas**~~

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

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

~~**iv. SCE**~~

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

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

d) **Trials/ Pilots:**

1) ~~SCE/ SoCalGas Moderate Income Direct Install MIDI~~

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

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

~~SCE and SoCalGas propose:~~
~~To implement a MIDI trial with a set goal of 2,000 units served~~
~~Develop a scalable program design for larger rollout in future cycles.~~
~~Evaluate delivery of MIDI Program utilizing existing ESA program infrastructure.~~

~~**1) Customer/Living Unit Eligibility**~~
~~To participate, the following guidelines must be met:~~
~~participants must be income eligible (between 201% and 250% of FPG)~~
~~living unit must not have received ESAP services after January 1st, 2002~~
~~living unit must meet the current ESAP/MIDI minimum measure requirements~~

~~**2) Measures**~~
~~(ESA program approved measures excluding appliances)~~

~~**3) Contractors**~~
~~SCE and SoCalGas will coordinate with select experienced joint ESAP contractors to perform an assessment of the living unit, complete customer enrollment, and install measures as applicable in the MIDI Program trial.~~

~~2~~) **SDG&E Trial Incentives**

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

12) Market Transformation Information:

1) ***Summary of the market transformation objectives of the program.***
The EUC program is designed to fulfill the goals of the *Strategic Plan* by guiding and incenting home and building buyers, owners and renovators to implement a whole house approach in energy consumption undertaken in their purchase and use of existing and new homes and buildings, home and building equipment (e.g. HVAC systems), household appliances, lighting and "plug load" amenities. The target is all existing homes in an effort to realize the maximum energy efficiency potential via the delivery of a comprehensive package of cost-effective whole-house and whole-building energy efficiency retrofit measures. These programs will include building shell upgrades, high-efficiency HVAC systems – appropriately sized for the building structure, and emerging

deep energy reductions in the lighting, appliance, plug-load and other residential oriented sectors. This initiative will be structured around a comprehensive audit, installation of the variety of retrofits required across the entire building structure, and access to attractive financing programs. The EUC effort will be achieved via the parallel and coordinated efforts of the utility programs, partners and other private market actors, and the State and local government policies and programs made available. As IOUs implement a system of automatic meters and wide-area network to enable data transport, the IOUs and customers will have the opportunity to integrate additional home automatic systems and integrated energy management features into the home (i.e., interim Intelligent Home Network, comprehensive Home Automatic Network and etc.) to support IDSM integration and deployment. The Plug Load and Appliance Program will have the potential to offer not only hardware based energy savings, but also comprehensive behavior savings opportunities.

2) ***I Identification of the relevant market actors and the relationships among them***

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

- Energy Upgrade California:
  - ~~*Basic Path*~~*Enhanced Basic/ Modified Flex Path*,
  - *Advanced Path*
  - *Multifamily Path*

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

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

Market Characterization

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

Overarching program participant profile

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

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

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

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

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

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

Market Actors:

- Homeowners/renters & property owners/managers
- Contractors
- Real Estate Professionals

- Financial Institutions
- Property Appraisers
- Local governments

Relationship Among the Market Actors:

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

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

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

Opportunities to advance demand side management technologies and strategies:

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

Key Barriers & Opportunity for Intervention:

The barriers for this program for the homeowner sector are the:

(1) Relatively high cost of home assessments,
(2) Relatively high gross costs of comprehensive energy upgrades,
(3) Market not aware of additional non-economic values resulting from comprehensive energy upgrades,

(4) Fledgling contracting and supporting industry for existing home energy upgrades,
(5) Low consumer awareness of incentive subprograms and the concepts of comprehensive home energy assessments and upgrades,
(6) Lack of common home rating protocols and common vernacular for the market to assign value to homes which undergo comprehensive energy upgrades,
(7) The economic downturn and its impact on the residential housing sector.
(8) Contractor awareness and access to information,
(9) Access to financing,
(10) Lack of access to skilled labor.

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

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

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

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

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

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

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

3) Expanded customer uptake through EUC incentives. (Barrier 1, 2, 5)
   Intended Results: Use incentives to reduce the barrier of entry into the comprehensive retrofit projects

4) Offering of Financing programs (by IOUs and/or other entities) (Barrier 1, 2, 9)
   Intended Results: Provide building owners the upfront cash they need to borrow to invest in a retrofit project, and amenable loan terms by which to repay that loan (note: this program component will be particularly important in the multifamily sector).

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

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

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

1) To improve a property owner or manager's energy efficiency knowledge, the *Multifamily Path* would seek to leverage comprehensive investment grade building assessments to identify potential energy efficiency opportunities. (Barrier 1)
2) To address split incentives and cost of upgrades, the *Multifamily Path* would integrate with the existing Energy Savings Assistance Program ("ESAP") and the Multifamily Energy Efficiency Rebate ("MFEER") Program. This would provide comprehensive services to the building, including "low cost" or "no cost" tenant measures in conjunction with the EUC *Multifamily Path* whole building incentives in order to maximize energy savings for the up-front investment. (Barrier 2)
3) Incentives would assist property owners or managers with overcoming a wide array of market and financial barriers which may otherwise prevent energy efficiency upgrades (Barrier 1, 5)
4) Create a single point of contact that would assist the property owner or manager navigate through the incentive and retrofitting process. This approach would provide support in understanding the various program rules and assistance in

determining eligibility. The property owner or manager would be guided through an easy and streamlined preliminary assessment to establish feasibility and estimate project cost for the *Multifamily Path*, with an eye toward leveraging all eligible programs. (Barrier 4)

5) Target buildings planning on or undergoing renovation projects to limit customer time burden and lost rental income. (Barrier 4, 5)
6) Multifamily sector is comprised of a wide diversity of properties which can be segmented by: 1.) rental rate (low – medium – or high; and/or 2.) size of the building and also size of the company that owns or manages the building. Defining the unique concerns and needs of building owners and managers by these variables of tenant socio-economic status and ownership/management structure will allow much more effective messaging and marketing communications. (Barrier 1, 2, 3, 4, 7)
7) On Bill Financing or Repayment program which could be focused on the tenant or the common property energy agendas. This program will provide access to capital to fund investments in energy efficiency upgrades for buildings at an attractive interest rate. (Barrier 2, 3, 7)

5) A coherent program or "market" logic model

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

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

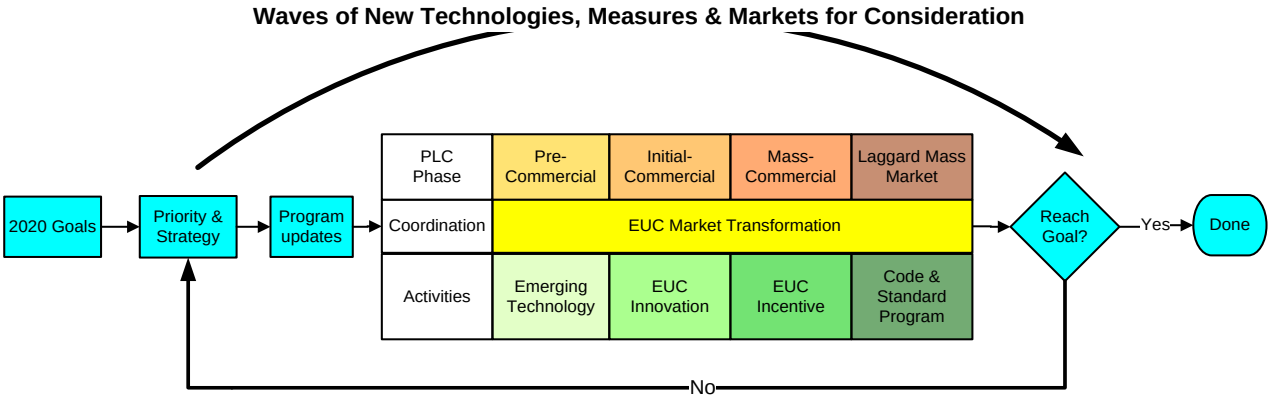
To reduce market barriers, the program's activities are designed to "get the word" out about the benefits of comprehensive retrofits through both mass marketing (D) as well as ground-up individual outreach for neighborhoods and communities (C), by working with local governments and entities. To help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

The program recognizes the importance of having a pool of qualified and competent contractors available to meet the market needs (J & O). The program offers BPI

certification training as well as participating contractor ongoing training and mentoring to meet the needs of the workforce and program quality control requirements. This increase in the quality and the quantity of the labor pool, will contribute to contractors' performing projects, outside of the program, to meet deep energy retrofit needs, leading to non-participant spillover effects (R, S & V).

The expected outcome of this program includes increased and improved awareness, knowledge and attitude (AKA) of homeowners and apartment owners towards understanding the benefits of deep energy retrofits (P). After realizing these benefits from program participation, the participant further enjoys other non-energy benefits such as improved comfort of the house and increased value of their properties. The increased value in the property will become more pronounced as the state finalizes its home rating system, so the home purchasers will be aware of the inherent value of properties complete with deep energy reduction retrofits (U). All of these benefits will help the program participants to continue property improvements outside of the program and outside of the program offerings, leading to spillover effects (T). These participant and non-participant spillover effects will eventually change the overall composition of the housing stock at the market level, making housing and building code ratcheting possible for society (X & Y). These codes and standards changes will lead to further reduction of energy consumption at the market level leading to fulfilling the objectives of the California Long-Term energy and environmental policies (AA).

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



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

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

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

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

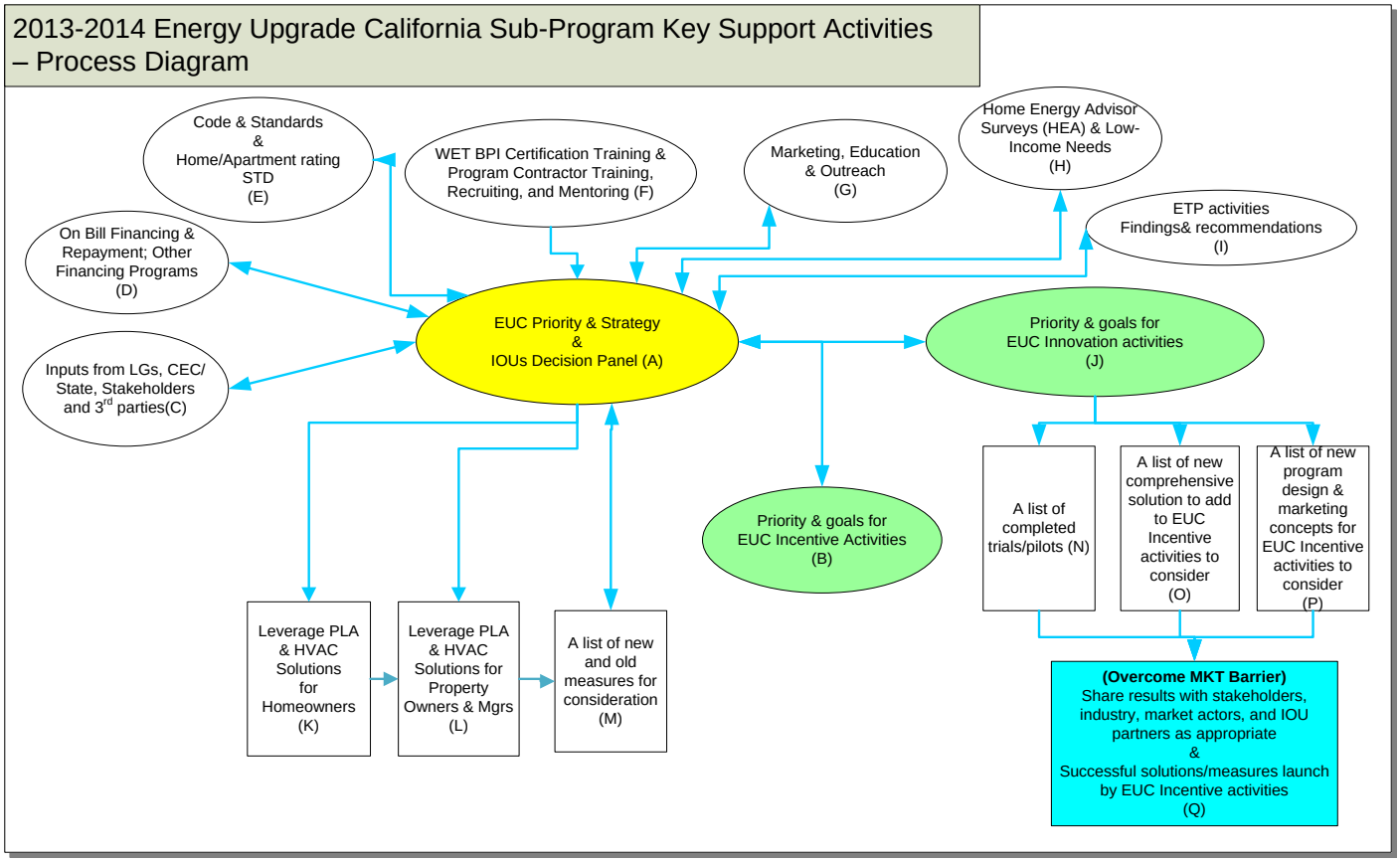
Formative evaluation: The formative evaluation of a market transformation program is typically performed at the intervention (i.e. program) level. The methods are the same as would be used in a program process evaluation, and would include interviews with program staff, participants and non-participants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

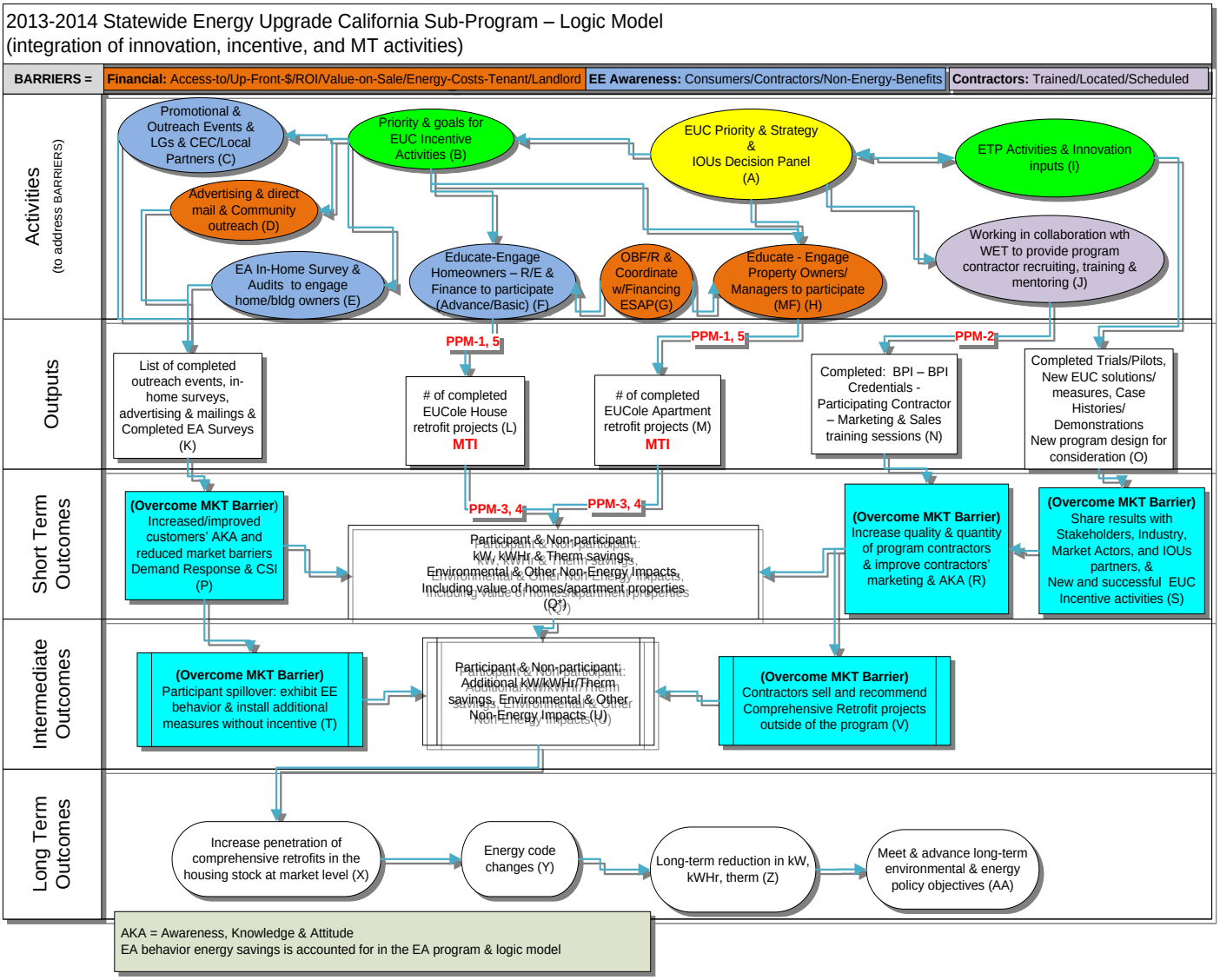
Program Performance Metrics:
Refer to Attachment 2 to this PIP

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

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

& Hoefgen (2009) for attributing market effects to individual programs include a number of approaches, all of them qualitative: self-report of spillover and free ridership; cross-sectional comparisons with other geographic regions; structured expert judging; and case studies. But attribution using a "preponderance of evidence" approach would likely be expensive and still yield arguable results. Attribution by nature focuses on individual program efforts, and we believe the market transformation evaluation discourse should be focused on the overlapping synergy among all programs and influences in the market. We realize we all have a "Shared Mission" of meeting the CPUC's very aggressive Strategic Plan goals. We do not wish to not invest resources in teasing apart which program entity contributed how much, but instead will plan to focus on whether all the market forces across the State of California have succeeded in transforming the market.





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

IOU Streamlined Emergency Replacement Protocol and Streamlined High Performing Contractor Protocol

1. **SDG&E**

   a. **Streamlined Emergency Replacement Protocol Per section 7 of SDG&E's QA/QC Quality Assurance and Quality Control Plan:**

   7.0 Emergency Replacement of Major Systems

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

7.1.1 Major systems that qualify under this provision are identified as:

a. HVAC Systems or components
b. Hot water heater replacements

7.1.2 In the event that a contractor wishes to install a major system identified herein under the provisions of an emergency replacement, the contractor shall contact and notify the QA/QC vendor immediately of the customer's emergency situation and to request accommodation under this provision. The QA/QC provider will determine if the circumstances warrant this provision.

a. The contractor will provide the QA/QC the customer contact information, make/model/serial numbers of existing equipment and date the replacement will be installed.
b. The QA/QC vendor may field-verify the equipment to be replaced.
c. The contractor can proceed with emergency work.
d. To include the emergency work as part of any EUC project scope, contractors must follow all other procedures for participation in the EUC program.
e. Any and all changes to the home prior to submitting a Pre-Retrofit Project Submittal Package shall be only for the immediate emergency need pre-approved by the QA/QC vendor and must be documented in the Pre-Retrofit Project Submittal Package.
f. All other project scope work outside of the approved emergency work must go through the standard QA/QC process as defined in this plan.

b. Streamlined High Performing Contractor Protocol

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

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

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

~~**2. PG&E**~~

~~**a. Streamlined Emergency Replacement Protocol**~~

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

~~The general policy for all equipment replacements performed within the PG&E program is that participating contractors and their subcontractors should wait for a Notice to Proceed to be issued before commencing work on a job for the program. However, in order to proceed with emergency replacements or expedited upgrades due to customer specific needs, contractors may proceed within the guidelines of this Fast Track Process. In order to be eligible for this Process, participating contractors must be active and in good standing under the PG&E program.~~

~~Upgrades may be started before the Notice to Proceed is issued if the participating contractor is confident that the job qualifies for the Program. Prior to adjusting or installing measures, the contractor must perform a comprehensive test-in, including combustion safety testing, to document the pre-existing conditions. The contractors should take pictures to document uncommon or unique situations.~~

~~Participating contractors that choose to perform work without the Notice to Proceed accept full liability that the rebate funds have not been reserved and that their customers may not be eligible.~~

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

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

~~3. SCE~~

~~a. Streamlined Emergency Replacement Protocol~~

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

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

~~Eligibility~~

The homeowner meets all mandatory *Advanced Path* program requirements as described in the Advanced Package Minimum Specifications and this Emergency Equipment Replacement Policy for HVAC/DHW Systems.

The space heating and/or domestic hot water system must have been 'red tagged' or deemed unsafe by the utility, service technician or building inspector; or the system has failed, cannot be repaired and must be replaced.

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

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

Notification/Authorization Requirements

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

Step 1: Submit for Pre-Replacement Approval

The contractor is required to submit a Record of Emergency Equipment Replacement Form.

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

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

Step 2: Receive Authorization to Proceed

Upon Authorization to proceed the contractor may commence installation of the new HVAC and/or DHW equipment.

Step 3: Complete Emergency Replacement and Submit Final Paperwork

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

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

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

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

Mandatory Documentation for Emergency Space Heating Equipment Replacement

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

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

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

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

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

While replacing the space heating equipment, this may be an opportunity to also replace the central air conditioner with a higher efficiency model. The existing equipment must be replaced with equipment meeting the requirements listed in the Advanced Package Minimum Specifications.

Contractor will need to supply the following information about both the new and existing air conditioning unit:

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

Mandatory Documentation for Domestic Hot Water Equipment Replacement

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

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

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

Mandatory Requirements for Emergency Equipment Replacement Approval

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

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

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

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

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

b. Streamlined High Performing Contractor Protocol

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

4. SoCalGas

a. Streamlined Emergency Replacement Protocol

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

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

Eligibility

The homeowner meets all mandatory *Advanced Path* program requirements as described in the Advanced Package Minimum Specifications and this Emergency Equipment Replacement Policy for HVAC/DHW Systems.

The space heating and/or domestic hot water system must have been 'red tagged' or deemed unsafe by the utility, service technician or building inspector; or the system has failed, cannot be repaired and must be replaced.

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

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

Notification/Authorization Requirements

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

Step 1: Submit for Pre-Replacement Approval

The contractor is required to submit a Record of Emergency Equipment Replacement Form.

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

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

Step 2: Receive Authorization to Proceed

Upon Authorization to proceed the contractor may commence installation of the new HVAC and/or DHW equipment.

Step 3: Complete Emergency Replacement and Submit Final Paperwork

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

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

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

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

Mandatory Documentation for Emergency Space Heating Equipment Replacement

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

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

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

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

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

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

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

~~Mandatory Documentation for Domestic Hot Water Equipment Replacement~~

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

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

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

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

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

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

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

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

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

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

Program Non-Energy Objectives

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

Table 3: Quantitative Program Targets (PPMs)
[Refer to Attachment 2 to this PIP]

14) Additional SDG&E *Multifamily Path* Information

1. Budget and Savings

The EUC Multifamily Path budget and savings estimates are considered part of the overall EUC budget and savings goals. The Multifamily Path was not filed as its own program, but filed as one component of a whole building performance program that also includes two single family paths. Actual expenses and impacts will depend upon customer uptake in the three paths and many expenses will be shared and leveraged with the single family paths in order to streamline and reduce administrative and implementation costs.

Given the shared and leveraged single family and multifamily components, the *Multifamily Path* proportion is estimated to be approximately 25% of the proposed EUC budget serving an estimated 2,800 dwelling units with estimated impacts of approximately 1,800,000 kwh and 72,000 therms

2. Incentives

Incentives will be offered on a tiered structure consistent with single family whole house performance incentives, paid on a per unit basis, based upon total building energy saved. An additional $100 per unit has been included to provide some offset for the high cost of rating a multifamily building and the combustion safety testing requirement. However, no incentives will be paid for just building ratings or combustion safety testing. Incentives are paid based upon successful completion of a whole building performance project, in accordance with program requirements, that meet the site energy savings as described below. Incentives will be paid to building owners only and cannot be designated to be paid to third parties. The following are the proposed incentive tiers:

Site Energy Savings	Incentive/unit
10%	$550
15%	$625
20%	$800
25%	$1,000
30%	$1,200
35%	$1,350
40%	$1,500

15) ~~Enhanced Basic Path Option for SDG&E, SCE and SoCalGas~~

~~As of July 2012, the Basic Path has represented only 4% of the statewide EUC volume among the four Investor Owned Utilities (IOUs). The Basic Path had been targeted to make up the volume of the program, however, after two years of implementing it has fallen well below expectations.~~

~~Under the Basic Path, homeowners are required to install all 5 energy efficient measures (i.e. 1. attic insulation, 2. duct sealing, 3. air sealing, 4. insulation of domestic hot water pipes, and 5. thermostatic activated flow restriction valve with or without a showerhead) in order to qualify for the $1,000 incentive. The Basic Path does not allow for homeowner customization and has not provided the lower-cost on-ramp to Advanced Path. The Basic doesn't facilitate up-sell opportunities for major equipment (i.e. domestic hot water and HVAC). Overall, the Basic Path is a poor match to the diverse housing stock in California.~~

~~SDG&E, SCE and SoCalGas will continue to offer an enhancement to the Basic Path option from the 2010-2012 program cycle. Final program design will be coordinated between IOU's and RENs and will be submitted via Advice Letter not later than April 1, 2013. It will be referred to as the Enhanced Basic Path (EBP).~~

~~The Enhanced Basic Path will enable the program to move to scale, and to do so at greatly reduced administrative cost. It produced consistent incentive results. It will facilitate competitive bidding among contractors. The higher volume of projects and increased contractor competition, is also likely to lower incremental project costs.~~

~~The Enhanced Basic Path has a mix of energy efficiency measures to allow a contractor to tailor each project to the needs of the customer. It will also include combustion safety testing to ensure that each home with a tightened building shell remains properly vented. The list below provides a list of measures to be included in the Enhanced Basic Path:~~

~~**Base Measure Upgrades**~~	~~**Requirements**~~
~~Whole House Air Sealing~~	~~30% reduction from vintage table~~
~~Attic Insulation with Attic Plane Air Sealing~~	~~Insulate to R-30 or greater~~
~~Duct Sealing/ Replacement~~	~~10% sealing/ 6% Replacement~~

~~**Building Shell Upgrades**~~	~~**Requirements**~~
~~Wall Insulation~~	~~Insulate to R-13 or greater~~
~~Floor Insulation~~	~~Insulate to R-19 or greater~~
~~Duct Insulation~~	~~Insulate to R-8 or greater~~

~~**HVAC Upgrades**~~	~~**Requirements**~~
~~Furnace~~	~~92% AFUE or greater~~
~~Air Conditioner~~	~~14 SEER, 12 EER or greater~~

~~**Water Heating**~~	~~**Requirements**~~
~~Natural Gas Water Heater~~	~~Energy Factor of 0.67 or greater~~
~~Electric Water Heater~~	~~Energy Factor $\geq$ 0.93, $\geq$ 30 gallons~~
~~Showerhead with Thermostatic Control Valve~~	~~Low Flow showerhead 1.5 gpm with TCV~~
~~Thermostatic Control Valve~~	~~TCV installed on Low Flow showerhead $\leq$ 1.5 gpm~~

~~Energy savings calculation will be conducted by the IOUs engineering team working collaboratively with Energy Division (ED) engineering to develop a hybrid-deemed work paper. The work paper analysis eliminates custom modeling for each project, but allows, via a combination of deemed values, a custom SOW for each project. This lowers the contractors' cost, and reduces the burden on the Utility for Quality Control. Participating contractors will be spend more time selling and installing jobs, and less time creating custom simulations.~~

~~The Enhanced Basic Path incentives will be a tiered incentive, driven by the customer's desired SOW. Incentive will begin at $1,000 for 10% energy savings, consistent with the original Basic Path program. The Tier increase at each 5% incremental improvement, to encourage deeper energy retrofits, while preserving the low barrier to entry. Incentives will be identical to Advance Path incentives for saving percentages but for Enhanced Basic Path will max out at $3,500 for 35% savings.~~

~~The IOUs are positioning the Enhanced Basic Path to capture the majority of current Advanced Path projects, which have an average of 25% - 31% energy savings. Participating contractors can participate in the Advanced Path if they wish, as it will continue to start at 10%, but rise all the way to 45%. That is, for the range between 10% and 35%, the incentive structure is the same as Advanced Path.~~

~~The Enhanced Basic Path will be delivered through existing participating contractors in the Energy Upgrade California program. Participating contractors will utilize a mobile application . This allows them to change potential SOWs directly with the customer, giving real time feedback on savings and incentives, instead of having to develop modeling simulation and having to return to the customer's home with the potential incentive amount.~~

~~Participation in the Enhanced Basic Path are as follows:~~

- ~~Step One: Select two of three qualifying base measures:~~
- ~~Step Two: Select at least one other optional measure.~~
- ~~Step Three: Add in stand-alone deemed measures, if desired~~
- ~~Savings: Selections made in Step Two & Three will be calculated through the Hybrid-Deemed engine to determine savings and incentives; Step 3 will have stand-alone savings consistent with the existing HEER program.~~
- ~~Step Two and Three Incentives use the same tiered incentive structure as Advanced Path~~
- ~~Step Three incentives match those offered by the HEER program~~

ATTACHMENT 2

Energy Upgrade California

Table 1: Total Projected Program Budget & Savings by Subprogram

Subprogram	PG&E ($)	SCE ($)	SDG&E ($)	SCG ($)	Kwh	KW	Therms
EUC			$11,324,594		2,372,625	1,898	542,857

Table 2: Total Projected Program Savings by IOU

Subprogram	PG&E Kwh	PG&E KW	PG&E Therms	SCE Kwh	SCE KW	SDG&E Kwh	SDG&E kW	SDG&E Therms	SCG Therms	Total
EUC						2,372,625	1,898	542,857		

Table 1. Projected Sub-Program Budget, by Calendar Year

	Program Year		
SDG&E EUC	2013	2014	Total
Admin ($)	$ 240,762 ~~1,277,646~~	$ 242,512 ~~1,246,606~~	$ 483,274 ~~2,524,252~~
Incentives ($)	$2,805,516.33~~7,862,803~~	$2,862,719.88~~7,879,296~~	$5,668,236.21~~15,742,099~~
Implementation Non-Incentives ($)	$ 1,608,232 ~~4,997,306~~	$ 1,643,232 ~~4,587,386~~	$ 3,251,464 ~~9,584,692~~
Marketing & Outreach ($)	$960,809.90~~1,321,893~~	$960,809.90~~1,336,323~~	$1,921,619.80~~2,658,216~~
Total Budget	**$ 5,615,320** ~~**15,459,648**~~	**$ 5,709,274** ~~**15,049,611**~~	**$ 11,324,594** ~~**30,509,258**~~

Table 2 Projected Sub-Program Net Energy and Demand Impacts, by Calendar Year

SDG&E EUC	Program Years		
	2013	2014	Total
GWh	11.105	11.090	**22.195**
Peak MW	2.884	2.899	**5.783**
Therms (millions)	0.643	0.622	**1.266**

**Table 3 Quantitative Program Targets Short Term Program Performance Metrics (STPPMs)*

PPM ID	Target	2013	2014	TOTAL
RES-16.1	Number of homes treated in the sub-program for 2013-2014. _____(~~Basic Path~~Enhanced Basic/ Modified Flex Path)	1,000	1,600	**2,600**
RES-16.2	Number of homes treated in the sub-program for 2013-2014.____ (Advanced Path)	250	400	**650**
RES-17	Number of enrolled contracting firms participating in the sub-program	120	160	**160**
RES-18.1	Average Ex-ante savings per home as reported (average kWh, therms, kW) for **Advanced** path by climate zone	N/A	N/A	N/A
RES-18.2	Average Ex-ante savings per home as reported (average kWh, therms, kW) for **~~Basic Path~~Enhanced Basic/ Modified Flex Path** by climate zone	N/A	N/A	N/A
RES-19	Average and range of evaluated energy savings per home (Basic and Advanced Paths)	N/A	N/A	N/A
RES-20.1	Number of homes not passing Quality Assurance/Quality Control review, by IOU	N/A	N/A	N/A
RES-20.2	Percentage of homes not passing Quality Assurance/Quality Control review, by IOU	N/A	N/A	N/A

*Since these forecasts were submitted in July 2012, there have been numerous policy changes and program changes, all of which affect this forecast. At a meeting on 4 March 2013, with senior Commission staff, the RENs and IOUs were told we would have the opportunity to modify our forecasts in light of policy changes recommended by the Commission. We submit these high participation scenarios here, consistent with the controlling decision, but we look forward to the opportunity to clarify these numbers in light of subsequent changes.

Long Term Program Performance Metrics (LTPPMs)

SDG&E includes long term PPMs per Energy Division guidance received in December 2012. As stated in the Joint Utilities' comments to the Commission in R. 09-11-014 dated November 21, 2011, and discussed between IOUs and ED on January 9, 2013, IOUs plan to finalize long term PPMs in further discussions with involved stakeholders and propose updates to Energy Division at a later date.

MTI Index#	RE-CATEGORIZED Metric (LTPPM - or SPI) [E-4385 Appendix B original text except for noted edits]	Unresolved Issues
Deep Retrofit - 3	MT Indicator 3: ~~The number and percent of audits performed compared to the number of customers signed up for an audit (NRDC, p.7)~~. Number of IOU customer households that undergo a deep retrofit (Advanced and/or IDSM) audit through IOU programs.	

Table 4: Work paper Status

#	Work paper Number/Measure Name	Approved	Pending Approval	Submitted but Awaiting Review
1	SDG&E SF Prescriptive Deemed Savings			
2	WPSCREMI0004.0 Prescriptive Whole Home Retrofit Program		x	
3	PGECOALL104 Whole House Rebate			x
4	SCG SF Prescriptive Deemed Savings		x	
5	PGECOALL100_R3 Custom Measures		x	
6	SDG&E Custom Measures			

Table 5: Sub-Program Milestones and Timeline (example)

Milestone	Date
IOU/ ED Monthly Progress Meetings	1/1/2013-12/31/2014
Monthly EUC Working Group Meetings	1/1/2013-12/31/2014
Revised Basic AL/ PIP	4/1/2013

Table 6: Geographic Regions

Geographic Region	SDG&E	SCE	PG&E	SoCalGas
CEC Climate Zone 1			x	
CEC Climate Zone 2			x	
CEC Climate Zone 3			x	
CEC Climate Zone 4			x	x
CEC Climate Zone 5			x	x
CEC Climate Zone 6	x	x		x
CEC Climate Zone 7	x	x		x
CEC Climate Zone 8	x	x		x
CEC Climate Zone 9		x		x
CEC Climate Zone 10	x	x		x
CEC Climate Zone 11			x	
CEC Climate Zone 12			x	

CEC Climate Zone 13		x	x	x
CEC Climate Zone 14	x	x		x
CEC Climate Zone 15	x	x		x
CEC Climate Zone 16		x	x	x

Table 7: Program Administration of Program Components

Program Name	Program Component	Implemented by IOU Staff? (X = Yes)	Implemented by contractors to be selected by competitive bid process (if Yes then enter type of contractor/other maket actor possibly used)	Implemented by contractors NOT selected by competitive bid process (list prime contractor and sub-contractor names)	Implemented by local government or other entity (X = Yes)
	SDG&E Marketing	x			
	SDG&E Program Administration	x			
	SDG&E Contractor/ Rater Training		X (EE program vendor with subject matter expertise)		
	SDG&E QA/QC		X (EE program vendor with subject matter expertise)		
	SCE Program Administration	x			
	SCE Marketing	x			
	SCE Recruitment, Training, & Support		X (EE program vendor with subject matter expertise)		
	SCE Quality Assurance & Quality Control		X (EE program vendor with subject matter expertise)		
	SCE MF Contractor/ Rater Training		X (EE program vendor with subject matter expertise)		
	SCE MF QA/QC		X (EE program vendor with subject matter expertise)		
	SCE MIDI Contractors		X (EE program vendor with subject matter expertise)		
	SCE MIDI QA/QC		X (EE program vendor with subject matter expertise)		

Program Name	Program Component	Implemented by IOU Staff? (X = Yes)	Implemented by contractors to be selected by competitive bid process (if Yes then enter type of contractor/other maket actor possibly used)	Implemented by contractors NOT selected by competitive bid process (list prime contractor and sub-contractor names)	Implemented by local government or other entity (X = Yes)
	PG&E Marketing and Outreach		X (EE program vendor with subject matter expertise)		x
	PG&E Program Administration		X (EE program vendor with subject matter expertise)		
	PG&E Contractor/ Rater Training		X (EE program vendor with subject matter expertise)		x
	PG&E QA/QC		X (EE program vendor with subject matter expertise)		
	SCG Marketing	X			
	SCG Program Administration	X			
	SCG Contractor/ Rater Training			ICF , Sub Contractor CBPCA	
	SCG QA/QC			ICF , Sub Contractor QC-RHA and QA AESC	
	SCG MIDI Contractor/ Rater Training		TBD	TBD	
	SCG MIDI QA/QC		TBD	TBD	
	SCG MF Contractor/ Rater Training		TBD	TBD	
	SCG MF QA/QC		TBD	TBD	

Table 8: Customer Eligibility Requirements (Joint Utility Table)

Customer Eligibility Requirement (list of requirements)	PGE	SCE	SDGE	SCG
Tennant or Owner of SF Bldg with active IOU account(s)	x	x	x	x
Owner or property mgt. co. of MF Bldg with active IOU account(s)	x	x	x	x
Must utilize participating EUC Contractor or Rater	x	x	x	x
Two to Four Unit Building with active individually metered accounts	x	x	x	x

Table 9: Contractor Eligibility Requirements (Joint Utility Table)

Contractor Eligibility Requirement (list of requirements)	PGE	SCE	SDGE	SCG
Contractor State Licensing Board (CSLB) in appropriate specialty	x	x	x	x
CSLB "B" General Contractor License (Advance Path Only)	x			
Bonding and in good standing	x	x	x	x
Insurance to IOU minimum standards	x	x	x	x
Execution of Contractor/ or Rater Participation Agreement	x	x	x	x
BPI Building Analyst Certified OR 3-day Basic Training (~~Basic Path~~Enhanced Basic/ Modified Flex Path Only)	x	x	x	x
BPI Building Analyst Certified on Staff (Advanced Path)	x	x	x	x
BPI MF Building Analyst Certified (MF Participating Rater Path)	TBD	TBD	x	TBD
HERSII Certified (MF Participating Rater Path)	TBD	TBD	x	TBD
HERSII and BPI BA Certified (SF Participating Rater Path)	x	x	x	x
2 Years of Relevant Work Experience	x			
B, C-2 or C-20 license for Basic Only	x			

Table 10: Manufacturer/Retailer/Distributor Partners

Manufacturer/Retailer/Distributor Partner Information	PGE	SCE	SDGE	SCG
Manufacturers enrolled in program	none	none	none	none
Manufacturers targeted for enrollment in program	none	none	none	none
Retailers enrolled in program	none	none	none	none
Retailers targeted for enrollment in program	none	none	none	none
Distributors enrolled in program	none	none	none	none
Distributors targeted for enrollment in program	none	none	none	none

Table 11: Summary Table of Measures, Incentive Levels and Verification Rates

Measure Group	Market Actor Receiving Incentive or Rebate	SDGE	
		Incentive Level	Installation Sampling Rate
10% Performance SF	Customers	$ 1,000	Tiered 100%-5%
15% Performance SF	Customers	$ 1,500	Tiered 100%-5%
20% Performance SF	Customers	$ 2,000	Tiered 100%-5%
25% Performance SF	Customers	$ 2,500	Tiered 100%-5%
30% Performance SF	Customers	$ 3,000	Tiered 100%-5%
35% Performance SF	Customers	$ 3,500	Tiered 100%-5%
40% Performance SF	Customers	$ 4,000	Tiered 100%-5%
45%+ Performance SF	Customers	$ 4,500	Tiered 100%-5%
~~**Basic Path**~~**Enhanced Basic/ Modified Flex Path**	Customers	$ 1,000	Tiered 100%-5%
10% Enhanced Basic SF	Customers	$ 1,000	Tiered 100%-10%
15% Enhanced Basic SF	Customers	$ 1,500	Tiered 100%-10%
20% Enhanced Basic SF	Customers	$ 2,000	Tiered 100%-10%
25% Enhanced Basic SF	Customers	$ 2,500	Tiered 100%-10%
30% Enhanced Basic SF	Customers	$ 3,000	Tiered 100%-10%
35% Enhanced Basic SF	Customers	$ 3,500	Tiered 100%-10%
40% Enhanced Basic SF	Customers	$ 4,000	Tiered 100%-10%
45%+Enhanced Basic SF	Customers	$ 4,500	Tiered 100%-10%
10% Performance MF	Customers	$ 550	100%
15% Performance MF	Customers	$ 625	100%
20% Performance MF	Customers	$ 800	100%
25% Performance MF	Customers	$ 1,000	100%
30% Performance MF	Customers	$ 1,200	100%
35% Performance MF	Customers	$ 1,350	100%
40% Performance MF	Customers	$ 1,500	100%

Table 12: Additional Services

Additional Services that the Sub-	To Which	SDGE

Program Will Provide	Market Actors	
		[indicate the level at which the service will be incented or funded]
N/A	N/A	N/A

Table 13: Program Related Audits

Levels at Which Program Related Audits Are Rebated or Funded	Who Receives the Rebate/Funding (Customer or Contractor)
None	

Table 14: Quality Assurance Provisions

QA Requirements	QA Sampling Rate (Indicate Pre/Post Sample)	QA Personnel Certification Requirements
SDG&E QA requirements #1	100% Pre Project QA (desktop)	BPI BA
SDG&E QA requirements #2	100% Post Project QA (desktop)	BPI BA
SDG&E QC requirements #1	100% first 10 projects (Pre)	BPI BA
SDG&E QC requirements #2	7 of next 20 projects (Pre)	BPI BA
SDG&E QC requirements #3	10% after 30th project (Pre)	BPI BA
SDG&E QC requirements #4	100% first 10 projects (Pre)	BPI BA
SDG&E QC requirements #5	7 of next 20 projects (Pre)	BPI BA
SDG&E QC requirements #6	10% after 30th project (Pre)	BPI BA

Table 15: Cross-cutting Sub-program and Non-IOU Partner Coordination

Sub-Program Name		
Other IOU Sub-program Name	**Coordination Mechanism**	**Expected Frequency**
PLA (HEER)	Meetings	Monthly/As-Needed
MFEER	Meetings	Monthly/As-Needed
HEES	Meetings	Monthly/As-Needed
QI/ QM	Meetings	Monthly/As-Needed
CSI	Meetings	Monthly/As-Needed
Coordination Partners Outside CPUC		
CCSE	Meetings	Weekly/ Monthly
City of San Diego	Meetings	As-Needed
County of San Diego	Meetings	As-Needed
City of Chula Vista	Meetings	As-Needed
Retrofit Advisory Council (RAC)	Meetings	Quarterly
Los Angeles County	Meetings	Monthly
Santa Barbara County	Call	Monthly
City of San Bernardino	Call	As-Needed
City of Long Beach	Call	As-Needed
Efficiency First	Call	Bi-Weekly
ABAG	Meetings	As-Needed
County of San Francisco	Meetings	As-Needed
County of Marin	Meetings	As-Needed
County of Sonoma	Meetings	As-Needed
County of Solano	Meetings	As-Needed
County of Alameda	Meetings	As-Needed
County of Contra Costa	Meetings	As-Needed
County of Santa Clara	Meetings	As-Needed
County of San Mateo	Meetings	As-Needed
County of Fresno	Meetings	As-Needed
County of Santa Barbara	Meetings	As-Needed
SMUD	Meetings	As-Needed
MIST	Meetings	As-Needed

Table 16: Non-EE Sub-Program Information

Sub-Program Name		
Non-EE Sub-Program	**Budget**	**Rationale and General Approach for Integrating Across Resource Types**
N/A	N/A	N/A

Attachment A1.2: SDG&E EUC Enhanced Basic/Modified Flex Path PIP
(Clean)

1) **Sub-Program Name:** Energy Upgrade California (EUC)

2) **Sub-Program ID number:** SDG&E 3208 - 3209

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

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

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

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

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

8) **Projected Sub-Program Budget**

   Table 1. Projected Sub-Program Budget, by Calendar Year
   [Refer to Attachment 2 to this PIP]

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

   a) **Sub-Program Description and Theory:**
   According to a report released by the Office of the Vice President, "homes in the United States generate more than 20 percent of our nation's carbon dioxide emissions, making them a significant contributor to global climate change."[1] The challenge of addressing residential emissions has been a significant topic for California stakeholders and was addressed when D.09-09-047 acknowledged, "Improving the energy efficiency of all

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

households is necessary to achieve the target outcome for the 2020 existing residential *Strategic Plan* goals."[2]

The Office of the Vice President report also identifies three market barriers to comprehensive residential retrofits:

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

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

1) Offer a statewide entry level simple, and flexible based approach using a deemed/ performance hybrid (*Enhanced Basic/Modified Flex Path*[3]) and a comprehensive and flexible performance based approach (*Advanced Path*) whole house incentives to help build the home performance contracting industry and offer customers and building owners and managers an easy entry point on the path to home performance (barrier 1);
2) Educate customers on the house-as-a-system concept and to encourage behavior changes that increase residential energy efficiency (barrier 1);
3) Educate contractors on the benefits of learning how to properly sell and install whole house measures as part of coordinated WE&T efforts (barrier 1& 3);
4) Offer incentives that influence customers to undertake comprehensive residential retrofits (barrier 1); and
5) Coordinate with relevant utility financing programs and external funding and financing mechanisms at the county, state and federal levels (barrier 2).

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

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

[2] D. 09-09-047. Page 110.
[3] Final name of path to be determined. SDG&E will file a PIP amendment once statewide consensus has been reached regarding a name for this path.

5) Time burden for tenants and owners;
6) Impact on rental income; and
7) Business policy/ profit incentive from replacing equipment on burn-out and unwillingness to negate remaining life in building components requiring capital outlay.

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

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

Other considerations to meet all income strata and address split incentives for property owners and tenants may include a direct install strategy, as well as prescriptive rebates through the existing MFEER Program. While programs will be coordinated and integrated, their respective policies, and procedures will be followed in the delivery of

services. Efforts at operational efficiencies would be made to streamline eligibility, income verification, and installation of measures.

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

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

The Energy Upgrade California (EUC) is a Market Transformation orientated program and is a continuing program which began in the 2010-2012 residential energy efficiency portfolio of the four California Investor Owned Utilities (IOUs) – Pacific Gas & Electric Company (PG&E), Southern California Edison (SCE), San Diego Gas & Electric Company (SDG&E) and Southern California Gas Company (SoCalGas).

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

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

EUC is designed to build customer and contractor[4] awareness of the house-as-a-system approach to residential retrofits and the many corresponding benefits of improving the

[4] A successful program recognizes the need to develop the pool of qualified home retrofit contractors (with the help of third party implementers) to engage in – and have the opportunity to profit from – performing quality work. Through comprehensive training curricula (currently available in the marketplace) broken into the key elements of a home: Building Envelope and Lighting, and

energy savings potential and comfort of their dwelling. It promotes the idea that energy efficiency measures are most effective when taking into account interactive effects of measures.

EUC moves customers from a prescriptive, widget or single-measure based approach to energy efficiency to one of deeper, comprehensive energy retrofits that respect the energy efficiency loading order [5], and which takes the approach that a house is a series of interdependent systems that must be considered holistically.

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

Customer outreach and education efforts for EUC will be coordinated with other IOU Demand Side Management (DSM) program offerings (e.g.,), Energy Advisor, Plug Load and Appliance (PLA), Comprehensive HVAC, SmartAC and other Residential Demand Response programs, Energy Savings Assistance Program, California Solar Initiative (CSI)) to leverage multiple customer touch points.

For single family residences, the whole house approach of EUC promotes two paths, a streamlined hybrid deemed/ performance based option (*Enhanced Basic/ Modified Flex Path)* and a comprehensive, measured performance based approach (*Advanced Path).*

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

In sum, these paths will provide an ideal platform to utilize the concept of continuous energy improvement for residential customers; tracking and encouraging a logical

---

Heating, Cooling and Hot Water delivery (major systems); skilled tradespersons will have the opportunity to enter the home retrofit market and grow their businesses.

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

sequence of energy improvements made by customers over time, creating an ongoing, actionable dialogue with each customer regarding their energy use.

EUC *Advanced Path*

EUC *Advanced Path* offers customers a customized path to comprehensive whole house energy efficiency that drives the customer to deep retrofits. *Advanced Path* solutions will require Participating Contractors to obtain higher levels of expertise than those who perform the *Enhanced Basic/ Modified Flex Path* installations. Customers can also participate in *Advanced Path* by using a Participating Rater. The *Advanced Path* requires diagnostic "test-in" and "test-out" whole house assessments. The "test-in" assessments will generate a comprehensive work scope and the "test-out" assessments will be used to document that specified improvements have been properly sized and installed.
The *Advanced Path* delivers comprehensive energy efficiency improvement packages tailored for both the home resale and home remodeling markets. The *Advanced Path* solicits, screens, and trains qualified residential repair and renovation contractors and HERS II Raters, to assemble capable contracting teams and perform whole-house diagnostics, propose a comprehensive energy efficiency improvement package, and install the improvements. The program also includes marketing activities to help educate customers on program services, and in some cases may provide additional customer leads to trained and experienced contractors. Incentives and resources for available financing options will be provided to help offset the initial homeowners cost for the energy efficiency improvements.

EUC *Enhanced Basic/ Modified Flex Path*

A basic path or gateway program for energy efficiency upgrades is fundamental to market penetration and transformation, by providing a program that introduces home energy efficiency awareness, education, is scaled to reach moderate-income homeowners, and allows for whole home upgrades to be installed in phases over time.

A program timed and sized to fit middle-income consumers also creates a leads-generated marketplace to progressively drive deeper energy savings in households where immediate available discretionary income is limited and, in a majority of cases, equipment failure or some other trigger event is the sole motivation (and energy savings is a consequential, not intentional, objective).

The *Enhanced Basic/Modified Flex Path* will enable EUC to scale more rapidly. The goal of EUC is to produce consistent incentives tied to post-project results. This path also may facilitate competitive bidding among contractors by providing a common measure cost estimate template for customers. The higher volume of projects and increased contractor competition is also likely to lower incremental project costs.

The *Enhanced Basic/Modified Flex Path* is expected to capture a substantial percentage of current Advanced Path projects and greatly accelerate the total number of EUC upgrades performed as many more HVAC contractors bring routine HVAC jobs into the program.

Participating contractors will utilize a web-based tool via their laptop, tablet, or phone application to generate an estimated scope of work with the customer. This application

will allow participating contractors to change potential statements of work (SOWs) directly with the customer and provide real time savings and incentives estimates. The participating contractor will not need to develop a modeling simulation and have to return to the customer's home with the potential incentive amount. This, in turn, enhances the ease of program adoption for both the customer and contractor.

The *Enhanced Basic/Modified Flex* has a mix of energy efficiency measures to allow a contractor to tailor each project to the needs of the customer, while supporting the energy efficiency loading order. It will also include combustion safety testing at test-in and test-out to ensure that each home with a tightened building shell remains properly vented.

The *Enhanced Basic/ Modified Flex Path* will also educate contractors and customers on the benefits of implementing comprehensive whole house retrofits on existing buildings that will provide systematic reductions in energy use. The *Enhanced Basic/ Modified Flex Path* will help to:

- Utilize no-cost (to customer) surveys (Energy Advisor) as an entry point to identify opportunities for efficiency improvements[6];
- Offer targeted marketing campaigns to engage participants that receive stand-alone EE rebates for completing qualified home improvement measures;
- Promote completion of retrofits based on preferred building science loading order;
- Offer incentives to encourage progression along a preferred approach towards comprehensive retrofits;
- Continuously engage customers over time as they progress toward a home performance approach;
- Leverage available opportunities to move customers to the *Advanced Path* by informing them about available local or third-party financing options and other complementary revitalization efforts that may be available within a particular jurisdiction;
- Offer a holistic path towards home performance by aggregating key elements of a dwelling into its core elements: building envelope and fixed lighting; heating, cooling and hot water, and appliances;

[6] The Energy Advisor provides residential customers with entry-level energy surveys online, over the phone, or by mail. The surveys are not intended to serve as an audit but are meant to provide consistent messaging and an easy on-ramp to EUC. The Energy Advisor surveys are also an ideal link between the California Solar Initiative (CSI) and EUC WHRP. This synergy will be discussed later in the document.

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

The EUC *Enhanced Basic/ Modified Flex Path* offers a flexible but comprehensive approach to delivering retrofit solutions to Californians by recognizing the essential interplay and relationships between groups necessary in the delivery of a successful program.

EUC *Multifamily Path*

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

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

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

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

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

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

The IOU's will organize and convene a workshop on lessons learned and best practices in their multifamily pilot programs in late 2013 or early 2014 and notice the workshop to the service list and RENs for this proceeding.

b) **Sub-Program Energy and Demand Objectives**-
Table 2: Projected Sub-Program Net Energy and Demand Impacts, by Calendar Year ***[Refer to Attachment 2 to this PIP]***

c) **Program Non-Energy Objectives**:
Table 16: Non-Energy Objective
[Refer to Attachment 2 to this PIP]

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

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

The EUC seeks to address these barriers through:

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

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

Non-economic value can be assigned as:

Gross Cost – (annual savings x EUL) – (assigned increased market value of home)

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

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

VALUE PROPOSITION

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

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

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

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

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

a. Energy savings reported for EUC *Revised Basic/ Modified Flex Path* will be based on the workpaper(s) approved by Energy Division. To date, the IOUs and RENs have submitted two workpapers to CPUC Energy Division for review and approval. The IOUs and RENs presume that the savings assumptions approved in the workpaper(s) will apply to all parties. The IOUs and RENs will align on post eligible conditions for eligible measures once the workpaper process has concluded. The IOUs and RENs expect that approval of any workpaper will be expedited due to the close collaboration between the parties and ED.

The IOUs engineers submitted a workpaper based on eQuest after IOU collaboration with Energy Division engineering. The workpaper analysis eliminates custom modeling for each project, but allows, via a combination of deemed values, a custom modeled SOW for each project. This lowers the contractor's cost, and streamlines Quality Control. The goal is for participating contractors be able to spend more time selling and installing jobs, and less time creating custom simulations. SDG&E has developed a web-based tool for contractors to use based on the savings levels found in the workpaper.

The IOUs will continue to develop their workpaper analysis, adding additional measures and refining the baseline assumptions, consistent with the approach they have taken at the direction of the CPUC and its consultants. This Phase Two is expected to produce results by late Q2 2013 on the baseline recalibration, with additional measures following periodically as needed and prioritized by the Statewide EUC team.

The 1 March 2013 Disposition Letter from ED on the use of EnergyPro to model savings does not materially affect the IOUs workpaper for *Enhanced Basic/Modified Flex Path* since the work paper is based on eQuest. However, the Disposition Letter would affect the REN workpaper as it is based on EnergyPro models. The Disposition Letter reduces electric savings as follows:

Table A: Pre-Retrofit Adjustment Factors, Original + Modified

	Electric Energy and Demand		Natural Gas Energy	
	Original	**Modified**	Original	**Modified**
Heated and Cooled Homes	0.25	**0.4**	0.63	**0.8**
Heated Only Homes	1.0	**1.0**	0.63	**0.8**

This brings the savings assumptions between *Enhanced Basic/Modified Flex Path* and *Advanced Path* as proposed by the IOUs into closer alignment, but retains the modeled percent improvement between old and new. Thus the Disposition Letter does not address the incentive gap between *Enhanced Basic/Modified Flex Path* and *Advanced Path*. This means that contractors will

be financially rewarded for pursuing *Advanced Path* jobs, given the greater potential for cash incentives. The same scope of work in *Enhanced Basic/Modified Flex Path* would earn a customer roughly 3 times the incentive in *Advanced Path*.

This gap will need to be addressed to ensure *Enhanced Basic/Modified Flex Path* is a market success. If the IOU workpaper brings the savings assumptions between *Enhanced Basic/Modified Flex Path* and *Advanced Path* as proposed by the IOUs into closer alignment, but retains the modeled percent improvement between old and new. This means that contractors will be financially rewarded for pursuing *Advanced Path* projects, given the greater potential for cash incentives.

If the IOU work paper is adopted, the incentive gap between *Advanced Path* and *Enhanced Basic/Modified Flex Path* jobs threatens the *Enhanced Basic/Modified Flex Path* with irrelevance. Similarly, if the REN workpaper is adopted, and the savings are reduced by 20% to 60%, the *Enhanced Basic/Modified Flex Path* would also be non-viable. That is, retaining the same incentive level with a 50% reduction in savings threatens program cost-effectiveness and program viability from an administrative standpoint; reducing the incentive proportionally threatens market acceptance and program viability from a customer standpoint.

The IOUs and RENs are developing a joint proposal to share with Energy Division on this issue and will modify PIPs accordingly, once the work paper(s) have been approved

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

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

b. Indicate work paper status for program measures:
Table 4 – Work paper Status
[Table 4 Work paper Status to be provided as an Excel Attachment to this PIP]

10) Program Implementation Details

In addition to traditional marketing efforts, the IOUs will work through service providers and vendors to engage qualified tradespersons in the crafts that they have chosen and will continue to invite input from stakeholders to further develop additional ways to meet program objectives.

One of the avenues that the IOUs plan to pursue to advance the program's efforts to achieve deeper energy savings retrofits in homes is to build closer partnerships with California's real estate industry, including via such activities such as voluntary training and outreach

partnerships. Based on input already gathered from relevant stakeholder groups, experts, and Commission Staff, the IOUs plan to implement the following main areas of activities for this initiative to leverage partnerships with the real estate industry:

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

2) Driving customer demand for energy efficient homes via collaborative consumer education and outreach, using easy to understand messaging and including efforts such as the promotion of home energy improvements and "green" labeling around the time of purchase and sale of a home. This is a critical timing in the market that can be leveraged. The Joint Center for Housing Studies estimates that home buyers spend more than $6,000 per year on home improvements in the first two years after buying homes. In subsequent years, the annual average outlay drops to $2,500.[7]

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

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

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

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

The program will employ a number of integrated delivery strategies:

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

Statewide Informal EUC Working Group

Given the ambitious market transformation goals of EUC, it's relatively new entrance into the IOU EE portfolio, and its challenges during the first two years of rollout, the IOUs during the 2013-2014 transition cycle are committed to providing the leadership and working with CPUC, CEC, local government staff, as well as relevant stakeholders to convene a statewide EUC Working Group to address relevant and significant issues for adoption in the 2015 IOU program cycle. The IOU's seek a cooperative design and implementation approach that involves all parties with an interest in EUC.

The Working Group will be co-chaired by one IOU, determined by IOU consensus, and one non-utility co-chair selected by the Working Group. The Working Group co-chairs will solicit views and direction from Commission staff on the Working Group operations. The Working group may choose to form subgroups and/or hold stakeholder outreach meetings as necessary.

The Working Group will be composed of all former EUC Steering Committee members, the REN's, EUC Contractors, and other interested stakeholders and implementers, including the EUC implementers, Commission, and CEC staff, and CCSE as the statewide marketing and outreach coordinator.

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

In this regard, the IOU's will hire a market transformation consultant to assist with improvements to the long-term EUC design and to support a constructive IOU engagement in the AB758 process. The Working Group IOU co-chair will be the lead IOU for this contract. Members of the EUC Working Group will be offered the opportunity to

substantively shape the work scope and priorities of the market transformation consultant. Timelines and general framework for the market transformation consultant will begin at the first meeting of the Working Group in January 2013.

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

1. Role of local governments
2. Software standards
3. Data collection standards
4. Home Assessment standards
5. Home Assessment reporting standards
6. HERS II Ratings and alignment with EUC Programs
7. Contractor certification standards
8. QA/QC standards
9. Streamlined project reporting and programmatic best practices
10. Integration of HVAC programs
11. Engagement of California Real Estate Market

12. Identification of Market Transformation Milestones and Metrics
13. Cost effectiveness metrics aligned with Market Transformation goals.
14. Long term incentive structure
15. Applicable AB758 issues

In addition, the Working Group will provide substantive contributions to program design and implementation plans on the following items to be included in an updated PIP to be filed by a Tier 2 Advice Letter not later than April 1, 2013:

1. Final statewide aligned and streamlined protocols regarding heating, ventilation and air-conditioning (HVAC) emergency replacements and high performing contractors.
2. Final program design and implementation of Enhanced Basic/ Flex-Path

a) **Timelines:**
Table 5: Sub-Program Milestones
[Refer to Attachment 2 to this PIP]

b) **Geographic Scope**:
Table 6: Geographic Regions Where the Program Will Operate
[Refer to Attachment 2 to this PIP]

c) **Program Administration**
Table 7: Program Administration of Program Components
[Refer to Attachment 2 to this PIP]

d) **Program Eligibility Requirements:**

i. Customers:

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

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

Per program requirements, process, and protocol, for all EUC projects, customers must install a minimum of three energy efficiency measures which support the energy efficiency loading order and must perform appropriate combustion safety testing.

Enhanced Basic/ Revised Flex Path Participation

SDG&E has developed a software tool and web application that a participating contractor can use to calculate project points based upon percentage of savings determined using basic characteristics of each home, vintage, and climate zone. This software tool is developed with strong engineering-supported savings in consideration of installed measure, including interactive effects and standard DEER and RASS assumptions.

Customers will be required to install at least 1 of 3 base measures, supplemented to attain the 3-measure and point thresholds built into the programs, with additional motivation for installing additional base measures. This simple, menu-driven, flexible design is expected to greatly increase the volume of projects over the original Basic Path. Contractors will be trained and encouraged to develop work scopes that include more building envelope measures and go beyond core systems. The 2013-2014 Energy Efficiency Transition Period gives the IOUs and RENs the opportunity to test a program design targeted at achieving a higher volume of retrofits, meeting the Commission's program criteria, and demonstrably supporting the loading order.

Participation Process

1. Select a participating contractor or participating rater.
2. Participating contractor or participating rater performs a combustion appliance safety CAS testing (pre-and post- installation).
3. Determine a scope of work:

a. Select a minimum of one of three base measures.
b. Select additional base or other flex measures for a minimum of three total measures.
c. If selecting to install any HVAC measures, in addition to duct replacement/duct sealing, customer must select one qualifying envelope measure.
d. Select any stand-alone measure(s) if desired (stand-alone measures do not count towards three measure minimum or marginal savings).

4. Participating contractor or participating rater performs a combustion appliance safety CAS testing (pre-and post- installation) and install measures.
5. Participating contractor or participating rater to submit project information for Quality Assurance/Quality Control (QA/QC) as applicable to measures installed.
6. Incentive paid to customer, or if designated by customer, to participating contractor.

Table 8: Customer Eligibility Requirements (Joint Utility Table)
[Refer to Attachment 2 to this PIP]

ii. Contractors/Participants:

Participating Contractor Requirements for *Enhanced Basic/ Modified Flex Path* and *Advanced Path*

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

1. Contractor State Licensing Board (CSLB) license in the appropriate specialty;
2. Bonding and in good standing.
3. Insurance to IOU minimum insurance standard;
4. Execution of a contractor participation agreement;
5. Completion of all utility training course requirements, including Participation Workshop and Home Performance training (online and field components). Home Performance training may be waived if contractor has at least one BPI (BA) already on staff. 6. BPI-certified Building Analyst (BA) to complete Combustion Safety and Carbon Monoxide Protection and all other minimum Health and Safety Requirements specified in the BPI Technical Standards for Building Analyst Professional (this may be subcontracted to a third party);
7. Ensure HVAC permits will be pulled on all work that is appropriate per local jurisdiction requirements;
8. Participating Contractors must employ at least one staff person who holds an active BPI Building Analyst certification. BPI accreditation is

strongly encouraged and may be required of all participating contractors at some point during the program cycle;

9. Additional IOU requirements, as appropriate.

Participating Rater Requirements for All EUC Paths

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

Table 9: Contractor/Participant Eligibility Requirements (Joint Utility Table**)**
[Refer to Attachment 2 to this PIP]

e) **Program Partners:**

a. **Manufacturer/Retailer/Distributor partners:**
Table 10: Manufacturer/Retailer/Distributor Partners
[Refer to Attachment 2 to this PIP]

b. **Other key program partners**:
Table 15: Energy Division, California Energy Commission, local governments, BPI and other standards bodies, as well as other partners
[Refer to Attachment 2 to this PIP]

f) **Measures and incentive levels**:

***Advanced Path* Incentives**

Incentives for the *Advanced Path* will be paid based upon modeled site savings energy utilizing any CEC approved simulation modeling software approved by IOUs. Incentives for *Advanced Path* are designed to encourage customers to reach for deep energy savings. *Advanced Path* incentives are for both gas and electric measures provided by the customers' participating utility program.[8]
Currently, Energy Pro simulation modeling software is the only approved software for use with EUC. During the 2013-2014 transition cycle, the IOUs will work collaboratively with the CEC and other stakeholders to identify potential approaches to adequately broaden the allowable software under the EUC while containing costs required for needed Commission Staff reviews.

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

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

Enhanced Basic/ Modified Flex Path **Incentives**

SDG&E has developed a software tool and web application that a participating contractor can use to calculate project points based upon percentage of savings determined using basic characteristics of each home, vintage, and climate zone. This software tool is developed with strong engineering-supported savings in consideration of installed measure, including interactive effects and standard DEER and RASS assumptions.

The *Enhanced Basic/Modified Flex Path* incentives will be tiered, driven by the customer's desired SOW. Incentives will begin at $1,000 for 100 points which will be equivalent to 10% site energy savings. The incentive tier increase at each 50 point incremental improvement, to encourage deeper energy retrofits. Each 50 point increment will equate to an additional $500 incentive. The incentives align with *Advanced Path* incentives for similar saving percentages, but the *Enhanced Basic/Modified Flex Path* will max out at 250 points (a $2,500 incentive).

To encourage customers to more fully adhere to the loading order, customers are eligible for additional bonus points for installing additional base measures. When installing 1 or 2 additional base measures beyond the required one measure, customers will receive cumulative bonus points of 15 and 20 for each additional base measure installed.

100 Points	$1,000
150 Points	$1,500
200 Points	$2,000
250 Points	$2,500*

In no case, regardless of any bonus points customers may receive, may customers participating in *Enhanced Basic/ Modified Flex Path* be eligible for incentives over $2,500.

***Multifamily Path* Incentives**

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

Ten Year Stepwise Incentive Structure

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

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

Table 11: Summary Table of Measures, Incentive Levels and Verification Rates
[Refer to Attachment 2 to this PIP]

Permitting Requirements

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

Qualified Measures

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

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

Enhanced Basic/ Modified Flex Path **Measures Installed Per Measures Installation Standards:**

Base Measures:

Measure	Post-Upgrade Condition
Attic Insulation & Attic Air Sealing	Insulation to R-30 or greater
Duct Sealing OR Duct Replacement	Seal to ≤ 10% for existing systems and ≤ 6% for duct replacement
Whole Building Air Sealing	≥ 30% or ≥ 15% leakage reduction from vintage table defaults

Flex Measures:

Measure	Post-Upgrade Condition
Flex Measures – Envelope	
Floor Insulation	≥ R-19
Wall Insulation	≥ R-13
High Performance Windows	TBD, Phase 2

Measure	Post-Upgrade Condition
Flex Measures – DHW	
Gas Water Heater	Gas Storage Heater EF ≥ 0.62; 0.67 for PG&E and SDG&E
	Gas On-Demand Tankless Heater; EF ≥ 0.82
Electric Water Heater	Electric Storage Water Heater; EF ≥ 0.93
	Electric Heat Pump Water Heater; ≥ 2.0 EF PG&E and SCE, not SDG&E

Measure	Post-Upgrade Condition
Flex Measures – HVAC*	
Gas Furnace	Gas Furnace; ≥ 0.92 AFUE; 0.95 for PG&E in future
High Efficiency AC	Central AC; ≥ 14 SEER; ≥ 12 EER
Right-Size HVAC Kicker	N/A until QI work paper approval
	N/A until QI work paper approval
Duct Insulation	Insulation ≥ R-8

* If selecting to install any HVAC measures, customer must select duct replacement/duct sealing plus one qualifying envelope measure

Additional Stand-Alone Measures:

Measure	Post-Upgrade Condition
Stand Alone Measures*	
Variable Speed Pool Pump	Variable-Speed Pool Pump and Motor (Plug Load and Appliances Program (PLA)
EnergyStar Lighting	N/A (Upstream Incentive Program)
Refrigerators	PLA catalog
Dishwashers	PLA catalog
Clotheswashers	PLA catalog
Whole House Fan	PLA catalog
Refrigerator/ Freezer Recycling	Appliance Recycling Program

*Note: For the IOU Additional Stand-Alone Measures, the list provided is an example set of measures that can be added-on to the whole house retrofit package.

Required or Recommended Measures:

Required measures below will not get any points but savings will be claimed.

Measure	Measure Requirement	Program Requirment
Low Flow Showerheads with TCV	Low Flow Showerheads ≤ 1.5 gpm; Bathroom Faucet Aerators ≤ 1.5 gpm; Kitchen Faucet Aerators ≤ 2.2 gpm	All projects require installation of a thermostatic shut-off valve on all showers in the home except when installing a tankless water heating system
Hot Water Pipe Wrap	Minimum First 5ft of Hot Water Pipe Wrapped	Must include pipe wrap for first five feet of exposed pipes
Sealing of can lights or Replacement with Sealed ENERGY STAR Fixtures	EnergyStar CFL or LED Fixture(s); Permanently Installed	It is highly recommended that all incandescent recessed can lighting fixtures be replaced with ENERGY STAR® CFL fixtures or ENERGY STAR® LED fixtures

Advanced Path **Measures Installed Per Measures Installation Standards:**

Attic Insulation
Cool Roof Installation (CRRC-certified)
Cooling System Upgrade
Domestic Hot Water Heater Upgrade (non-solar)
Domestic Hot Water Pipe Insulation
Duct Insulation
Duct Test and Seal
Exterior Lighting Upgrade – Permanently Installed High-Efficacy
Floor Insulation
Heating System Upgrade
Interior Lighting Upgrade – Permanently Installed High-Efficacy
Low-Flow Shower Head
Radiant Barrier Installation
Thermostatic Shut-Off Valve
Wall Insulation
Whole House Fan Installation
Whole House Air Sealing
Window Upgrade
Other Measures as may be modeled and allowed by IOUs per regional market needs

Advance Path Ineligible Measures

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

Multifamily Building Eligible Measures

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

g) **Additional Services:**

Table 12: Additional Service
[Refer to Attachment 2 to this PIP]

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

IOUs will conduct integrated as well as program-specific marketing and outreach which will be coordinated with the statewide marketing and outreach program. The utilities may use a range of tactics such as; e-mails, flyers, on-Line marketing, direct

mail, bill messaging, social media, local events, ethnic media, and other channels that suit the target audience, the message, and the resources.

Marketing, Education and Outreach plans

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

2) **Target Audiences**

   EUC marketing and outreach aims to include all stakeholders in the retrofit process, throughout the life of the program. This will help to ensure that all audiences receive consistent information and will enable a more informed dialogue about program specifics, in an effort to continuously engage stakeholders in the energy efficiency retrofit process. The initial target group is comprised of the following audiences listed below and are based on the results of the statewide market survey research.

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

3) **Keys to Success**

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

   - Continue to utilize a statewide brand and message; and a creative envelope for EUC marketing efforts to avoid market confusion;
   - Co-brand where feasible;
   - Coordinate with local governments;
   - Engage contractors, stakeholders and local governments in generating customer demand; and

- Provide collateral pieces to participating contractors to assist in lead generation and education;
- Employ expanded community based marketing approach; and
- Use a variety of innovative marketing strategies such as time of sale assessment vouchers.

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

Specific workforce development efforts supporting EUC include the following:

- CEC/EDD: California Clean Energy Workforce Training Program Community college programs;
- Third party programs; and
- IOU training offerings (IOU trainings will serve as backup if required. IOU courses do not duplicate modules available in the marketplace but will serve backup role in the event that a market need is identified and best served by the IOU Energy Training Centers).

EUC will be coordinated with the statewide IOU WE&T program, local government residential retrofit and contractor training programs that are tied directly to workforce education and training efforts on a state and federal level.

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

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

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

Contractor recruitment efforts will be conducted primarily by third party program implementers – a model that has proven successful in statewide IOU HVAC programs in the 2010-2012 program cycle. Program implementers will continue to primarily recruit contractors through:

- The network of contractors already participating in IOU HVAC, insulation and weatherization programs;
- Direct outreach through trade groups with locally active memberships;

- Workforce development departments (to target unemployed general contractors).

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

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

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

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

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

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

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

   Table 13: Post-implementation Audits
   [Refer to Attachment 2 to this PIP]

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

Payment of customer incentives will be tied to the contractor's delivery of full job required program documentation. Program implementers will randomly select a minimum of 5 percent of each participating contractor's reported retrofits for onsite job verification and review 100 percent of the job data inputs from contractors. Verifications will include homeowner interviews, intensive visual checklist inspections, and selective retesting of key items. A subset of these energy savings estimates may later be validated against the first year's after-retrofit utility bills plus climate data and homeowner interviews as needed to identify changes in other factors affecting energy use. IOUs, and where applicable, RENs, will collaborate to develop QA/QC plans and documents that reflect statewide uniformity to the greatest extent possible. QA/ QC documents and standards will be updated regularly with contractor input and will include:

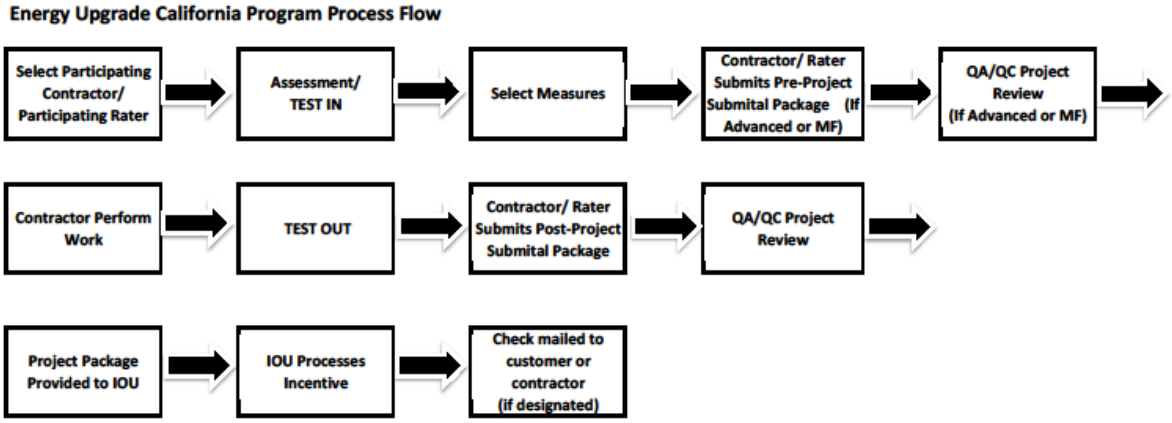
1. QA/QC Process and Protocols
2. Minimum installation standards for all allowable measures
3. Emergency and Fast Track equipment replacement protocols.

a. Exhibit A attached includes existing and continuing IOU Emergency and Fast Track protocols.

4. Permitting requirements
   a. EUC shall support Heating Ventilation and Air Conditioning permit acquisition as a matter of course.
   b. EUC jobs involving HVAC replacement must include submittal of the HVAC permit number and a contractor certification that appropriate permits have been obtained, for inclusion in program records.

Table 14: Quality Assurance Provisions
[Refer to Attachment 2 to this PIP]

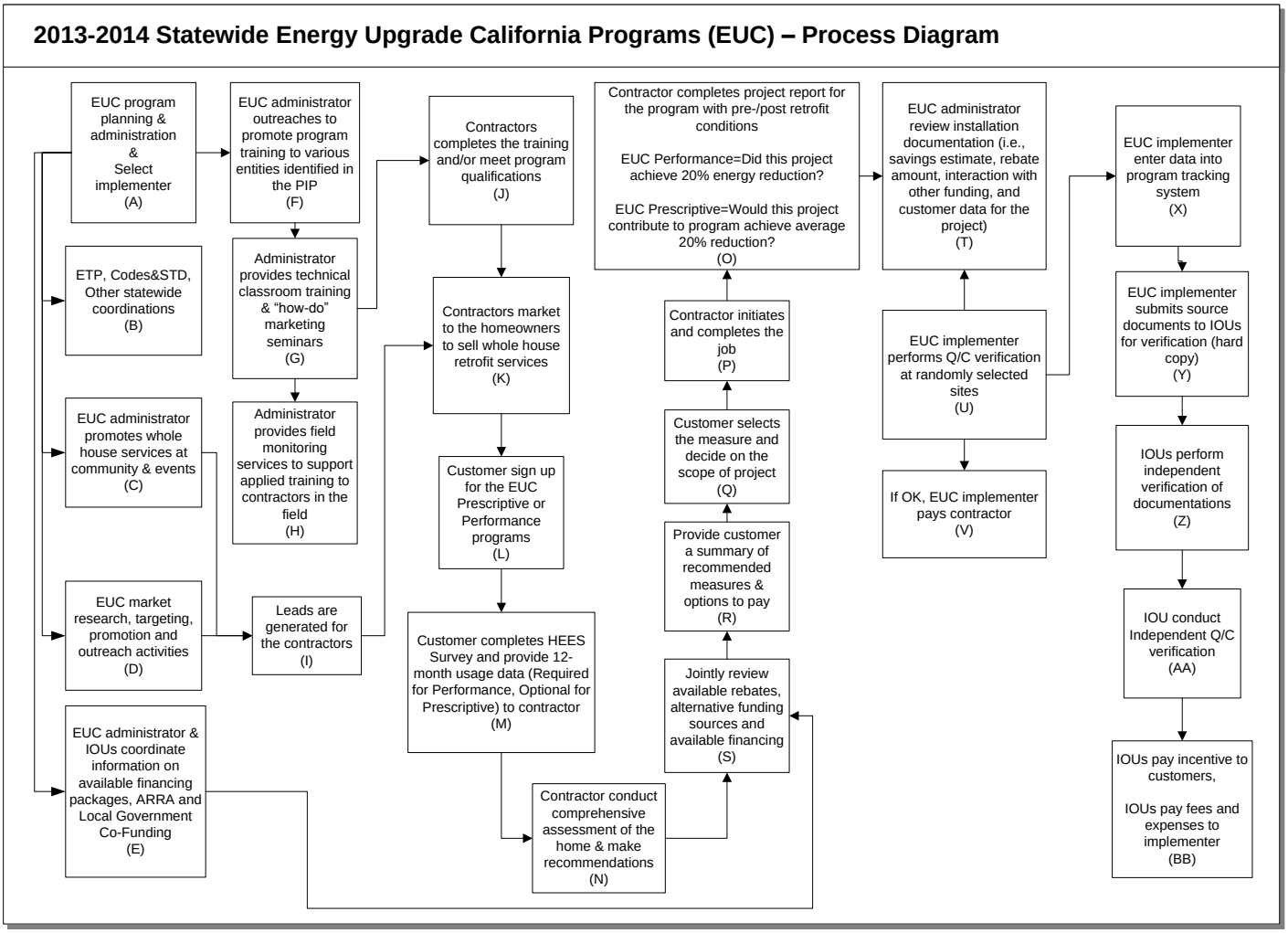
l) **Sub-program Process Flow Chart:**



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

Table 15: Cross-cutting Sub-program and Non-IOU Partner Coordination
[Refer to Attachment 2 to this PIP]

n) **Logic Model:**



11) Additional Sub-Program Information

a) **Advancing Strategic Plan Goals and Objectives**:
The EUC is consistent with the requirements of the *Strategic Plan*. It addresses the Whole-House Strategy of the *Strategic Plan* by influencing contractors and customers to implement comprehensive home retrofit energy efficiency measures through either the *Enhanced Basic/ Modified Flex Path* on-ramp, *Advanced Path* or *Multifamily Path*.

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

effective, high efficiency appliances, water heaters and HVAC upgrades. The *Strategic Plan* further states that a similar approach must be developed for multifamily housing. The program will help to achieve the following goals identified in Section 2 of the *Strategic Plan*:

Table 6. Whole House Alignment with California Long Term Energy Efficiency *Strategic Plan*			
Residential and Low Income Goal 2: Existing Homes			
Goal Number	**Strategy**	**EUC Strategy**	**Integrated Programs & Activities**
2-1	Deploy full-scale Whole-House programs.	Monitor performance of selected lower energy homes. Design implement, monitor and continuously improve full-scale programs for whole-house energy efficiency and renewable energy retrofits.	Programs: EUC, Solar, Demand Response, MFEER, Plug Loads, ESAP Marketing: Customer segmentation and local coordination EM&V: Studies to provide early feedback and establish baselines
2-2	Promote effective decision-making to create widespread demand for energy efficiency measures.	Continue to offer Energy Advisor programs online, by mail, and over-the-phone to provide customers with information to promote effective decision-making, in combination with other segment specific marketing outreach and educational activities.	Programs: Energy Advisor EUC, MFEER Marketing: Customer and contractor education to promote building efficiency and appropriate EE behaviors in a segmented manner
2-3	Manage research into new/advanced cost-effective innovations to reduce energy use in existing homes.	Coordinate with Emerging Technologies and other programs to integrate market-ready technologies into the Whole House offering when appropriate. Promote commercialization of home energy management tools including AMI-based monitoring and display tools	Programs: Emerging Technologies, Demand Response, Solar, and others
2-4	Develop financial products and programs such as on-bill financing to encourage demand for energy efficiency building products, home systems, and appliances.	Ensure that customers are aware of the most effective and attractive financing packages that are available to them.	Programs: EUC Coordination: Local government partnerships and other state/federal financing entities
2-5	Increase Title 24 compliance through specific measures leading to aggressive statewide enforcement.	Partner with local governments to expedite the permitting process to decrease the barriers to entry in the home performance industry.	Coordination: Local government partnerships

b) Integration

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

The IOUs have identified IDSM as an important priority. The IOUs plan to monitor the progress of other IDSM efforts and to work closely to identify comprehensive integration approaches that feed into the overall statewide strategy and to implement best practices as rapidly as practical.
The statewide EUC is a platform for integration of solutions to the residential customer and is intended to provide an easy entry point for customers and contractors that ultimately integrate other programs for whole house and customer solutions. As awareness of the cost-effective opportunities in whole house retrofits grows through training and education efforts, customers will be presented with the ability to integrate Demand Response and properly-sized onsite generation.

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

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

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

In addition, any contractors who work onsite with customers can provide delivery channels for DR programs information or installation of DR technology. EUC will also serve as a platform to integrate technology advancements in DR and Advanced Metering. IDSM efforts will be part of an ongoing conversation with customers to enhance program offerings and increase their participation in DSM efforts over time.

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

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

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

One of the major benefits of comprehensive home retrofits is improved indoor air quality. Residents will notice more consistent temperatures throughout their home and in many cases, improved indoor air quality.
The embodied energy in water distribution will become an increasingly important part of utility programs. The consumer education process in the house-as-a-system approach will provide an opportunity for local governments to present customers with information on non-energy savings inherent in comprehensive retrofits.
[Refer to Attachment 2 to this PIP]

c) **Leveraging of Resources**:

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

Over the course of the last few years, SDG&E has worked closely with each local government to ensure local programs are closely coordinated and achieve the highest level of collaboration and consistency across the region. Building off the lessons learned over the course of the last few years as well as the unique authorities afforded local governments, SDG&E and the local government program advisory group has developed the following list of key roles that local governments will play to advance Energy Upgrade California during the transition cycle.

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

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

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

4. Coordinate workforce education and training program activities;

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

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

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

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

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

EUC will coordinate IOU incentives and marketing outreach with local government efforts in neighborhood outreach and contractor recruitment. This effort allows for multiple levels of engagement that, through coordination with local entities, will reach to a neighborhood level that will drive awareness and market adoption.

d) **Trials/ Pilots:**

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

12) Market Transformation Information:

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

The EUC program is designed to fulfill the goals of the *Strategic Plan* by guiding and incenting home and building buyers, owners and renovators to implement a whole house approach in energy consumption undertaken in their purchase and use of existing and new homes and buildings, home and building equipment (e.g. HVAC systems), household appliances, lighting and "plug load" amenities. The target is all existing homes in an effort to realize the maximum energy efficiency potential via the delivery of a comprehensive package of cost-effective whole-house and whole-building energy efficiency retrofit measures. These programs will include building shell upgrades, high-efficiency HVAC systems – appropriately sized for the building structure, and emerging deep energy reductions in the lighting, appliance, plug-load and other residential oriented sectors. This initiative will be structured around a comprehensive audit, installation of the variety of retrofits required across the entire building structure, and access to attractive financing programs. The EUC effort will be achieved via the parallel and coordinated efforts of the utility programs, partners and other private market actors, and the State and local government policies and programs made available. As IOUs implement a system of automatic meters and wide-area network to enable data transport, the IOUs and customers will have the opportunity to integrate additional home automatic systems and integrated energy management features into the home (i.e., interim Intelligent Home Network, comprehensive Home Automatic Network and etc.) to support IDSM integration and deployment. The Plug Load and Appliance Program will have the potential to offer not only hardware based energy savings, but also comprehensive behavior savings opportunities.

2) I Identification of the relevant market actors and the relationships among them

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

- Energy Upgrade California:
  - *Enhanced Basic/ Modified Flex Path,*
  - *Advanced Path*
  - *Multifamily Path*

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

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

Market Characterization

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

Overarching program participant profile

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

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

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

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

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

- 29% of the targeted population are aware of Energy Upgrade California (EUC),
- 13% of the targeted population reported seeing logo displayed,
- 3% of the targeted population have visited the website,
- 43% of the targeted population has been exposed to at least one marketing treatment from EUC.
- Among those "aware" in the targeted population, 27% first heard of the program from radio, (PG&E did not do radio ads but the local governments did), 18%

from direct mail, 11% Newspaper, and 10% each for Word-of-Mouth, Internet and Television.

- Among workshop participants, word-of-mouth and events are the most effective communication channels.
- Program homeowner participants ranked "comfort", "reduced energy bill", "benefits of the incentive" and "home energy assessments" as important reasons for why they participated.
- Contractors report the most effective messaging in their opinion are the messages of: Comfort, Incentives, Lowering energy bills

Market Actors:

- Homeowners/renters & property owners/managers
- Contractors
- Real Estate Professionals
- Financial Institutions
- Property Appraisers
- Local governments

Relationship Among the Market Actors:

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

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

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

Opportunities to advance demand side management technologies and strategies:

Building owners who have committed to a EUC retrofit solution will have taken the ultimate step in applying energy efficiency technology to minimize their energy usage.

They have evidenced their willingness to pursue minimizing energy usage, and are therefore self-identified as highly likely to embrace the next step(s) of demand side technologies and strategies to further minimize energy usage. So the next phase of energy reduction for the EUC retrofit customers will be the variety of demand side reduction programs that the IOUs can make available.

Key Barriers & Opportunity for Intervention:

The barriers for this program for the homeowner sector are the:

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

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

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

(1) Lack of knowledge regarding energy efficiency as well as the comprehensive programs that are offered by the IOUs,
(2) Challenge of the "split incentive" where it is the building owner/manager who must pay for all building improvements, including those inside of the individual rental units. But it is the tenants of the unit that pay the energy bills and therefore receive the immediate benefits of the energy efficient investment (by the landlord),
(3) Multifamily buildings are managed as businesses, where capital for major improvements must be borrowed. But the extended ROI for most energy efficiency projects is longer than the few years that most business allow for recouping their investments,
(4) To implement a "whole building" retrofit, the apartment owner/manager must typically bring in several specialty contractors for multiple visits, which in tenant occupied units is a very challenging task,

(5) Tenants having to out of the rental units during retrofit work, as well as the management time required on behalf of the building owner/manager – is a costly investment of resources,
(6) Major retrofit often can only happen when the rental unit(s) is unoccupied – which is a significant loss of income for the owner/manager,
(7) Managed as a business – multifamily building owners/managers are not inclined to replace any major building component or energy system prior to its actual wear-out/break-down. Building retrofits usually take place toward the "end-of-life" of key components (HVAC – for example) – but not when they break-down. Building owners/managers cannot afford the impact on tenants of having key systems not functioning for any length of time.

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

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

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

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

3) Expanded customer uptake through EUC incentives. (Barrier 1, 2, 5)
   Intended Results: Use incentives to reduce the barrier of entry into the comprehensive retrofit projects

4) Offering of Financing programs (by IOUs and/or other entities) (Barrier 1, 2, 9)
   Intended Results: Provide building owners the upfront cash they need to borrow to invest in a retrofit project, and amenable loan terms by which to repay that loan (note: this program component will be particularly important in the multifamily sector).

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

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

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

1) To improve a property owner or manager's energy efficiency knowledge, the *Multifamily Path* would seek to leverage comprehensive investment grade

building assessments to identify potential energy efficiency opportunities. (Barrier 1)

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

5) A coherent program or "market" logic model

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

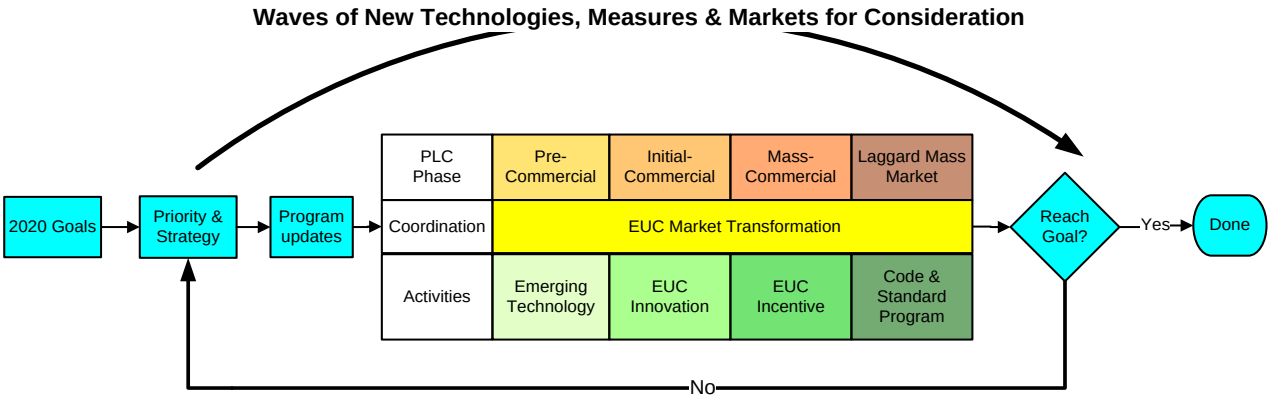
EUC will be serving both homeowners and property owners/managers, with the intent to coordinate its program activities with the low-income program to meet special needs. Like the other market transformation programs, the EUC program, will work with Emerging Technology (I), Plug Load & Appliance, Residential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

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

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

The expected outcome of this program includes increased and improved awareness, knowledge and attitude (AKA) of homeowners and apartment owners towards understanding the benefits of deep energy retrofits (P). After realizing these benefits from program participation, the participant further enjoys other non-energy benefits such as improved comfort of the house and increased value of their properties. The increased value in the property will become more pronounced as the state finalizes its home rating system, so the home purchasers will be aware of the inherent value of properties complete with deep energy reduction retrofits (U). All of these benefits will help the program participants to continue property improvements outside of the program and outside of the program offerings, leading to spillover effects (T). These participant and non-participant spillover effects will eventually change the overall composition of the housing stock at the market level, making housing and building code ratcheting possible for society (X & Y). These codes and standards changes will lead to further reduction of energy consumption at the market level leading to fulfilling the objectives of the California Long-Term energy and environmental policies (AA).

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



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

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

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

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

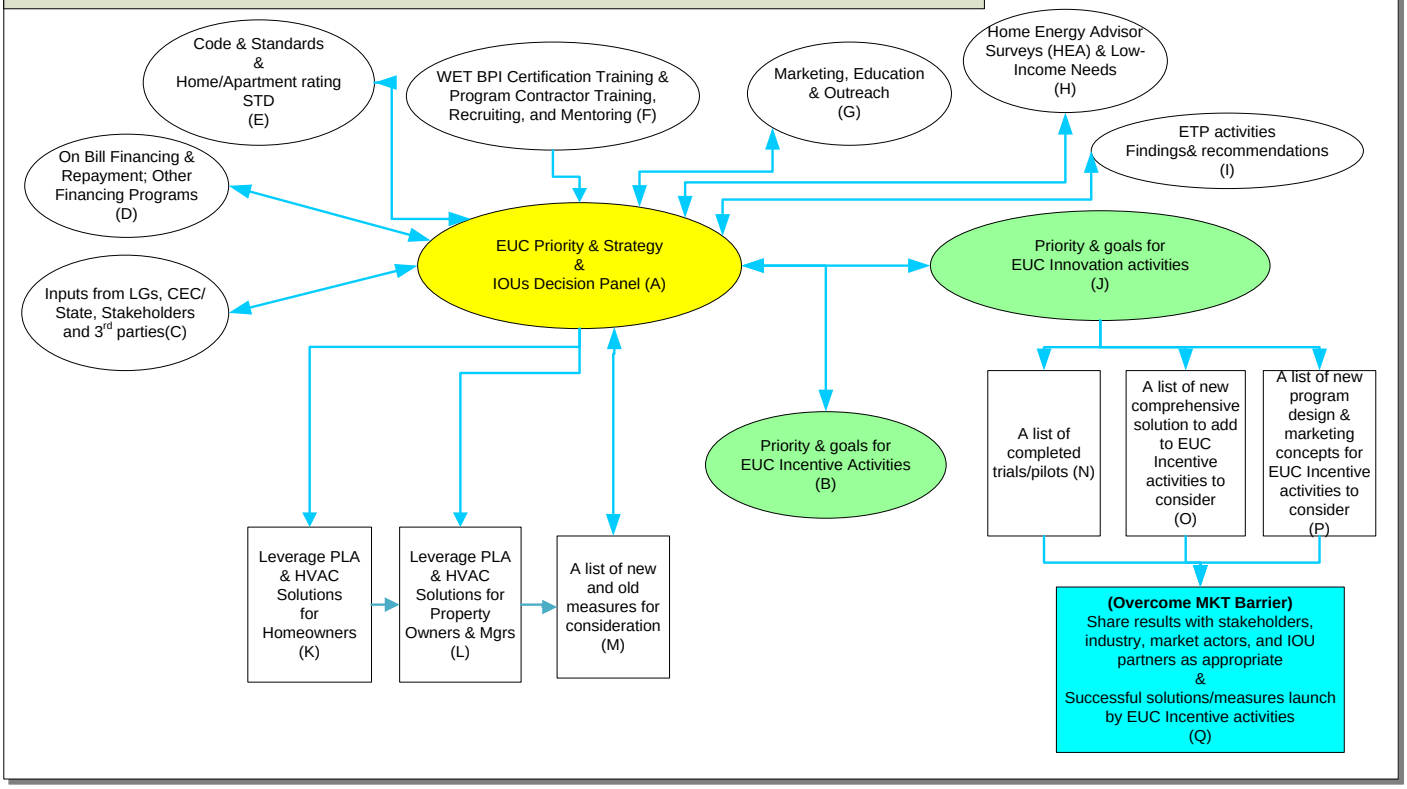
Formative evaluation: The formative evaluation of a market transformation program is typically performed at the intervention (i.e. program) level. The methods are the same as would be used in a program process evaluation, and would include interviews with program staff, participants and non-participants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

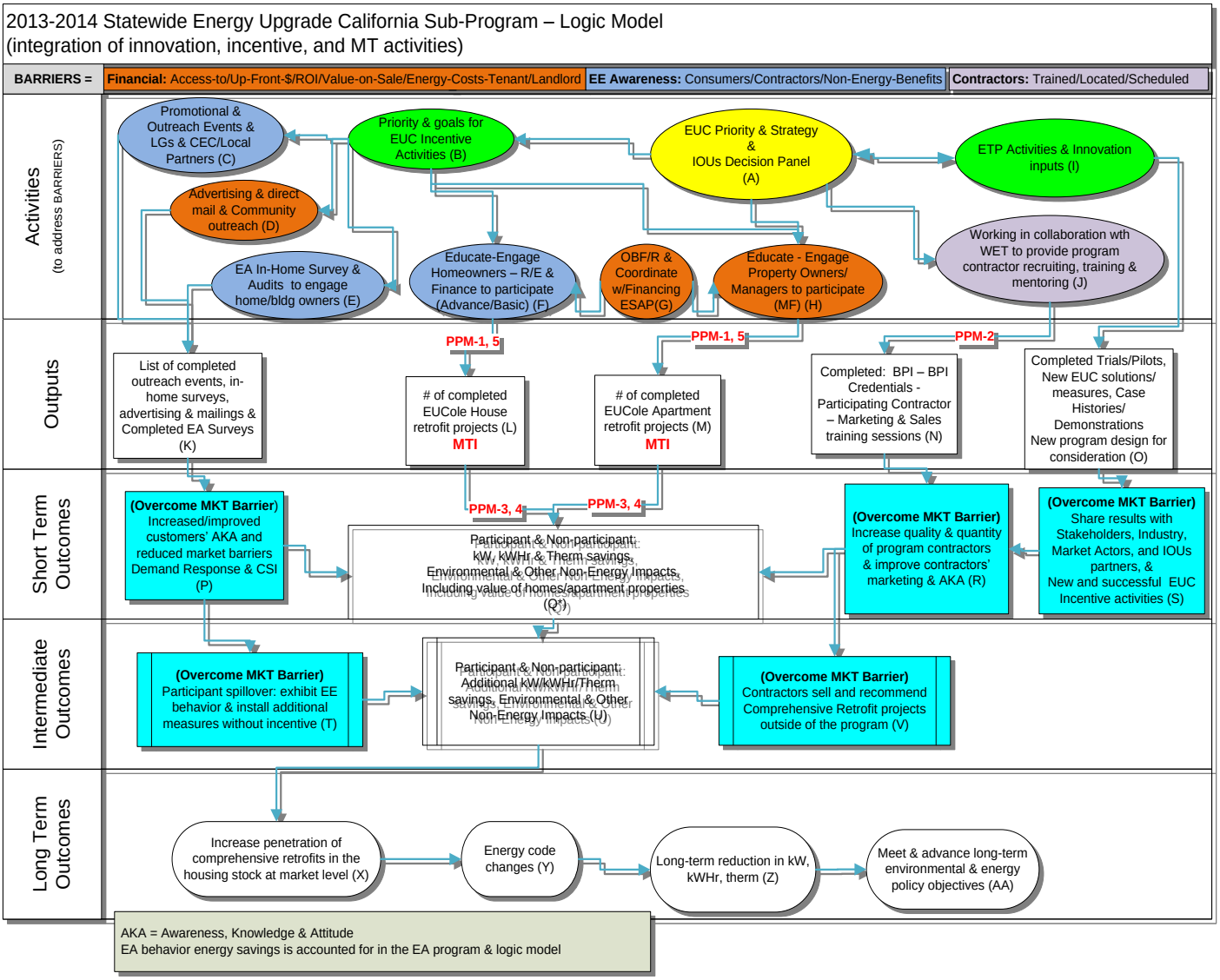
Program Performance Metrics:
Refer to Attachment 2 to this PIP

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

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

2013-2014 Energy Upgrade California Sub-Program Key Support Activities – Process Diagram





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

IOU Streamlined Emergency Replacement Protocol and Streamlined High Performing Contractor Protocol

1. **SDG&E**

   a. **Streamlined Emergency Replacement Protocol Per section 7 of SDG&E's QA/QC Quality Assurance and Quality Control Plan:**

   7.0 Emergency Replacement of Major Systems

   7.1 *It is recognized that there may be instances whereas immediate replacement of major systems is required due to health, safety and quality of life*

circumstances. In the event the customer has immediate need for equipment replacement, the QA/QC process will not interfere with a customer's ability to participate in the EUC.

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

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

b. Streamlined High Performing Contractor Protocol

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

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

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

Program Non-Energy Objectives

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

Table 3: Quantitative Program Targets (PPMs)
[Refer to Attachment 2 to this PIP]

14) Additional SDG&E *Multifamily Path* Information

1. Budget and Savings

The EUC Multifamily Path budget and savings estimates are considered part of the overall EUC budget and savings goals. The Multifamily Path was not filed as its own program, but filed as one component of a whole building performance program that also includes two single family paths. Actual expenses and impacts will depend upon customer uptake in the three paths and many expenses will be shared and leveraged with the single family paths in order to streamline and reduce administrative and implementation costs.

Given the shared and leveraged single family and multifamily components, the *Multifamily Path* proportion is estimated to be approximately 25% of the proposed EUC budget serving an estimated 2,800 dwelling units with estimated impacts of approximately 1,800,000 kwh and 72,000 therms

2. Incentives

Incentives will be offered on a tiered structure consistent with single family whole house performance incentives, paid on a per unit basis, based upon total building energy saved. An additional $100 per unit has been included to provide some offset for the high cost of rating a multifamily building and the combustion safety testing requirement. However, no incentives will be paid for just building ratings or combustion safety testing. Incentives are paid based upon successful completion of a whole building performance project, in accordance with program requirements, that meet the site energy savings as described below. Incentives will be paid to building owners only and cannot be designated to be paid to third parties. The following are the proposed incentive tiers:

Site Energy Savings	Incentive/unit
10%	$550
15%	$625
20%	$800
25%	$1,000
30%	$1,200
35%	$1,350
40%	$1,500

ATTACHMENT 2

Energy Upgrade California

Table 1: Total Projected Program Budget & Savings by Subprogram

Subprogram	PG&E ($)	SCE ($)	SDG&E ($)	SCG ($)	Kwh	KW	Therms
EUC			$11,324,594		2,372,625	1,898	542,857

Table 2: Total Projected Program Savings by IOU

Subprogram	PG&E Kwh	PG&E KW	PG&E Therms	SCE Kwh	SCE KW	SDG&E Kwh	SDG&E kW	SDG&E Therms	SCG Therms	Total
EUC						2,372,625	1,898	542,857		

Table 1. Projected Sub-Program Budget, by Calendar Year

	Program Year		
SDG&E EUC	2013	2014	Total
Admin ($)	$ 240,762	$ 242,512	$ 483,274
Incentives ($)	$2,805,516.33	$2,862,719.88	$5,668,236.21
Implementation Non-Incentives ($)	$ 1,608,232	$ 1,643,232	$ 3,251,464
Marketing & Outreach ($)	$960,809.90	$960,809.90	$1,921,619.80
Total Budget	**$ 5,615,320**	**$ 5,709,274**	**$ 11,324,594**

Table 2 Projected Sub-Program Net Energy and Demand Impacts, by Calendar Year

SDG&E EUC	Program Years		
	2013	2014	Total
GWh	11.105	11.090	**22.195**
Peak MW	2.884	2.899	**5.783**
Therms (millions)	0.643	0.622	**1.266**

Table 3 Quantitative Program Targets Short Term Program Performance Metrics (STPPMs)

PPM ID	Target	2013	2014	TOTAL
RES-16.1	Number of homes treated in the sub-program for 2013-2014. (Enhanced Basic/ Modified Flex Path)	1,000	1,600	**2,600**
RES-16.2	Number of homes treated in the sub-program for 2013-2014. (Advanced Path)	250	400	**650**
RES-17	Number of enrolled contracting firms participating in the sub-program	120	160	**160**
RES-18.1	Average Ex-ante savings per home as reported (average kWh, therms, kW) for **Advanced** path by climate zone	N/A	N/A	N/A
RES-18.2	Average Ex-ante savings per home as reported (average kWh, therms, kW) for **Enhanced Basic/ Modified Flex Path** by climate zone	N/A	N/A	N/A
RES-19	Average and range of evaluated energy savings per home (Basic and Advanced Paths)	N/A	N/A	N/A
RES-20.1	Number of homes not passing Quality Assurance/Quality Control review, by IOU	N/A	N/A	N/A
RES-20.2	Percentage of homes not passing Quality Assurance/Quality Control review, by IOU	N/A	N/A	N/A

*****Since these forecasts were submitted in July 2012, there have been numerous policy changes, and program changes, all of which affect this forecast. At a meeting on 4 March 2014, with senior Commission staff, the RENs and IOUs were told we would have the opportunity to modify our forecasts in light of policy changes recommended by the Commission. We submit these high participation scenarios here, consistent with the controlling decision, but we look forward to the opportunity to clarify these numbers in light of subsequent changes.

Long Term Program Performance Metrics (LTPPMs)

SDG&E includes long term PPMs per Energy Division guidance received in December 2012. As stated in the Joint Utilities' comments to the Commission in R. 09-11-014 dated November 21, 2011, and discussed between IOUs and ED on January 9, 2013, IOUs plan to finalize long term PPMs in further discussions with involved stakeholders and propose updates to Energy Division at a later date.

MTI Index#	RE-CATEGORIZED Metric (LTPPM - or SPI) [E-4385 Appendix B original text except for noted edits]	Unresolved Issues
Deep Retrofit - 3	MT Indicator 3: ~~The number and percent of audits performed compared to the number of customers signed up for an audit (NRDC, p.7)~~. Number of IOU customer households that undergo a deep retrofit (Advanced and/or IDSM) audit through IOU programs.	

Table 4: Work paper Status

#	Work paper Number/Measure Name	Approved	Pending Approval	Submitted but Awaiting Review
1	SDG&E SF Prescriptive Deemed Savings			
2	WPSCREMI0004.0 Prescriptive Whole Home Retrofit Program		x	
3	PGECOALL104 Whole House Rebate			x
4	SCG SF Prescriptive Deemed Savings		x	
5	PGECOALL100_R3 Custom Measures		x	
6	SDG&E Custom Measures			

Table 5: Sub-Program Milestones and Timeline (example)

Milestone	Date
IOU/ ED Monthly Progress Meetings	1/1/2013-12/31/2014
Monthly EUC Working Group Meetings	1/1/2013-12/31/2014
Revised Basic AL/ PIP	4/1/2013

Table 6: Geographic Regions

Geographic Region	SDG&E	SCE	PG&E	SoCalGas
CEC Climate Zone 1			x	
CEC Climate Zone 2			x	
CEC Climate Zone 3			x	
CEC Climate Zone 4			x	x
CEC Climate Zone 5			x	x
CEC Climate Zone 6	x	x		x
CEC Climate Zone 7	x	x		x
CEC Climate Zone 8	x	x		x
CEC Climate Zone 9		x		x
CEC Climate Zone 10	x	x		x
CEC Climate Zone 11			x	
CEC Climate Zone 12			x	
CEC Climate Zone 13		x	x	x
CEC Climate Zone 14	x	x		x
CEC Climate Zone 15	x	x		x
CEC Climate Zone 16		x	x	x

Table 7: Program Administration of Program Components

Program Name	Program Component	Implemented by IOU Staff? (X = Yes)	Implemented by contractors to be selected by competitive bid process (if Yes then enter type of contractor/other maket actor possibly used)	Implemented by contractors NOT selected by competitive bid process (list prime contractor and sub-contractor names)	Implemented by local government or other entity (X = Yes)
	SDG&E Marketing	x			
	SDG&E Program Administration	x			
	SDG&E Contractor/ Rater Training		X (EE program vendor with subject matter expertise)		
	SDG&E QA/QC		X (EE program vendor with subject matter expertise)		
	SCE Program Administration	x			
	SCE Marketing	x			
	SCE Recruitment, Training, & Support		X (EE program vendor with subject matter expertise)		
	SCE Quality Assurance & Quality Control		X (EE program vendor with subject matter expertise)		
	SCE MF Contractor/ Rater Training		X (EE program vendor with subject matter expertise)		
	SCE MF QA/QC		X (EE program vendor with subject matter expertise)		
	SCE MIDI Contractors		X (EE program vendor with subject matter expertise)		
	SCE MIDI QA/QC		X (EE program vendor with subject matter expertise)		
	PG&E Marketing and Outreach		X (EE program vendor with subject matter expertise)		x
	PG&E Program Administration		X (EE program vendor with subject matter expertise)		
	PG&E Contractor/ Rater Training		X (EE program vendor with subject matter expertise)		x

Program Name	Program Component	Implemented by IOU Staff? (X = Yes)	Implemented by contractors to be selected by competitive bid process (if Yes then enter type of contractor/other maket actor possibly used)	Implemented by contractors NOT selected by competitive bid process (list prime contractor and sub-contractor names)	Implemented by local government or other entity (X = Yes)
	PG&E QA/QC		X (EE program vendor with subject matter expertise)		
	SCG Marketing	X			
	SCG Program Administration	X			
	SCG Contractor/ Rater Training			ICF , Sub Contractor CBPCA	
	SCG QA/QC			ICF , Sub Contractor QC-RHA and QA AESC	
	SCG MIDI Contractor/ Rater Training		TBD	TBD	
	SCG MIDI QA/QC		TBD	TBD	
	SCG MF Contractor/ Rater Training		TBD	TBD	
	SCG MF QA/QC		TBD	TBD	

Table 8: Customer Eligibility Requirements (Joint Utility Table)

Customer Eligibility Requirement (list of requirements)	PGE	SCE	SDGE	SCG
Tennant or Owner of SF Bldg with active IOU account(s)	x	x	x	x
Owner or property mgt. co. of MF Bldg with active IOU account(s)	x	x	x	x
Must utilize participating EUC Contractor or Rater	x	x	x	x
Two to Four Unit Building with active individually metered accounts	x	x	x	x

Table 9: Contractor Eligibility Requirements (Joint Utility Table)

Contractor Eligibility Requirement (list of requirements)	PGE	SCE	SDGE	SCG
Contractor State Licensing Board (CSLB) in appropriate specialty	x	x	x	x
CSLB "B" General Contractor License (Advance Path Only)	x			
Bonding and in good standing	x	x	x	x
Insurance to IOU minimum standards	x	x	x	x
Execution of Contractor/ or Rater Participation Agreement	x	x	x	x
BPI Building Analyst Certified OR 3-day Basic Training (Enhanced Basic/ Modified Flex Path Only)	x	x	x	x
BPI Building Analyst Certified on Staff (Advanced Path)	x	x	x	x
BPI MF Building Analyst Certified (MF Participating Rater Path)	TBD	TBD	x	TBD
HERSII Certified (MF Participating Rater Path)	TBD	TBD	x	TBD
HERSII and BPI BA Certified (SF Participating Rater Path)	x	x	x	x
2 Years of Relevant Work Experience	x			
B, C-2 or C-20 license for Basic Only	x			

Table 10: Manufacturer/Retailer/Distributor Partners

Manufacturer/Retailer/Distributor Partner Information	PGE	SCE	SDGE	SCG
Manufacturers enrolled in program	none	none	none	none
Manufacturers targeted for enrollment in program	none	none	none	none
Retailers enrolled in program	none	none	none	none
Retailers targeted for enrollment in program	none	none	none	none
Distributors enrolled in program	none	none	none	none
Distributors targeted for enrollment in program	none	none	none	none

Table 11: Summary Table of Measures, Incentive Levels and Verification Rates

Measure Group	Market Actor Receiving Incentive or Rebate	SDGE	
		Incentive Level	Installation Sampling Rate
10% Performance SF	Customers	$ 1,000	Tiered 100%-5%
15% Performance SF	Customers	$ 1,500	Tiered 100%-5%
20% Performance SF	Customers	$ 2,000	Tiered 100%-5%
25% Performance SF	Customers	$ 2,500	Tiered 100%-5%
30% Performance SF	Customers	$ 3,000	Tiered 100%-5%
35% Performance SF	Customers	$ 3,500	Tiered 100%-5%
40% Performance SF	Customers	$ 4,000	Tiered 100%-5%
45%+ Performance SF	Customers	$ 4,500	Tiered 100%-5%
Enhanced Basic/ Modified Flex Path	Customers	$ 1,000	Tiered 100%-5%
10% Enhanced Basic SF	Customers	$ 1,000	Tiered 100%-10%
15% Enhanced Basic SF	Customers	$ 1,500	Tiered 100%-10%
20% Enhanced Basic SF	Customers	$ 2,000	Tiered 100%-10%
25% Enhanced Basic SF	Customers	$ 2,500	Tiered 100%-10%
30% Enhanced Basic SF	Customers	$ 3,000	Tiered 100%-10%
35% Enhanced Basic SF	Customers	$ 3,500	Tiered 100%-10%
40% Enhanced Basic SF	Customers	$ 4,000	Tiered 100%-10%
45%+Enhanced Basic SF	Customers	$ 4,500	Tiered 100%-10%
10% Performance MF	Customers	$ 550	100%
15% Performance MF	Customers	$ 625	100%
20% Performance MF	Customers	$ 800	100%
25% Performance MF	Customers	$ 1,000	100%
30% Performance MF	Customers	$ 1,200	100%
35% Performance MF	Customers	$ 1,350	100%
40% Performance MF	Customers	$ 1,500	100%

Table 12: Additional Services

Additional Services that the Sub-Program Will Provide	To Which Market Actors	SDGE
		[indicate the level at which the service will be incented or funded]
N/A	N/A	N/A

Table 13: Program Related Audits

Levels at Which Program Related Audits Are Rebated or Funded	Who Receives the Rebate/Funding (Customer or Contractor)
None	

Table 14: Quality Assurance Provisions

QA Requirements	QA Sampling Rate (Indicate Pre/Post Sample)	QA Personnel Certification Requirements
SDG&E QA requirements #1	100% Pre Project QA (desktop)	BPI BA
SDG&E QA requirements #2	100% Post Project QA (desktop)	BPI BA
SDG&E QC requirements #1	100% first 10 projects (Pre)	BPI BA
SDG&E QC requirements #2	7 of next 20 projects (Pre)	BPI BA
SDG&E QC requirements #3	10% after 30th project (Pre)	BPI BA
SDG&E QC requirements #4	100% first 10 projects (Pre)	BPI BA
SDG&E QC requirements #5	7 of next 20 projects (Pre)	BPI BA
SDG&E QC requirements #6	10% after 30th project (Pre)	BPI BA

Table 15: Cross-cutting Sub-program and Non-IOU Partner Coordination

Sub-Program Name		
Other IOU Sub-program Name	**Coordination Mechanism**	**Expected Frequency**
PLA (HEER)	Meetings	Monthly/As-Needed
MFEER	Meetings	Monthly/As-Needed
HEES	Meetings	Monthly/As-Needed
QI/ QM	Meetings	Monthly/As-Needed
CSI	Meetings	Monthly/As-Needed
Coordination Partners Outside CPUC		
CCSE	Meetings	Weekly/ Monthly
City of San Diego	Meetings	As-Needed
County of San Diego	Meetings	As-Needed
City of Chula Vista	Meetings	As-Needed
Retrofit Advisory Council (RAC)	Meetings	Quarterly
Los Angeles County	Meetings	Monthly
Santa Barbara County	Call	Monthly
City of San Bernardino	Call	As-Needed
City of Long Beach	Call	As-Needed
Efficiency First	Call	Bi-Weekly
ABAG	Meetings	As-Needed
County of San Francisco	Meetings	As-Needed
County of Marin	Meetings	As-Needed
County of Sonoma	Meetings	As-Needed
County of Solano	Meetings	As-Needed
County of Alameda	Meetings	As-Needed
County of Contra Costa	Meetings	As-Needed
County of Santa Clara	Meetings	As-Needed
County of San Mateo	Meetings	As-Needed
County of Fresno	Meetings	As-Needed
County of Santa Barbara	Meetings	As-Needed
SMUD	Meetings	As-Needed
MIST	Meetings	As-Needed

Table 16: Non-EE Sub-Program Information

Sub-Program Name		
Non-EE Sub-Program	**Budget**	**Rationale and General Approach for Integrating Across Resource Types**
N/A	N/A	N/A

Attachment A2.1: SCE EUC Enhanced Basic/Modified Flex Path PIP Public Version (Redline)

Southern California Edison

CUSTOMER ENERGY EFFICIENCY and SOLAR DIVISION

PROGRAM IMPLEMENTATION PLANS

2013 - 2014

1d

Energy Upgrade California Program

1. **Sub-Program Name:** Energy Upgrade California Program (EUC)

2. **Sub-Program ID number:** SCE-13-SW-001d

3. **Type of Sub-Program: _X_ Core __Third Party __Partnership**

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

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

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

7. **Projected Sub-program Total Resource Cost (TRC) and Program Administrator Cost (PAC):** TRC ___0.49_ PAC _0.67_

8. **Projected Sub-Program Budget:**

Table 1: Projected Sub-Program Budget, by Calendar Year[1]

SCE-13-SW-001d	PROGRAM YEARS		
Sub-Program	**2013**	**2014**	**Total**
Total Administrative Cost (Actual)	$ 623,263	$ 606,211	$ 1,229,474
Total Marketing & Outreach Cost (Actual)	$ 604,261	$ 603,656	$ 1,207,917
Total Direct Implementation (Actual)	$ 7,149,200	$ 7,424,190	$ 14,573,390
Integration Budget Allocated to other Programs (If Applicable)	$ -	$ -	$ -
Total Budget by Program (Actual)	$ 8,376,724	$ 8,634,057	$ 17,010,781

Note: SCE does not have any incremental budget from the 2012 Multifamily EUC Program to carry over into 2013-14.

9. **Sub-Program Description, Objectives and Theory:**

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

Energy Upgrade California Program

a) Sub-Program Description and Theory:

According to a report released by the Office of the Vice President, "homes in the United States generate more than 20 percent of our nation's carbon dioxide emissions, making them a significant contributor to global climate change."[2] The challenge of addressing residential emissions has been a significant topic for California stakeholders and was addressed when D.09-09-047 acknowledged, "Improving the energy efficiency of all households is necessary to achieve the target outcome for the 2020 existing residential *Strategic Plan* goals."[3]

The Office of the Vice President report also identifies three market barriers to comprehensive residential retrofits:

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

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

1) Offer a statewide entry level deemed ~~pre-set measures based~~ approach~~ed~~ (*Enhanced Basic/Modified Flex Path*) and a comprehensive and flexible performance based approach (*Advanced Path*) whole house incentives to help build the home performance contracting industry and offer customers ~~and building owners and managers~~ an easy entry point on the path to home performance (barrier 1);
2) Educate customers on the house-as-a-system concept and to encourage behavior changes that increase residential energy efficiency (barrier 1);
3) Educate contractors on the benefits of learning how to properly sell and install whole house measures as part of coordinated WE&T efforts (barrier 1& 3);
4) Offer incentives that influence customers to undertake comprehensive residential retrofits (barrier 1); and
5) Coordinate with relevant utility financing programs and external funding and financing mechanisms at the county, state and federal levels (barrier 2).

Formatted: Font: Italic

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

1) Lack of knowledge regarding energy efficiency, as well as the comprehensive energy efficiency EE programs offered by IOUs;
2) The economics of "split-incentives" where the building owner invests capital but the savings primarily benefit the tenants;

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

3) Access to investment capital and insufficient return on investment (ROI). Up-front out-of-pocket costs and extended payback periods required pose a significant participation barrier for property owners and managers;
4) Hassle of dealing with multiple contractors and visits required;
5) Time burden for tenants and owners;
6) Impact on rental income; and
7) Business policy/ ~~profit incentive~~ voluntary expense from replacing equipment on burn-out and unwillingness to negate remaining life in building components requiring capital outlay.

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

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

Energy Upgrade California Program

See Attachments A and A1 for the Multifamily EUC PIP.

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

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

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

The Energy Upgrade California Program (EUC) is a Market Transformation-oriented program and is a continuing program which began in the 2010-2012 residential energy efficiency portfolio of the four California Investor Owned Utilities (IOUs) – Pacific Gas & Electric Company (PG&E), Southern California Edison (SCE), San Diego Gas & Electric Company (SDG&E) and Southern California Gas Company (SoCalGas).

As a recognized market transformation program only halfway through its second full year of statewide rollout, the EUC is expected to be a major contributor to achieving the goals of the California Long Term Energy Efficiency Strategic Plan (*Strategic Plans*)- as it relates to existing residential homes, and it faces significant hurdles in customer and contractor awareness, industry and workforce development, and traditional cost effective metrics towards measuring effectiveness and success.

Energy Upgrade California Program

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

EUC is designed to build customer and contractor[4] awareness of the house-as-a-system approach to residential retrofits and the many corresponding benefits of improving the energy--savings potential and comfort of their dwelling. It promotes the idea that energy efficiency measures are most effective when taking into account interactive effects of measures.

The EUC moves customers from a prescriptive, widget or single-measure based approach to energy efficiency to one of deeper, comprehensive energy retrofits that respect the energy efficiency loading order [5], and which takes the approach that a house is a series of interdependent systems that must be considered holistically.

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

Customer outreach and education efforts for the EUC will be coordinated with other IOU Demand Side Management (DSM) program offerings (e.g., HEER, MFEER), Energy Advisor, Plug Load and Appliance (PLA), Comprehensive HVAC, and other Residential Demand Response programs, Energy Savings Assistance Program, California Solar Initiative (CSI)) to leverage multiple customer touch points.

---

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

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

For single family residences, the whole house approach of EUC promotes two paths, a prescriptive based *Enhanced Basic ~~Path~~/Modified Flex Path* and a comprehensive, measured *Advanced Path*. These complimentary paths will be presented to customers[6] as one comprehensive offering.

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

In sum, these paths will provide an ideal platform to utilize the concept of continuous energy improvement for residential customers; tracking and encouraging a logical sequence of energy improvements made by customers over time, creating an ongoing, actionable dialogue with each customer regarding their energy use.

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

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

EUC *Enhanced Basic ~~Path~~/ Modified Flex Path:*
During the 2013-2014 transition cycle, the IOUs will convene interested stakeholders at the state and/or regional level to propose one or more statewide and/or regional pilot programs to explore potential changes to the current *Basic*

[6] Residential customers include homeowners, renters, and multifamily properties. Paths will be presented to these customers when the services are available to them.

Path in order to make it more appealing to customers, particularly moderate income households.

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

The ~~*Enhanced Basic Path / Modifed Flex Path*~~ *Enhanced Basic/Modified Flex Path* ~~*Basic Path*~~ will also educate contractors and customers on the benefits of implementing comprehensive whole house retrofits on existing buildings that will provide systematic reductions in energy use. The ~~*Enhanced Basic Path / Modifed Flex Path*~~ *Enhanced Basic/Modified Flex Path* ~~*Basic Path*~~ will help to:

- Utilize no-cost (to customer) surveys (Energy Advisor) as an entry point to identify opportunities for efficiency improvements[7];
- Offer targeted marketing campaigns to engage participants that receive stand-alone EE and/or CSI rebates for completing qualified home improvement measures;
- Promote completion of retrofits based on preferred building science loading order;
- Offer incentives to encourage progression along a preferred approach towards comprehensive retrofits;
- Continuously engage customers over time as they progress toward a home performance approach;
- ~~Leverage available opportunities to move customers to the *Advanced Path* by i~~Inform~~ing~~ customers~~them~~ about available local or third-party financing options and other complementary revitalization efforts that may be available within a particular jurisdiction;
- Offer a holistic path towards home performance by aggregating key elements of a dwelling into its core elements: building envelope ~~and fixed lighting~~; heating, ~~cooling, and hot~~cooling, hot water, and appliances;

[7] The Energy Advisor provides residential customers with entry-level energy surveys online, over the phone, or by mail. The surveys are not intended to serve as an audit but are meant to provide consistent messaging and an easy on-ramp to EUC. The Energy Advisor surveys are also an ideal link between the California Solar Initiative (CSI) and EUC WHRP. This synergy will be discussed later in the document.

Energy Upgrade California Program

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

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

EUC *Multifamily Path:*

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

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

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

The *Multifamily Path* is envisioned as a logical next step to the prescriptive based MFEER and would be coordinated with Energy Savings Assistance Program and MFEER (much like EUC Basic Path is to the Advanced Path in single family homes) to present a singular and streamlined approach for multifamily tenants, property owners and property managers, in accordance with the Strategic Plan. A key feature of the *Multifamily Path* would be a single point of contact to assist multifamily customers and to streamline their experience. The single point of contact will assist multifamily owners and property managers and advise customers of the program(s) that best suit their needs.

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

The *Multifamily Path* would guide multifamily customers towards deeper, comprehensive energy efficiency measures, including: whole house solutions,

plug load efficiency, visual monitoring and displays, performance standards, local government opportunities, and IDSM integration. The *Multifamily Path* will support the strategies, where possible, in the Low Income Proposed Decision.

b) Sub-Program Energy and Demand Objectives:

Table 2: Projected Sub-Program Net Energy and Demand Impacts, by Calendar Year:
See Section 5 of Program Overview SCE-13-SW-001

c) Program Non-Energy Objectives:

Table 3. Quantitative Program Targets (PPMs)
See Attachment 2

In addition to the quantitative program targets (PPMs) in Table 3 in Attachment 2, SCE considered the following when determining the Program's participation for program year 2013-2014:

SCE			
Scenario	2013	2014	Assumptions
	SF Homes	SF Homes	
High Participation	990	990	Efficiencies and improvement in program model New financial options coming online Increase local government involvement & support

~~However, since~~Since these forecasts were submitted in July 2012, there have been numerous policy changes, clarifications regarding IOU and REN territory, and program changes, all of which affect this forecast. At a meeting on 4 March 2014~~2~~3, with senior Commission staff, the RENs and IOUs were told we would have the opportunity to modify ~~our~~the forecasts in light of policy changes recommended by the Commission. We submit these high participation scenarios here, consistent with the controlling decision, but we look forward to the opportunity to clarify these numbers in light of subsequent changes.

Formatted: Indent: Left: 0"

Formatted: No bullets or numbering

Formatted: Font: Not Bold

d) Cost Effectiveness/Market Need:
The California IOUs look forward to continuing to play a lead role in collaboration with local governments and other stakeholders to move the existing residential homes market toward larger reductions in energy usage and towards the *Strategic Plan* goal of achieving 40% purchased energy reductions in all existing homes by 2020.

Energy Upgrade California Program

At this time, current market conditions and barriers are:

1. Relatively high cost of home assessments.
2. Relatively high gross costs of comprehensive energy upgrades.
3. Lack of market awareness of non-economic value of comprehensive energy upgrades (comfort, indoor air quality, safety, aesthetics, etc.).
4. Fledgling contracting and supporting industry for existing home energy upgrades.
5. Low consumer awareness of incentive programs and the concepts of comprehensive home energy assessments and upgrades.
6. Lack of common home rating protocols and common vernacular for the market to assign value to homes which undergo comprehensive energy upgrades.

The EUC seeks to address these barriers through:

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

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

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

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

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

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

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

	Driving Up Value	**Driving Down Costs**
	• Standard Ratings where the Market can assign value • Higher monthly utility bills	• More Qualified Providers • Higher ~~Demand~~ Volume of Projects • Streamlined Processes • ~~Innovative~~ Market~~place~~ innovation

e) Measure Savings/ Work Papers:

i. EUC ~~*Enhanced Basic Path / Modifed Flex Path*~~ *Enhanced Basic/Modified Flex Path* ~~*Basic Path*~~ utilizes deemed savings values by measure, climate zone, vintage, and number of stories. ~~for building vintages pre-1979 and by climate zone post- 1979~~

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

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

ii. Indicate work paper status for program measures:

Table 4 – Work paper Status

See Attachment 2

10. Program Implementation Details:

Energy Upgrade California Program

In addition to traditional marketing efforts, the IOUs will work through service providers and vendors to engage qualified tradespersons in the crafts that they have chosen and will continue to invite input from stakeholders to further develop additional ways to meet program objectives.

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

1) Training for all relevant aspects of the real estate industry and point-of-sale chain (real estate agents, lenders, inspectors, green/efficiency specialists, appraisers, rater's public agencies and contractors). An emphasis will be placed on training the cross-functional teams that already work together in the market, since all pieces of the process needs to be covered to be effective, especially on the financing side. The use of successful case studies will also be explored.
2) Driving customer demand for energy efficient homes via collaborative consumer education and outreach, using easy--to--understand messaging and including efforts such as the promotion of home energy improvements and "green" labeling around the time of purchase and sale of a home. This is a critical timing in the market that can be leveraged. The Joint Center for Housing Studies estimates that home buyers spend more than $6,000 per year on home improvements in the first two years after buying homes. In subsequent years, the annual average outlay drops to $2,500.[8]

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

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

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

Also, during the transition cycle the IOUs will explore ~~potential of offering pilot tests of~~ expanding building science, combustion safety, ~~certifications~~ and home evaluation and performance improvement ~~processes~~ certifications beyond BPI ~~to potentially include equivalent certifications, and home evaluation and performance improvement processes such as those through ACCA~~.

To increase the number of qualified participating contractors and contribute to the creation of a sustainable workforce, third party program implementers will solicit and screen qualified contractors. The program will also include marketing activities to help educate customers on program services and other activities to provide additional customer leads to trained contractors.

The program will employ a number of integrated delivery strategies:

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

Statewide Informal EUC Working Group:
Given the ambitious market transformation goals of EUC, its relatively new entrance into the IOU EE portfolio, and its challenges during the first two years of rollout, the IOUs during the 2013-2014 transition cycle are committed to providing the leadership and working with CPUC, CEC, local government staff, as well as relevant stakeholders to convene a statewide EUC Working Group to address relevant and significant issues for adoption in the 2015 IOU program cycle. The IOU's seek a cooperative design and implementation approach that involves all parties with an interest in EUC.

The Working Group will be co-chaired by one IOU, determined by IOU consensus, and one non-utility co-chair selected by the Working Group. The Working Group co-chairs will solicit views and direction from Commission

staff on the Working Group operations. The Working group may choose to form subgroups and/or hold stakeholder outreach meetings as necessary. The Working Group will be composed of all former EUC Steering Committee members, the REN's, EUC Contractors, and other interested stakeholders and implementers, including the EUC implementers, Commission, and CEC staff, and CCSE as the statewide marketing and outreach coordinator.

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

In this regard, the IOU's will hire a market transformation consultant to assist with improvements to the long-term EUC design and to support a constructive IOU engagement in the AB758 process. The Working Group IOU co-chair will be the lead IOU for this contract. Members of the EUC Working Group will be offered the opportunity to substantively shape the work scope and priorities of the market transformation consultant.

The Working Group will as necessary focus on the following issues on a statewide level for consideration in the 2013-2014~~5~~ program cycle:

1. Role of local governments
2. Software standards
3. Data collection standards
4. Home Assessment standards
5. Home Assessment reporting standards
6. HERS II Ratings and alignment with EUC EE Programs
7. Contractor certification standards
8. QA/QC standards
9. Streamlined project reporting and programmatic best practices
10. Integration of HVAC programs
11. Engagement of California Real Estate Market
12. Future of Basic Path
13. Identification of Market Transformation Milestones and Metrics
14. Cost effectiveness metrics aligned with Market Transformation goals.
15. Long term incentive structure
16. Applicable AB758 issues

In addition, the Working Group will provide substantive contributions to program design and implementation plans on the following items to be included in an updated PIP to be filed by a Tier 2 Advice Letter not later than April 1, 2013:

Energy Upgrade California Program

1. Final statewide aligned and streamlined protocols regarding heating, ventilation and air-conditioning (HVAC) emergency replacements and high performing contractors.
2. Final program design and implementation of *Enhanced Basic/Modified Flex* ~~Enhanced Basic~~ to include a tiered ~~incentive,~~incentive require three measures at a minimum, follow energy efficiency loading order to address shell improvements first, and support appropriate combustion safety testing protocols.
3. Provide updated targets for number of homes in Enhanced Basic
4. Discussion on subsidizing whole house audits and diagnostic test for EUC project if the project involves at least three energy efficiency measures.
5. Refined savings and technical details for the Enhanced Basic will also be included.

Three utilities, SDG&E, SoCalGas, and SCE plan to launch an ~~*Enhanced Basic Path / Modifed Flex Path*~~ *Enhanced Basic/Modified Flex Path* ~~Enhanced Basic Pilot in~~ early 2013 to test systems and program design with a limited set of contractors. This effort should not be understood to prejudice the outcome of the stakeholder process to improve Basic as outlined in the Decision, but rather to ~~be able to have an informed discussion on market acceptance of~~ Beta test an alternative delivery method. The participating IOUs remain open to further suggestions and refinements in *Enhanced Basic/Modified Flex*~~Enhanced Basic~~. We look forward to further work with the RENs in particular to improve our joint EUC offering in 2013.

a) Timelines:

Table 5: Sub-Program Milestones and Timeline:

See Attachment 2

b) Geographic Scope:

Table 6: Geographic Regions Where the Program Will Operate:

See Attachment 2

c) Program Administration

Table 7: Program Administration of Program Components:

See Attachment 2

d) Program Eligibility Requirements:

i. Customers:

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

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

All single family EUC projects must install a minimum of three energy efficiency measures which support the energy efficiency loading order. In addition, all EUC projects will include pre- and post-construction combustion safety testing.

Table 8: Customer Eligibility Requirements:

See Attachment 2

ii. Contractors/Participants:

Participating Contractor Requirements for *Enhanced Basic/Modified Flex*~~Basic~~ Path and *Advanced Path*

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

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

certification. BPI accreditation is strongly encouraged and may be required of all participating contractors at some point during the program cycle;

9. Additional IOU requirements, as appropriate.

Participating Rater Requirements for All EUC Paths

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

Table 9: Contractor/Participant Eligibility Requirements:

See Attachment 2

e) Program Partners:

i. Manufacturer/Retailer/Distributor Partners:

Table 10: Manufacturer/Retailer/Distributor Partners:

See Attachment 2

ii. Other Key Program Partners:

Energy Division, California Energy Commission, local governments, BPI and other standards bodies, as well as other partners. See Cross-cutting Sub-program and Non-IOU Partner Coordination section of this PIP.

f) Measures and Incentive Levels:

***Advanced Path* Incentives:**

Incentives for the *Advanced Path* will be paid based upon modeled site savings energy utilizing any CEC approved simulation modeling software approved by IOUs. Incentives for *Advanced Path* are designed to encourage customers to reach for deep energy savings. *Advanced Path* incentives are for both gas and electric measures provided by the customers' participating utility program.[9]

Currently, Energy Pro simulation modeling software is the only approved software for use with EUC. During the 2013-2014 transition cycle, the IOUs will work collaboratively with the CEC and other stakeholders to identify

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

potential approaches to adequately broaden the allowable software under the EUC while containing costs required for needed Commission Staff reviews.

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

~~*Enhanced Basic Path / Modifed Flex Path*~~ *Enhanced Basic/Modified Flex Path* ~~***Basic Path***~~ **Incentives:**

The Enhanced Basic/Modified Flex Path incentives will also be a tiered incentive, driven by the customer's desired SOW. Incentives will begin at $1,000 for 100 points which will be roughly equivalent to 10% site energy savings. The incentive tier increases at each 50 point increment~~al improvement,~~ to encourage deeper energy retrofits. Each 50 point incre~~ment ase will~~ equates to an additional $500 incentive. The incentives align with Advanced Path incentives for similar saving percentages, but the Enhanced Basic/Modified Flex Path ~~Path~~ will max out at 250 points (a $2,500 incentive).

To encourage customers to more fully adhere to the loading order, customers may be eligible for additional bonus points for installing additional base measures. For customers who install ~~1 or 2~~ a second or third ~~additional~~ base measures beyond the required one measure. In addition to the additional points associated with measure itself ~~,~~ ~~c~~customers will receive 15 additional points for the second of three base measures, and 20 additional points for the third. ~~based incentive for each additional base measure installed.~~

Formatted: Indent: Left: 0.75"

Participation Level: Points	Incentive Amount
100 Points	$1,000
150 Points	$1,500
200 Points	$2,000
250 Points	$2,500

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

- ~~Consistent statewide;~~
- ~~Compatible with municipal financing options; and~~
- ~~Implemented so as to leverage external funding where appropriate.~~

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

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

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

Energy Upgrade California Program

Table 11: Summary Table of Measures, Incentive Levels and Verification Rates:

See Attachment 2

i. Permitting Requirements

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

ii. Qualified Measures

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

1. Greater cross marketing of PLA and EUC customers.
2. Work with EnergySoft to find solutions to pool pump modeling, if available.
3. Incorporate lighting and appliance options as a ~~more~~ predominante~~a~~nt~~e~~ feature in standard assessment reports to customers.

~~Enhanced Basic Path / Modifed Flex Path~~ Enhanced Basic/Modified Flex Path

Eligible Whole Building ~~Required *Basic Path*~~ Measures ~~Installed Per Measures Installation Standards~~:

Base Measures (Pick one of three)
Whole Building Air Sealing
Attic Insulation & Attic Air Sealing
Duct Sealing or Duct Replacement

Flex Measures - Envelope
Floor Insulation
Wall Insulation
High Performance Windows
Attic Radiant Barrier

Flex ~~Meaures~~Measures – Domestic Hot Water (DHW)
Gas Water Heater (including tankless)
Electric Water Heater

Flex Measures – HVAC
Gas Furnace
High Efficiency Air Conditioner~~ing~~
~~Right Size~~ HVAC QI Kicker (pending QI workpaper)
~~Buried~~ Insulated Ducts ~~Kicker~~

Formatted: Underline
Formatted: Underline
Formatted: Underline
Formatted: No underline
Formatted: Underline
Formatted: Underline
Formatted: No underline
Formatted: No underline
Formatted: No underline
Formatted: No underline
Formatted: No underline
Formatted: No underline

Energy Upgrade California Program

Required Measures – No points
Thermal Control Valve
Pipe Wrap

~~Additional~~ Stand-~~-~~Alone Measures (do not count toward overall performance)

Variable Speed Pool Pump
Refrigerators
Dishwashers
Clothes washers
Whole House Fan
Refrigerator / Freezer Recycling

Ineligible Measures:

Screw-In Lighting Fixtures and Lamps
Solar Domestic Hot Water Heater System
Distributed Generation Systems – Solar, ~~PV, Fuel Cell,~~ Wind, etc.

~~Thermostatic Shut-Off Valve~~
~~Carbon monoxide Monitor~~
~~Combustion Safety Testing~~
~~Low-Flow Showerhead (recommended)~~

Advanced Path Whole Building Measures- (Partial list)~~Installed Per Measures Installation Standards~~:

Envelope
Attic Insulation
Cool Roof Installation (CRRC-certified)
Wall Insulation ~~Cooling System Upgrade~~
~~Domestic Hot Water Heater Upgrade (non-solar)~~
Whole House Air Sealing
Windows~~Duct Insulation~~

HVAC
Duct Test and Seal
Duct Insulation
Heating System
Cooling Systems
~~Exterior Lighting Upgrade – Permanently Installed High-Efficacy~~
~~Floor Insulation~~
~~Heating System Upgrade~~
~~Interior Lighting Upgrade – Permanently Installed High-Efficacy~~
Domestic Hot Water

Formatted: No underline
Formatted: Font: Bold, No underline
Formatted: Indent: Left: 0.25"
Formatted: Indent: Left: 0.25"
Formatted: Indent: Left: 0.61"
Formatted: Indent: Left: 0.61"
Formatted: Indent: Left: 0.18", Right: 0", Allow hanging punctuation, Adjust space between Latin and Asian text, Adjust space between Asian text and numbers, Font Alignment: Auto
Formatted: No underline
Formatted: Indent: Left: 0"
Formatted: Underline
Formatted: Indent: Left: 0"
Formatted: Underline
Formatted: Indent: Left: 0", Allow hanging punctuation, Adjust space between Latin and Asian text, Adjust space between Asian text and numbers, Font Alignment: Auto
Formatted Table
Formatted: Indent: Left: 0", Right: 0", Allow hanging punctuation, Adjust space between Latin and Asian text, Adjust space between Asian text and numbers, Font Alignment: Auto
Formatted Table
Formatted: Underline

Low-Flow Shower Head
Domestic Hot Water Heater Upgrade (non-solar)~~Radiant Barrier Installation~~
Thermostatic Shut-Off Valve
~~Wall Insulation~~
~~Whole House Fan Installation~~
~~Whole House Air Sealing~~
~~Window Upgrade~~
Other Measures as may be modeled and allowed by IOUs per regional market needs

~~Ineligible~~ Stand-alone Measures (do not count toward overall performance)~~:~~

~~Screw In Lighting Fixtures and Lamps~~
~~Solar Domestic Hot Water Heater System~~
~~Distributed Generation Systems - Solar PV, Fuel Cell, Wind, etc.~~
Variable Speed Pool Pump~~Pool Pump Upgrade~~
Refrigerators~~Clothes Washer Upgrade~~
Dishwashers
Clothes washers
Whole House Fan
Refrigerator / Freezer Recycling ~~Clothes Dryer Upgrade~~
~~Dishwasher Upgrade~~

Ineligible Measures

Screw-In Lighting Fixtures and Lamps
Solar Domestic Hot Water Heater System
Distributed Generation Systems - Solar, Wind, etc.

Multifamily Building Eligible Measures (Partial list)

Envelope
Attic insulation ~~upgrade~~
Wall Insulation ~~upgrade~~
Floor insulation ~~upgrade~~
Window replacements – 2008 T-24 standard or better
Cool roof – CRRC rated product
Radiant barrier
Window shading – permanent, non-retractable

HVAC
Duct Sealing - with HERS test
A/C equipment replacement – Must meet current T-20 standard
Furnace replacement – Must meet current T-20 standard

Formatted: Indent: Left: 0", Right: 0", Allow hanging punctuation, Adjust space between Latin and Asian text, Adjust space between Asian text and numbers, Font Alignment: Auto

Formatted Table

Formatted: Underline

Formatted: Underline

Premium efficiency motors (ECM included)
VFD controls for CHW, HW, CW pumps
VFD controls for cooling tower fans
Pipe insulation~~– From ½ inch to 1-inch, or none to 1-inch~~
Controls optimization ~~(OA reset, zone reset)~~

Domestic Hot Water
Boiler or DHW replacement – Must meet current T-20 standard
Insulate hot water piping – From ½-inch to 1-inch, or none to 1-inch
DHW tank insulation
Pipe ~~insuation~~insulation
Add VFD to circulation pump
Update central DHW pump to demand control – From no control to demand control

Lighting (pending CPUC policy)
Common area lighting fixtures – high efficacy hardwired fixtures
Dwelling unit lighting fixtures – high efficacy hardwired fixtures
Lighting controls – Occupancy sensor, photo sensor, or dimmer switch
Outdoor lighting retrofits – high efficacy hardwired fixtures
Controls optimization

Stand-alone Measures (do not count toward overall performance)
ENERGY STAR® Refrigerator
ENERGY STAR® Dishwasher (if a dishwasher is installed in pre-retrofit condition)

g) Additional Services:

Table 12: Additional Services:

See Attachment 2

h) Sub-Program Specific Marketing and Outreach:
IOUs will conduct integrated as well as program-specific marketing and outreach which will be coordinated with the statewide marketing and outreach program. The utilities may use a range of tactics such as; e-mails, flyers, on-Line marketing, direct mail, bill messaging, social media, local events, ethnic media, and other channels that suit the target audience, the message, and the resources. The program will increase its marketing and outreach budget for climate zone 9 through16 by at least 25 percent.

Marketing, Education and Outreach Plans:

1) **Objectives:**

- Generate greater awareness, understanding and for the whole house system concept;

Formatted: Underline

Formatted: Underline

- Drive response amongst qualified customers to seek out whole house projects; and
- Build demand in the marketplace for home retrofit services.

2) Target Audiences:

EUC marketing and outreach aims to include all stakeholders in the retrofit process, throughout the life of the program. This will help to ensure that all audiences receive consistent information and will enable a more informed dialogue about program specifics, in an effort to continuously engage stakeholders in the energy efficiency retrofit process. The initial target group is comprised of the following audiences listed below, and is bw. Based on the results of ~~the~~ statewide market survey research.

Formatted: Indent: Left: 0"

Target Group:

- Single family residential customers in proposed targeted segments with additional focus on Climate Zone 9 through 16
- Multifamily residential customers
- Residential customers with a history of prior EE engagement including, but not limited to: rebates, online tool enrollment and energy audits
- Local governments, community-based organizations and other stakeholders (i.e. the realtor community)
- Efforts may target select public events and work with local earned media to publicize the program's benefits.

3) Keys to Success:

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

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

i) Sub-Program Specific Training:

Energy Upgrade California Program

Specific workforce development efforts supporting- EUC, as a market transformation program, include the following:

- CEC/EDD: California Clean Energy Workforce Training Program Community college programs; and
- IOU training offerings (IOU trainings will serve as backup if required. IOU courses do not duplicate modules available in the marketplace but will serve backup role in the event that a market need is identified and best served by the IOU Energy Training Centers).

EUC will be coordinated with the statewide IOU WE&T program, local government residential retrofit and contractor training programs that are tied directly to workforce education and training efforts on a state and federal level.

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

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

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

Contractor recruitment efforts will be conducted primarily by third party program implementers – a model that has proven successful in statewide IOU HVAC programs in the 2010-12 program cycle. Program implementers will continue to primarily recruit contractors through:

- The network of contractors already participating in ~~IOU~~ HVAC, insulation and weatherization programs;
- Direct outreach through trade groups with locally active memberships;
- Workforce development departments (to target unemployed general contractors); and

Program implementers will verify and enroll Participating Contractors and Raters and provide required program participation related training. Once

enrolled, the Participating Contractor and Rater lists will be posted in a centralized location for customers to view. IOUs will direct customers to appropriate websites for lists of eligible Participating Contractors and Raters.

Upon completion of 2012 Energy Upgrade California process evaluations, the IOUs will convene a workshop to review workforce training needs, seek stakeholder input and identify timeline to implement suggested program improvements, as well as identify training needs

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

i. List all eligible software or similar tools required for sub-program participation.

- Energy Pro energy simulation modeling software
- eQuest, depending on resolution of Enhanced Basic/Modified Flex Path workpaper submittals

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

Advanced Path:
Pre-implementation audit required __x__ Yes ___ No
Post-implementation audit required __x__ Yes ___ No

Enhanced Basic/Modified Flex Path
Pre-implementation audit required Yes x No
Post-implementation audit required x Yes ___ No

Enhanced Basic/Modified Flex Path will not require pre-implementation audits due to deemed baseline assumptions.

Formatted: Underline
Formatted: Underline
Formatted: No underline
Formatted: Underline

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

Table 13: Post-implementation Audits:

See Attachment 2

k) Sub-Program Quality Assurance Provisions:

Payment of customer incentives will be tied to the contractor's delivery of full job required program documentation. Program implementers will randomly select a portion of each participating contractor's reported retrofits for onsite job verification and review 100 percent of the job data inputs from contractors. Verifications ~~will~~ may include homeowner interviews, intensive visual checklist inspections, and selective retesting of key items. A subset of these energy savings estimates may later be validated against the first year's

after-retrofit utility bills plus climate data and homeowner interviews as needed to identify changes in other factors affecting energy use. IOUs will collaborate to develop QA/QC plans and documents that reflect statewide uniformity to the greatest extent possible. QA/ QC documents and standards will be updated regularly with contractor input and will include:

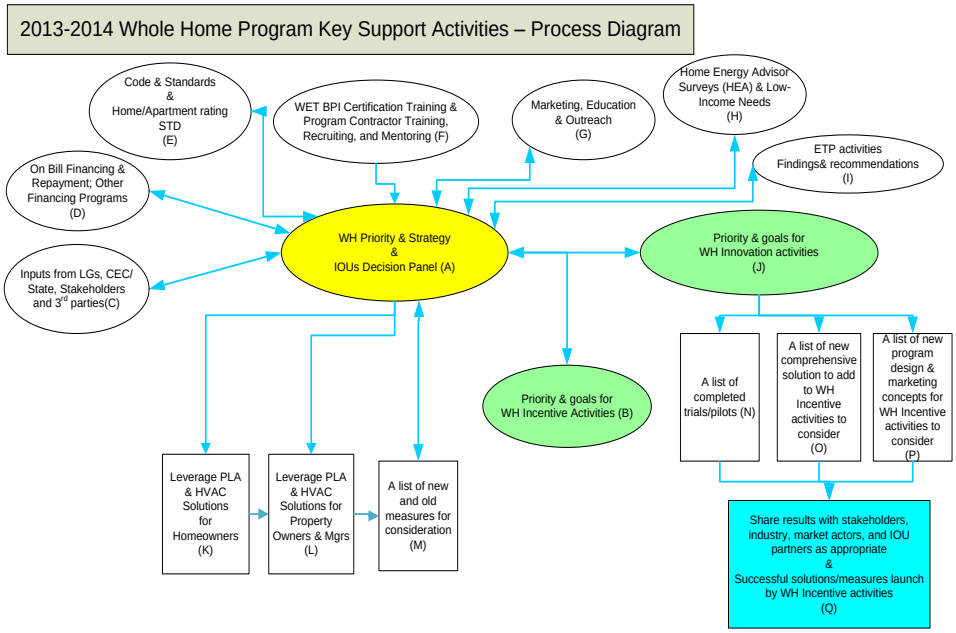
1. QA/QC Process and Protocols
2. Minimum installation standards for all allowable measures
3. Emergency and Fast Track equipment replacement protocols.
   a. Exhibit A attached includes existing and continuing IOU Emergency and Fast Track protocols.
4. Permitting requirements
   a. EUC shall support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

Table 14: Quality Assurance Provisions

See Attachment 2

l) Sub-Program Delivery Method and Measure Installation/Marketing or Training:

m) Sub-program Process Flow Chart:



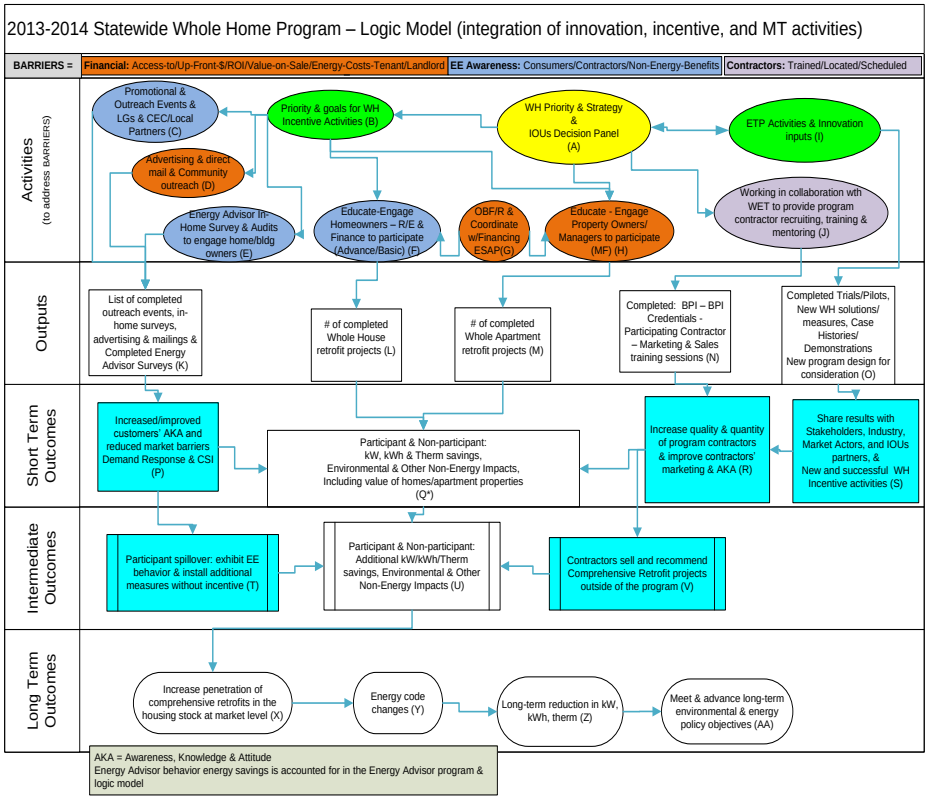
n) Cross-cutting Sub-program and Non-IOU Partner Coordination:

Table 15: Cross-cutting Sub-program and Non-IOU Partner Coordination

See Attachment 2

o) Logic Model:

Energy Upgrade California Program



11. Additional Sub-Program Information:

a) Advancing Strategic Plan Goals and Objectives:

The EUC is consistent with the requirements of the *Strategic Plan*. It addresses the Whole-House Strategy of the *Strategic Plan* by influencing contractors and customers to implement comprehensive home retrofit energy efficiency measures through either the *-Enhanced Basic/Modified Flex Path* on-ramp, *Advanced Path* or *Multifamily Path*.

EUC responds to the need for much larger energy savings in existing homes and multifamily buildings than is possible with conventional checklist audits or single measure improvement (prescriptive) programs. It addresses the key "whole house" strategy of the *Strategic Plan* by influencing "decision triggers" to improving energy efficiency and understand advantages to expand participation to reach savings goals. This program is also a vehicle to increase penetration of shell upgrades and cost effective, high efficiency appliances, water heaters and HVAC upgrades. The *Strategic Plan* further states that a similar approach must be developed for multifamily housing. The program will help to achieve the following goals identified in Section 2 of the *Strategic Plan*:

Energy Upgrade California Program

Table 6. Energy Upgrade California Program Alignment with California Long Term Energy Efficiency *Strategic Plan*			
Residential and Low Income Goal 2: Existing Homes			
Goal Number	**Strategy**	**EUC Strategy**	**Integrated Programs & Activities**
2-1	Deploy full-scale Whole-House/Home programs.	Monitor performance of selected lower energy homes. Design implement, monitor and continuously improve full-scale programs for whole-house energy efficiency and renewable energy retrofits.	Programs: EUC, Solar, Demand Response, MFEER, Plug Loads, ESAP Marketing: Customer segmentation and local coordination EM&V: Studies to provide early feedback and establish baselines
2-2	Promote effective decision-making to create widespread demand for energy efficiency measures.	Continue to offer Energy Advisor programs online, by mail, and over-the-phone to provide customers with information to promote effective decision-making, in combination with other segment specific marketing outreach and educational activities.	Programs: Energy Advisor EUC, MFEER Marketing: Customer and contractor education to promote building efficiency and appropriate EE behaviors in a segmented manner
2-3	Manage research into new/advanced cost-effective innovations to reduce energy use in existing homes.	Coordinate with Emerging Technologies and other programs to integrate market-ready technologies into the Whole House offering when appropriate. Promote commercialization of home energy management tools including AMI-based monitoring and display tools	Programs: Emerging Technologies, Demand Response, Solar, and others
2-4	Develop financial products and programs such as on-bill financing to encourage demand for energy efficiency building products, home systems, and appliances.	Ensure that customers are aware of the most effective and attractive financing packages that are available to them.	Programs: EUC Coordination: Local government partnerships and other state/federal financing entities
2-5	Increase Title 24 compliance through specific measures leading to aggressive statewide enforcement.	Partner with local governments to expedite the permitting process to decrease the barriers to entry in the home performance industry.	Coordination: Local government partnerships

b) Integration:

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

The IOUs have identified IDSM as an important priority. The IOUs plan to monitor the progress of other IDSM efforts and to work closely to identify comprehensive integration approaches that feed into the overall statewide strategy and to implement best practices as rapidly as practical.

Energy Upgrade California Program

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

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

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

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

In addition, any contractors who work onsite with customers can provide delivery channels for DR programs information or installation of DR technology.

EUC will also serve as a platform to integrate technology advancements in DR and Advanced Metering. IDSM efforts will be part of an ongoing conversation with customers to enhance program offerings and increase their participation in DSM efforts over time.

Table 16: Non-EE Sub-Program Information:

See Attachment 2

ii. Integration across resource types:

EUC is designed to deliver comprehensive solutions to customers while integrating across resource types to maximize customer benefits not only in

terms of energy savings, but through improvements to occupant health, safety and comfort. Primarily, there are opportunities for water efficiency and indoor air quality improvements.

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

The embodied energy in water distribution ~~will~~ may become an increasingly important part of utility programs. The consumer education process in the house-as-a-system approach will provide an opportunity for local governments to present customers with information on non-energy savings inherent in comprehensive retrofits.

c) Leveraging of Resources:

IOU's may leverage unique local government resources.

Local Governments

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

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

d) Trials/ Pilots:

IOUs may execute various trials/pilots. The Whole House program will have the option to conduct additional pilots/trials to test technologies, applications or other programmatic design and marketing possibilities. The learning from those activities is expected to contribute to the program innovation and further learning.

The Local MIDI Program will be offered by SCE and SoCalGas to eligible customers residing in single family and multifamily properties (multifamily common areas excluded) served by SCE and SoCalGas. The MIDI Program will coordinate with SCE and SoCalGas' Energy Savings Assistance Program

(ESAP) to deliver MIDI measures through select ESAP contractors. ESA Program infrastructure will be used to administer the MIDI Program. When working in joint SCE/SoCalGas territory, shared contractors will offer both IOU's Program measures. The MIDI Program will encourage residential owners/property managers of single family and multifamily properties to install comprehensive energy efficiency improvements.

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

SCE and SoCalGas propose:

- To implement a MIDI trial with a set goal of 2,000 units served
- Develop a scalable program design for larger rollout in future cycles.
- Evaluate delivery of MIDI Program utilizing existing ESA Program infrastructure.

To participate, the following eligibility ~~guidelines must be met:~~guidelines must be met:

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

List of measures for this Local MIDI program include:

Power strips
Halogen Torchiere exchange
Specialty CFL exchange
Room AC exchange
Pool pumps (Single-family only)
~~(ESA Program approved measures excluding appliances)~~

Formatted: Font: Not Bold

Formatted: Font: Not Bold

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

12. Market Transformation Information:

a) Summary of the market transformation objectives of the program:
The EUC program is designed to fulfill the goals of the *Strategic Plan* by guiding and incenting home and building buyers, owners and renovators to implement a whole house approach in energy consumption undertaken in their

purchase and use of existing and new homes and buildings, home and building equipment (e.g. HVAC systems), household appliances, lighting and "plug load" amenities. The target is all existing homes in an effort to realize the maximum energy efficiency potential via the delivery of a comprehensive package of cost-effective whole-house and whole-building energy efficiency retrofit measures. These programs will include building shell upgrades, high-efficiency HVAC systems – appropriately sized for the building structure, and emerging deep energy reductions in the lighting, appliance, plug-load and other residential oriented sectors. This initiative will be structured around a comprehensive audit, installation of the variety of retrofits required across the entire building structure, and access to attractive financing programs. The EUC effort will be achieved via the parallel and coordinated efforts of the utility programs, partners and other private market actors, and the State and local government policies and programs made available. As IOUs implement a system of automatic meters and wide-area network to enable data transport, the IOUs and customers will have the opportunity to integrate additional home automatic systems and integrated energy management features into the home (i.e., interim Intelligent Home Network, comprehensive Home Automatic Network and etc.) to support IDSM integration and deployment. The Plug Load and Appliance Program will have the potential to offer not only hardware based energy savings, but also comprehensive behavior savings opportunities.

b) A description of the market, including identification of the relevant market actors and the relationships among them:

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

- Energy Upgrade California:
  - *Enhanced Basic/Modified Flex Path*,
  - *Advanced Path*
  - *Multifamily Path*

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

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

Market Characterization:

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

Overarching program participant profile:

- The program participation is primary through the *Advanced Path* and there is little engagement in the *Basic Path* service.
- *Advanced Path* jobs report energy savings of 25% average in this first program phase.
- The average cost per job ranges from $13,000 to $16,000
- The utility incentives covered 19% of the project cost~~s~~ on average.
- Despite the large supply of program contractors, only a limited pool of larger contractors complete the majority of the projects
- Many – 44% of participants – used financing to pay for their projects.

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

- There are widespread contractor performance gaps despite a certification requirement (i.e., BPI),
- The current contractors' participation training does not adequately prepare them for job processing expectations and the rigor of the QA/QC process,
- BPI certification does not guarantee a standardized job performance level
- ~~Since t~~The requirements for certification ~~often~~ vary in method and emphasis ~~(i.e~~e.g.~~.~~, (1) on-line training versus in-person classes, (2) ~~different region may place different emphasis, i.e.,~~ Vermont trainers ~~may~~ focus ~~more~~ on heating, while California classes ~~may~~ focus ~~more~~ on ~~HV~~AC).

In order to help improve contractor skills and understanding of the program, mandatory mentoring is required to be completed by all participating contractor during the initial period of program participation. It has been designed to provide contractors with an understanding of critical program processes.

Mandatory mentoring includes the following modules:

- Field Data Collection – in person training

- Witness QC – in person observation / training
- Project Processing – webinar based training
- Energy Modeling – webinar based training (Advanced Path Contractors Only)
- The Learning Center – Online documentation of the contractor's proficiency using a learning and testing environment.

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

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

Market Actors:

- Homeowners/renters & property owners/managers
- Contractors
- Real Estate Professionals
- Financial Institutions
- Property Appraisers
- Local governments

Relationship Among the Market Actors:

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

Working together, the real estate professional, appraisal and financial communities are market actors that can help push energy efficiency in the

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

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

Opportunities to advance demand side management technologies and strategies:

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

Key Barriers & Opportunity for Intervention:

The barriers for this program for the homeowner sector are the:

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

(10) Lack of access to skilled labor.

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

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

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

d) A description of proposed intervention(s) and its/their intended results:
The EUC seeks to address these barriers for private single-family homes through:

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

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

(3) Expanded customer uptake through EUC incentives. (Barrier 1, 2, 5)
Intended Results: ——Use incentives to reduce the barrier of entry into the comprehensive retrofit projects

(4) Offering of Financing programs (by IOUs and/or other entities) (Barrier 1,2, 9)
Intended Results: Provide building owners the upfront cash they need to borrow to invest in a retrofit project, and amenable loan terms by which to repay that loan (note: this program component will be particularly important in the multifamily sector).

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

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

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

(1) To improve a property owner or manager's energy efficiency knowledge, the Multifamily Path would seek to leverage comprehensive investment grade building assessments to identify potential energy efficiency opportunities. (Barrier

(2) To address split incentives and cost of upgrades, the Multifamily Path would integrate with the existing Energy Savings Assistance Program ("ESAP") and the Multifamily Energy Efficiency Rebate ("MFEER") Program. This would provide comprehensive services to the building, including "low cost" or "no cost" tenant measures in conjunction with the EUC Multifamily Path whole building incentives in order to maximize energy savings for the up- front investment. (Barrier 2)

(3) Incentives would assist property owners or managers with overcoming a wide array of market and financial barriers which may otherwise prevent energy efficiency upgrades (Barrier 1, 5)

(4) Create a single point of contact that would assist the property owner or manager in navigating through the incentive and retrofitting process. This approach would provide support in understanding the various program

rules and assistance in determining eligibility. The property owner or manager would be guided through an easy and streamlined preliminary assessment to establish feasibility and estimate project cost for the Multifamily Path, with an eye toward leveraging all eligible programs. (Barrier 4)

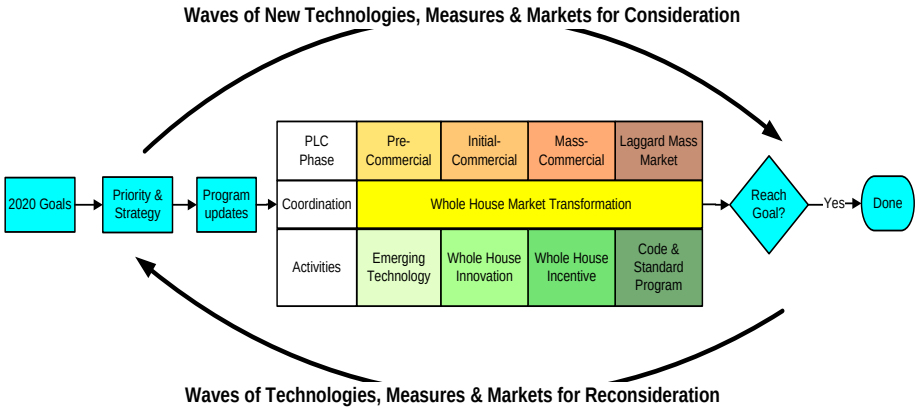
(5) Target buildings planning on or undergoing renovation projects to limit customer time burden and lost rental income. (Barrier 4, 5)

(6) Multifamily sector is comprised of a wide diversity of properties which can be segmented by: 1.) rental rate (low – medium – or high; and/or 2.) size of the building and also size of the company that owns or manages the building. Defining the unique concerns and needs of building owners and managers by these variables of tenant socio-economic status and ownership/management structure will allow much more effective messaging and marketing communications. (Barrier 1, 2, 3, 4, 7)

(7) On Bill Financing or Repayment program which could be focused on the tenant or the common property energy agendas. This program will provide access to capital to fund investments in energy efficiency upgrades for buildings at an attractive interest rate. (Barrier 2, 3, 7)

e) A coherent program or "market" logic model:

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



Within this context, a decision making body, the IOUs Decision Panel, is formed to manage and guide this process.

The EUC Program will be serving both homeowners and property owners/managers, with the intent to coordinate its program activities with the low-income program to meet special needs. Like the other market transformation

programs, the EUC program will work with Emerging Technology, Plug Load & Appliance, Residential HVAC Programs and other residential programs to leverage new and innovative technologies and applications, while pruning more mature technologies and applications from program offerings. These program interactions are described in the EUC Program Key Support Activity Process Diagram. These interaction and coordination decisions will be facilitated by IOUs' Decision Panel as indicated in the logic model (see Logic Model section above in this PIP). .

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

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

The expected outcome of this program includes increased and improved awareness, knowledge and attitude (AKA) of homeowners and apartment owners towards understanding the benefits of deep energy retrofits. After realizing these benefits from program participation, the participant further enjoys other non-energy benefits such as improved comfort of the house and increased value of their properties. The increased value in the property will become more pronounced as the state finalizes its home rating system, so the home purchasers will be aware of the inherent value of properties complete with deep energy reduction retrofits. All of these benefits will help the program participants to continue property improvements outside of the program and outside of the program offerings, leading to spillover effects. These participant and non-participant spillover effects will eventually change the overall composition of the housing stock at the market level, making housing and building code ratcheting possible for society. These codes and standards changes will lead to further reduction of energy consumption at the market level leading to fulfilling the objectives of the California Long-Term energy and environmental policies.

Additional key program support activities are diagramed as a process diagram, in the appropriate section above, for further illustration.

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

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

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

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

Market Transformation Indicators: DeepRetrofit-2: The number of households that elect to perform comprehensive energy upgrades. (This MTI was proposed for 2010-2012 and is planned to continue in this 2013-2014 subprogram). Market transformation indicator results shall be reported, as available, by Energy Division or the IOUs, depending upon who conducts the necessary market studies. (Res. 4385, 12/2/10)

Attribution. Outside of California, most guidelines for evaluating market transformation acknowledge that it is very difficult to attribute market effects to any single program, and nearly impossible to partition out the respective contributions of several coordinated programs on market effects and market transformation. In California, the Framework (Sebold et al., 2001) emphasized that attribution of market effects to programs bears further research. Others (Rosenberg & Hoefgen, 2009; Keating & Prahl (MT Workshop, Nov 2011)

suggest that declaring the program's strategic intent through the market transformation initiative's theory and logic model is key to establishing future claim on transformation effects. The methods proposed by Rosenberg & Hoefgen (2009) for attributing market effects to individual programs include a number of approaches, all of them qualitative: self-report of spillover and free ridership; cross-sectional comparisons with other geographic regions; structured expert judging; and case studies. But attribution using a "preponderance of evidence" approach would likely be expensive and still yield arguable results. Attribution by nature focuses on individual program efforts, and we believe the market transformation evaluation discourse should be focused on the overlapping synergy among all programs and influences in the market. We realize we all have a "Shared Mission" of meeting the CPUC's very aggressive Strategic Plan goals. We do not wish to not invest resources in teasing apart which program entity contributed how much, but instead will plan to focus on whether all the market forces across the State of California have succeeded in transforming the market.

13. **Additional information as required by Commission decision or ruling or as needed:**

SCE's Streamlined Emergency Replacement Protocol, ~~and~~ Streamlined High Performing Contractor Protocol, and Streamlined Program Processing:

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

Eligibility:

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

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

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

Notification/Authorization Requirements:

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

~~**Step 1: Submit for Pre-Replacement Approval:**~~

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

~~**Step 2: Receive Authorization to Proceed:**~~

~~Upon Authorization to proceed the contractor may commence installation of the new HVAC and/or DHW equipment.~~

~~**Step 3:** **Complete Emergency Replacement and Submit Final Paperwork:**~~

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

2. The Incentive Reservation Form must be turned into the EUC Program within 30 calendar days of Emergency Equipment Replacement

Approval. Failure to do so will result in not receiving credit for installed equipment.

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

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

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

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

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

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

- Contractor's business name, address and phone number
- Date of installation

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

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

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

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

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

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

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

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

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

~~2.~~

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

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

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

c. Streamlined Project Processing:
In the 2010 – 2012 Program Cycle, SCE has made numerous improvements to streamline processing of projects. SCE will continue to implement the improvements that are working in order to reduce project cycle time and continuously improve and look for best practices. Below are some of the improvements that have been made to streamline the process:

- Provide QA/QC inspection handbook to participating contractor to inform contractors of the inspection process resulting in cleaner submittals.
- Initiated variance values to reduce processing times for projects whose test values are within the acceptable variance range.

Formatted: No bullets or numbering

Formatted: List Paragraph, Bulleted + Level: 1 + Aligned at: 1" + Indent at: 1.25"

Energy Upgrade California Program

- Implement Emergency Equipment Replacement policy
- Provide EnergyPro handbook to participating contractors to provide them with information on how to model projects in EnergyPro.
- Implement the ability for customers to switch from one participating contractor to another participating contractor during the project phase.
- Allowing contractors to use default values for blower door and duct test.
- Provide participating contractors with the ability to have witness quality control for test out.

Formatted: List Paragraph, Indent: Left: 1.25"

Energy Upgrade California Program

ATTACHMENT 1

Program Non-Energy Objectives:
For New or Substantially changed programs and sub-programs, provide the following information for Program Non-Energy Objectives and follow the format used for the previous cycle Program Performance Metrics found in Resolution E-4385:

i. List the primary SMART[10] non-energy objectives of the program:
See Attachment 2, Table 3, which provides targets per approved PPM's for single family homes. Additional PPM's for multifamily may be developed as program develops.

ii. For each SMART objective, identify the quantitative targets, direction or percent of change that you hope to achieve during the program cycle11:

iii. For each proposed SMART objective, describe any relevant baseline data on current market conditions that you have assembled or plan to assemble and the sources:

iv. Quantitative program targets (PPMs):

Table 3: Quantitative Program Targets (PPMs):

See Attachment 2

[10] A SMART objective is one that is **S**pecific (i.e. quantitative and quantifiable generally, in terms of the results to be achieved**), M**easurable, **A**mbitious, **R**ealistic, and **T**ime-bound. For example, for a vender training component of an innovative commercial program, two SMART mid-term objectives and one long-term objective might be:

a) During the period 2013-2014, the number of HVAC installers in the SCE service territory who are able to perform quality installations of energy efficient packaged air conditioners will increase by 20%.
b) During the period 2013-2014, the number of installations of energy efficient packaged air conditions in the SCE service territory that are considered quality installations will increase by 25%.
c) By 2020, installations of energy efficient packaged air conditions in the SCE service territory that are considered quality installations will increase by 75%.

[11] Please also add any new program objectives and quantitative targets for statewide programs to the portfolio PPM/MTI reporting template.

Energy Upgrade California Program

ATTACHMENT 2
("Appendix C" New Program Tables)

Program Performance Metrics (PPMs)

The IOUs have evaluated *(or will evaluate)* 2010-2012 PPMs in Resolution E-4385 for applicability to the 2013-2014 program cycle and propose to work collaboratively with Energy Division to develop revised program targets and PPMs as appropriate for the 2013-2014 program cycle. The IOUs will propose revisions in an advice letter that will be developed with stakeholder input.

Table 3.1 Short-Term PPMs
On December 2, 2010, the Commission issued Resolution E-4385, approving short-term 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.

Table 3.1 Quantitative Program Targets (PPMs)

SW Program/Sub Program	PROGRAM PERFORMANCE METRIC (PPM)	Metric Type
Whole House Retrofit [Energy Upgrade California]	1. Number of homes treated in the program for 2010-2012. (Report by prescriptive and performance program.)	2a
	2. Number of enrolled contracting firms participating in the program	2a
	3. Average Ex-ante savings per home as reported (average kWh, therms, kW) for both performance and prescriptive programs by climate zone	2a
	4. Average and range of evaluated energy savings per home (prescriptive and performance programs)	2b
	5. Number and percentage of homes not passing Quality Assurance/ Quality Control review, by IOU	2a

Table 3.2 Long Term PPMs
SCE includes draft long term PPMs[12] per supplemental Energy Division guidance received in December 2012. As stated in the Joint Utilities' comments to the Commission in R.09-11-014, dated November 21, 2011, and discussed between IOUs and ED on January 9, 2013, IOUs plan to finalize long term PPMs in further discussions with involved stakeholders and propose updates to Energy Division at a later date.

[12] Unchanged from the Energy Division's file "Revised MTIs_10 27 11-formal-release-ED-May-2012.xlsx"

Energy Upgrade California Program

Table 3.2

2013-2014 Statewide Program - Subprogram PIP	MTI Index #	RE-CATEGORIZED Metric (LTPPM - or SPI) [E-4385 Appendix B original text except for noted edits]	Unresolved Issues
Residential - Energy Upgrade California	DeepRetrofit-3	MT Indicator 3: ~~The number and percent of audits performed compared to the number of customers signed up for an audit (NRDC, p.7)~~. Number of IOU customer households that undergo a deep retrofit (Advanced and/or IDSM) audit through IOU programs.	

PPMs for Multifamily path will need to be developed as this path progresses towards full program implementation.

Table 4 – Work paper Status

#	Work paper Number/Measure Name	Approved	Pending Approval	Submitted but Awaiting Review
1	SDG&E SF Prescriptive Deemed Savings			
2	WPSCREMI0004.0 Prescriptive Whole Home Retrofit Program		x	
3	PGECOALL104 Whole House Rebate			x
4	SCG SF Prescriptive Deemed Savings		x	
5	PGECOALL100_R3 Custom Measures		x	
6	SDG&E Custom Measures			?
7	SCE13MI005.0 - Basic Path Enhancement for Whole House (EUCA)			x

Formatted Table

Table 5: Sub-Program Milestones and Timeline

Milestone	Date
Launch Multifamily Path trials	5~~1~~/3~~3~~1/2013
Complete Multifamily Path trials	12/31/2013
IOU/ ED Monthly Progress Meetings	1/31/2013-12/31/2014

Energy Upgrade California Program

Table 6 Geographic Regions

Geographic Region	SDG&E	SCE	PG&E	SoCalGas
CEC Climate Zone 1			x	
CEC Climate Zone 2			x	
CEC Climate Zone 3			x	
CEC Climate Zone 4			x	x
CEC Climate Zone 5			x	x
CEC Climate Zone 6	x	x		x
CEC Climate Zone 7	x	x		x
CEC Climate Zone 8	x	x		x
CEC Climate Zone 9		x		x
CEC Climate Zone 10	x	x		x
CEC Climate Zone 11			x	
CEC Climate Zone 12			x	
CEC Climate Zone 13		x	x	x
CEC Climate Zone 14	x	x		x
CEC Climate Zone 15	x	x		x
CEC Climate Zone 16		**x**	**x**	**x**

Table 7: Program Administration of Program Components

Program Name	Program Component	Implemented by IOU Staff? (X = Yes)	Implemented by contractors to be selected by competitive bid process (if Yes then enter type of contractor/other market actor possibly used)	Implemented by contractors NOT selected by competitive bid process (list prime contractor and sub-contractor names)	Implemented by local government or other entity (X = Yes)
	SDG&E Marketing	x			
	SDG&E Program Administration	x			
	SDG&E Contractor/ Rater Training		X (EE program vendor with subject matter expertise)		
	SDG&E QA/QC		X (EE program vendor with subject matter expertise)		
	SCE Program Administration	x			~~X~~x
	SCE Marketing	x			~~X~~x
	SCE Recruitment, Training, & Support		X (EE program vendor with subject matter expertise)		~~X~~x

	SCE Quality Assurance & Quality Control		X (EE program vendor with subject matter expertise)		~~X~~x
	SCE MF Contractor/ Rater Training		X (EE program vendor with subject matter expertise)		
	SCE MF QA/QC		X (EE program vendor with subject matter expertise)		
	SCE MIDI Contractors		X (EE program vendor with subject matter expertise)		
	SCE MIDI QA/QC		X (EE program vendor with subject matter expertise)		
	PG&E Marketing and Outreach		X (EE program vendor with subject matter expertise)		x
	PG&E Program Administration		X (EE program vendor with subject matter expertise)		
	PG&E Contractor/ Rater Training		X (EE program vendor with subject matter expertise)		x
	PG&E QA/QC		X (EE program vendor with subject matter expertise)		
	SCG Marketing	X			
	SCG Program Administration	X			
	SCG Contractor/ Rater Training			ICF , Sub Contractor CBPCA	
	SCG QA/QC			ICF , Sub Contractor QC-RHA and QA AESC	
	SCG MIDI Contractor/ Rater Training		TBD	TBD	
	SCG MIDI QA/QC		TBD	TBD	
	SCG MF Contractor/ Rater Training		TBD	TBD	
	SCG MF QA/QC		TBD	TBD	

Table 8: Customer Eligibility Requirements (Joint Utility Table)

Customer Eligibility Requirement (list of	PGE	SCE	SDGE	SCG

requirements)				
Tennant or Owner of SF Bldg with active IOU account's)	x	x~~X~~	x	x
Owner or property mgt. co. of MF Bldg with active IOU account's)	x	x	x	x
Must utilize participating EUC Contractor or Rater	x	x	x	x
Two to Four Unit Building with active individually metered accounts	x	x	x	x

Formatted Table

Table 9: Contractor Eligibility Requirements (Joint Utility Table)

Contractor Eligibility Requirement (list of requirements)	**PGE**	**SCE**	**SDGE**	**SCG**
Contractor State Licensing Board (CSLB) in appropriate specialty	x	x	x	x
CSLB "B" General Contractor License (Advance Path Only)	x			
Bonding and in good standing	x	x	x	x
Insurance to IOU minimum standards	x	x	x	x
Execution of Contractor/ or Rater Participation Agreement	x	x	x	x
BPI Building Analyst Certified OR 3-day Basic Training (Basic Path Only)	x	x	x	x
BPI Building Analyst Certified on Staff (Advanced Path)	x	x	x	x
BPI MF Building Analyst Certified (MF Participating Rater Path)	TBD	TBD	x	TBD
HERSII Certified (MF Participating Rater Path)	TBD	TBD	x	TBD
HERSII and BPI BA Certified (SF Participating Rater Path)	x	x	x	x
2 Years of Relevant Work Experience	x	x		x
B, C-2 or C-20 license for Basic Only	x			

Formatted Table

Table 10: Manufacturer/Retailer/Distributor Partners

Manufacturer/Retailer/Distributor Partner Information	**PGE**	**SCE**	**SDGE**	**SCG**
Manufacturers enrolled in program	none	none	none	none
Manufacturers targeted for enrollment in program	none	none	none	none
Retailers enrolled in program	none	none	none	none
Retailers targeted for enrollment in program	none	~~none~~3	none	none
Distributors enrolled in program	none	none	none	none
Distributors targeted for enrollment in program	none	none	none	none

Formatted Table

Energy Upgrade California Program

Redacted – Public Version

Table 11: Summary Table of Measures, Incentive Levels and Verification Rates

Measure Group	Market Actor Receiving Incentive or Rebate	PGE		SCE		SDGE		SCG	
		Incentive Level	Installation Sampling Rate	Incentive Level	Installation Sampling Rate	Incentive Level	Installation Sampling Rate	Incentive Level	Installation Sampling Rate
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Incentive level will be paid dependent on SCG shared utility service territory	
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted

Table 12: Additional Services

Additional Services that the Sub-Program Will Provide	To Which Market Actors	PGE	SCE	SDGE	SCG

		[indicate the level at which the service will be incented or funded]	[indicate the level at which the service will be incented or funded]	[indicate the level at which the service will be incented or funded]	[indicate the level at which the service will be incented or funded]
N/A	N/A	N/A	N/A	N/A	N/A

Table 13: Program Related Audits

Levels at Which Program Related Audits Are Rebated or Funded	Who Receives the Rebate/Funding (Customer or Contractor)
None	

Redacted – Public Version

Table 14: Quality Assurance Provisions

QA Requirements	QA Sampling Rate (Indicate Pre/Post Sample)	QA Personnel Certification Requirements
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted

Energy Upgrade California Program

QA Requirements	QA Sampling Rate (Indicate Pre/Post Sample)	QA Personnel Certification Requirements
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted

Table 15: Cross-cutting Sub-program and Non-IOU Partner Coordination

Sub-Program Name		
Other IOU Sub-program Name	Coordination Mechanism	Expected Frequency
PLA (HEER)	Meetings	Monthly/As-Needed
MFEER	Meetings	Monthly/As-Needed
Energy Advisor (HEES)	Meetings	Monthly/As-Needed
QI/ QM	Meetings	Monthly/As-Needed
CSI	Meetings	Monthly/As-Needed
Coordination Partners Outside CPUC		
CCSE	Meetings	Weekly/ Monthly
City of San Diego	Meetings	As-Needed
County of San Diego	Meetings	As-Needed
City of Chula Vista	Meetings	As-Needed

Retrofit Advisory Council (RAC)	Meetings	Quarterly
Los Angeles County	Meetings	Monthly
Santa Barbara County	Call	Monthly
City of San Bernardino	Call	As-Needed
City of Long Beach	Call	As-Needed
Efficiency First	Call	Bi-Weekly
ABAG	Meetings	As-Needed
County of San Francisco	Meetings	As-Needed
County of Marin	Meetings	As-Needed
County of Sonoma	Meetings	As-Needed
County of Solano	Meetings	As-Needed
County of Alameda	Meetings	As-Needed
County of Contra Costa	Meetings	As-Needed
County of Santa Clara	Meetings	As-Needed
County of San Mateo	Meetings	As-Needed
County of Fresno	Meetings	As-Needed
County of Santa Barbara	Meetings	As-Needed
SMUD	Meetings	As-Needed
MIST	Meetings	As-Needed

Table 16: Non-EE Sub-Program Information

EUC		
Non-EE Sub-Program	**Budget**	**Rationale and General Approach for Integrating Across Resource Types**
N/A	N/A	N/A

Energy Upgrade California Program

ATTACHMENT A:

Multifamily Energy Upgrade California Pilot Program Implementation Plan

1. **Program Name:** Multifamily Energy Upgrade California Pilot Program

2. **Program Type:** Core

3. **Program Descriptors**
   Market Sector: Existing Residential Multifamily Properties
   Program Classification: Statewide
   Program Status: Pilot

4. **Program Statement**
   The Multifamily Energy Upgrade California Pilot is an extension of the existing statewide Energy Upgrade California (EUC) Program within the statewide residential energy efficiency sector. EUC delivers comprehensive energy efficiency upgrades tailored to the needs of existing single family homes and their owners.

   The Multifamily Energy Upgrade California Pilot Program will specifically target the multifamily housing retrofit market. The Pilot will promote long-term energy benefits through comprehensive energy efficiency retrofit measures —including building shell upgrades, high-efficiency HVAC units, central heating and cooling systems, central domestic hot water heating and other deep energy reduction opportunities. These energy efficiency measures will be identified through an investment grade assessment.

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

5. **Program Rationale**
   Energy efficiency efforts for this segment must overcome a number of barriers; primarily: 1) lack of energy efficiency knowledge, 2) the economics of "split-incentives" where the building owner invests capital but the savings primarily benefit the tenants, and 3) access to investment capital. Up-front out-of-pocket costs pose a significant participation barrier for property owners and managers. The pilot will include a number of tactics, outlined below:

   - To improve a property owner or manager's energy efficiency knowledge, the pilot seeks to leverage comprehensive building assessments to identify potential energy efficiency opportunities.
   - To address split incentives and cost of upgrades, the Pilot will integrate with the existing Energy Savings Assistance Program ("ESAP") and Multifamily Energy Efficiency Rebate ("MFEER") Program. This will provide comprehensive services to the building, including "low cost" or "no cost"

measures in conjunction with the MF EUC incentives to maximize energy savings for the up-front investment . Additionally, low income tenants (ESAP) may qualify for additional "no cost" energy saving measures.

- Incentives will assist property owners or managers with overcoming a wide array of market and financial barriers which may otherwise prevent energy efficiency upgrades.
- A single point of contact will help the property owner or manager navigate through the incentive process.

MF EUC Pilot will field test a single-point-of-contact approach to guide property owners through the various programs in retrofitting their multifamily property. This approach will provide support in understanding the various program rules and assistance in determining eligibility. The customer will be guided through a "clipboard audit" to establish feasibility and estimate project cost for MF EUC, with an eye toward leveraging all eligible programs.

The primary purpose of this pilot program is to test performance based approaches to the multifamily property owner market. Other considerations to meet all income strata and address split incentives for property owners and tenants may include a direct install strategy, as well as prescriptive rebates through the existing MFEER Program.

While programs will be coordinated and integrated, their respective policies and procedures will be followed in the delivery of services. Operational efficiencies will be employed to streamline eligibility, income verification, and installation of measures.

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

- Building owners can leverage incentives to address common areas and systems as well as individual unit upgrades to make more cost effective improvements.
- Major rehabilitation projects are common in the multifamily sector. It is cost effective to include energy efficiency upgrades at the time of these renovation projects. These projects typically have well-financed construction budgets and broad scopes that could include energy efficiency measures.
- Multifamily properties tend to be operated and maintained by professional building staff. Providing resources to building staff increases the odds that the building will be operated efficiently after energy upgrades are installed, perpetuating savings benefits.

From the 2010-2012 EUC-WH Process Evaluation by SBW/ODC/ASW, SCE and PG&E have a set of lessons learned applicable to the single family Whole House Upgrade

Energy Upgrade California Program

Program design.

Below is a summary of EUC-WH Process Evaluation Recommendations:

1) Support contractors' marketing efforts,
2) Support a more flexible EUC website to allow IOU access to make modifications and access data to follow up on customer leads,
3) Marketing recommendations
    a. Foster peer to peer marketing
    b. Continue to promote main program benefits
    c. Continue email and direct mail to targeted groups of customers
    d. Continue with events and workshops,
    e. Offer brief, step-by-step explanation, with emphasis on whole house improvements
4) Convene quarterly statewide meetings of all entities implementing the program Contractor recruiting, training and mentoring recommendations
    a. Focus training and mentoring on top performers
    b. Reduce program required paperwork and adopt common statewide job reporting
    c. Offer financing options
5) SCE-Specific Training Recommendations
    a. For participant workshop, focus on EnergyPro training and job reporting documentation and process,
    b. For Basic/Advanced Path training –Improve detail on Basic/Advanced path training requirements
    c. Third Party BPI training – not all third party BPI training is equal, additional re-training may be needed to standardize the quality and content coverage
    d. On-line Learning Center – allow multiple representatives from the same contractor firm to participate, and provide more extensive training topic coverage
    e. Contractor Mentoring – standardize contractor mentoring service
6) Program Design
    a. Allow early installation of HVAC and hot water heaters prior to approval of preliminary application
    b. Modify or drop the Basic Upgrade Package
    c. Improve customer service to contractors and customers
    d. Offer contractor incentives, increase customer incentive and subsidize assessment costs
    e. Improve whole house energy modeling, including site-specific schedules

For the EUC-MF pilot program, there are a few key program design differences:

1) Smaller scale, and only a select few qualified contractors will be used for pilot program implementation,
2) The targeted customers are defined as property owners/managers, as well as

properties with low-income renters. This program target is in sharp contrast with the EUC-WH program which focuses on diverse single family homeowners. The marketing initiative for this pilot will be very focused and targeted.

3) The modeling software tool has yet to be determined for this program; however, tools are currently being assessed by program teams.
4) The single family comprehensive audit and whole building comprehensive audit are fundamentally different, leading to different skill requirements. As a result, the program team is planning to engage a few highly qualified contractors and raters to participate for quality control purposes.
5) Unlike the EUC-WH program, where program participation has experienced a slow uptake, SCE expects the EUC-MF pilot and subsequent program will experience greater participation due to what currently appears to be greater market demand. The expected increased participation in the MF program will require the IOUs to create a local, targeted marketing program and contractor infrastructure to ensure quality and consistent outcomes during the pilot.

List of Lessons learned applicable to EUC-MF pilot program:

SCE/SCG:

1. Utilize target marketing to property owners/managers
2. Offer "no cost" investment-grade audits to qualified customers to eliminate initial barrier of entry
3. Utilize EUC website as a resource for property owners/managers
4. Establish single point of contact to facilitate participation process, reduce paperwork and processing time.

PG&E:

1. Target marketing to property owners/managers using effective and proven messaging techniques
2. Continue to use the website as a resource for property owners /managers
3. Continue participation workshops and trainings with a focus on job reporting and incorporation of adult learning techniques
4. Continue to provide on field mentoring for participating professionals
5. Explore development of common paperwork requirements
6. Leverage single family program infrastructure to support participating professionals
7. As additional improvements are made to the single family EUC they will be considered for the MF EUC Pilot

SDG&E:

The SDG&E model is not a contractor model, but is a consultant model and utilizes a single point of contact to serve a market that is uniquely different than the single family market served by the EUC contractor model. Thus, many of the recommendations do not apply. Under the participating contractor model, participating contractors perform both assessments and installation of measures. Under the consultant model, customers may use the contractor of their choosing but must utilize a participating rater to perform

assessments and the test-in, test-out modeling to determine energy savings. Please reference p. A-31 for discussion regarding consultant model.

6. Support of the Strategic Plan

The Multifamily Energy Upgrade California Pilot, in support of the California Long Term Energy Efficiency Strategic Plan (Strategic Plan), pursues comprehensive energy efficiency measures and treats multifamily buildings as a system to seek deep energy reductions.

One of the goals of the Strategic Plan is the transformation of the home improvement market to apply whole-house energy solutions to existing homes. The overall objective of the goal is to reach all existing homes and maximize their energy efficiency potential through delivery of a comprehensive package of cost effective measures. The Strategic Plan further states that a similar approach must be developed for multifamily housing.

7. Expected Pilot Program Objectives and Outcomes

Objectives:

The Pilot Program seeks to transform the multifamily retrofit market from a prescriptive, one-size-fits-all approach, toward a comprehensive building analysis approach. The Pilot will leverage energy consultants and professionals to evaluate a wide range of energy efficiency options when rehabilitating multifamily properties. The creation of energy-efficient complexes provides benefits beyond the direct energy savings. Through the incorporation of energy efficient measures by multifamily property owners and managers, tenant behaviors can be influenced and comfort improved. The hope is that these behaviors can contribute to a virtuous cycle of energy efficiency - as tenants receive upgrades that reduce their energy costs and improve comfort, they in turn recruit and mentor other tenants.

Expected Pilot Program outcomes:

1. Deeper energy savings per building than otherwise possible, with a target of 10-20% or greater savings per building benefitting both property owners and tenants.
2. A broader suite of measures than in typical deemed programs, resulting in deeper savings (i.e., HVAC, envelope, domestic hot water).
3. Improved property owners' and managers' understanding of the benefits of a whole building approach.
4. More comprehensive maintenance follow-up for tenants and building by enrolling them into California Integrated Customer Energy Audit Tool (CA-ICEAT) to enable ongoing comparative energy usage, and energy goal setting, ensuring the persistence of savings after the EUC intervention is complete. *(PG&E will consider utilizing this tactic)*
   A better understanding of combustion safety as it relates to comprehensive (non-prescriptive) retrofits.

Energy Upgrade California Program

At the time of the original filing of the Advice Letter, the Multifamily IT tools developed using ARRA funding were under development. On March 9, 2012, the IOUs received a demo of the IT Tools including the EUC MF web portal, MF Funding Finder Navigation Tool and MF Tracking System (presumably the "Compass Portfolio Tracker"). The IOUs are still evaluating whether they will use these tools for this pilot.

SCE is initiating an evaluation to identify and evaluate best benchmarking tools for the multifamily market segment. In addition to Compass Portfolio Tracker, the evaluation will also include EnergyStar Portfolio Manager for multifamily facilities (scheduled to launch in June 2013), and EnergyScoreCards, as well as other tools that may be identified.

PG&E is interested in leveraging the tools developed; in particular, the single point of contact could use the Multifamily Funding Finder Navigation tool during the preliminary consultation with the property owner or manager. However, the maintenance and upkeep of these tools needs to be understood to ensure the information contained in the tool is current and accurate. PG&E is also interested in the MF Tracking Tool demonstrated in March 2012, and will work with the other IOUs to further evaluate the approach for the pilot.

SDG&E will not be utilizing the Compass Portfolio Tracker and is currently still evaluating the different functions of the tool.

In as much as the tool can provide a tracking mechanism for owners to follow the workflow of their projects, for the pilot, the single point of contact serves as this contact and notifies the participating rater when projects hit certain milestones. For example, when projects are submitted for review for both pre and post submittals, the single point of contact and participating rater are notified as projects are scheduled for inspection and when they are approved.

8. Innovation:

Integrated ~~Progam~~Program Design

In accordance with the Strategic Plan, the Multifamily EUC Pilot will engage with ESA and Core Energy Efficiency programs, such as MFEER. This unprecedented integrated approach combines market-rate and income-qualified energy efficiency measures that will benefit multifamily property owners and tenants.

Please see Attachments A1 to A3 for more details on how each utility plans to implement the Multifamily EUC Pilot.

9. Energy Measures:

9.1. Measure Information:

This updated measure list reflects the 2013-2014 IOUs' filed EE Applications. Additionally, low income tenants (ESAP) may qualify for additional "no cost" energy saving measures (denoted with an *) offered within the respective IOU service areas. Eligible measures may include but are not limited to:

Energy Upgrade California Program

- Screw-in CFL Reflector bulbs (ENERGY STAR® Qualified)
- Interior LED Lamps
- Interior CFL Fixtures (ENERGY STAR® Qualified) *
- T5 or Lamps w/electronic ballasts
- Exterior CFL fixtures (ENERGY STAR® Qualified) *
- Exterior LED lamps
- Exterior LED fixtures
- Occupancy sensors*
- Torchiere*
- Photocells
- Ceiling Fans (ENERGY STAR® Qualified)
- LED Pool and Spa lighting
- Vending Machine Controls
- Landscape/parking lighting
- High Performance Dual-Pane Windows
- Attic and/or wall insulation*
- Floor insulation
- Cool roofs/radiant barriers
- Space heating equipment
- Space cooling equipment
- Duct sealing and insulation
- Pipe insulation*
- Air sealing/envelope: outlet cover plate gaskets, attic access weather-stripping, door weather-stripping, caulking, and minor home repairs. Minor home repairs predominantly are door jamb repair / replacement, door repair, and window putty*
- Electric storage water heaters
- Central system natural gas water heaters
- Natural gas water heater and/or boiler controllers
- Natural gas storage water heater
- Faucet Aerator*
- Water Heater Blanket*
- Water heater repair & replacement*
- Package terminal air conditioners
- Unitary AC Units
- HVAC Quality Maintenance
- Brushless Fan Motor for Central AC
- Evaporative Coolers
- Programmable Thermostats
- A/C Tune-up (Central AC)*
- AC Time Delay*
- Evaporative coolers repair & replacement*
- Refrigerators (ENERGY STAR® Qualified)*

- High-efficiency Clothes Washers
- High-efficiency Dishwasher
- Central Natural Gas Furnace
- Furnace repair & replacement *
- Cold Water Clothes Washers
- Low flow water fixtures
- Microwave-(displacing gas or electric oven use) *
- Variable Speed Pool Pumps
- Programmable Thermostats (Common Areas only)
- Demand Control for Centralized Water Heater Recirculation Pump

Ineligible Measures

The following upgrade measures will not be considered as part of the energy analysis for program participation:

- Solar photovoltaic
- Solar Thermal
- Cold water savings devices (e.g. toilets, irrigation systems, weather controllers)
- Clothes dryers
- Green materials or certification
- Paint, carpet, cabinets, etc.

Combustion appliance safety testing will take place as appropriate.

10. Budget/Timeframe:

Please see Attachments A1 to A3 for details regarding each IOUs projected budget and timelines.

11. Program Performance Metrics:

In 2012, the first year of the pilot program and the last year of the current program cycle, data will be collected for baseline development. Program performance metrics may be developed, as applicable, in conjunction with the Energy Division's plans to develop a comprehensive process to determine program objectives and short and long term program performance metrics, as described in the Energy Division's "Framework of Indicators for Assessing Achievement of Long Term Energy Efficiency Objectives" for the 2013-2014 bridge period and beyond. The IOUs will report on pilot results in the Pilot Program Target Update Report for this program cycle.

12. Methodologies to Test Cost Effectiveness:

The IOUs will examine cost effectiveness of the various measures installed after gathering preliminary information from the pilot.

13. EM&V Plan:

Energy Upgrade California Program

Please see Attachment A1 for IOU plans for evaluation, measurement, and verification.

14. Plan for Disseminating Best Practices and Lessons Learned; transferring these lessons to resource programs; schedule/plan to expand the pilot to statewide usage:

Best practices and lessons learned for the Multifamily EUC Pilot will be disseminated via EUC and will likely include various channels, such as: incentives, education, and outreach programs. These channels will be used to inform resource programs on the successful practices and tools identified during the pilot.

A successful pilot would warrant ramping up the delivery of a comprehensive package of cost effective measures in order to reach existing multifamily homes and maximize their energy efficiency potential in future portfolio cycles.

EUC-MF-Pilot & 2013-2014 Program PIP

Identified multifamily market barriers to overcome: multifamily

1) Lack of customer (building owners and managers, and building tenants) awareness; limited program information available
2) Lack of access to financing
    a. Need to address split incentives and cost of upgrades for multifamily owners/managers,
    b. Integrate EUC-MF with Multifamily Energy Efficiency Rebate Program offerings
    c. Where applicable, leverage EE financing programs to provide financial assistance to building owners and managers to make the comprehensive upgrade possible
3) Lack of-skilled workers trained in energy efficiency concepts and installation

This pilot will not address barrier #2 until the latter half of 2012 when financing packages may be available.

To overcome other programmatic and design concerns, actions include:

a. Creating a single point of contact that would assist the property owners/managers to navigate the incentive and retrofit process regardless of "income qualification" requirements and different program rules
b. Targeting properties with planned or in-progress renovations to minimize time-burden and lost rental income,
c. Addressing wide diversity of the multifamily properties through segmentation to ensure broad coverage and to meet special requirements
d. Developing EE assessment and installation programs that minimize the disruption of tenants in the multifamily property market to multifamily properties on the basis of the company size; consider the number of individual units (bulk) that can be impacted via single program outreach efforts to the larger size property owners and managers.

e. Using highly skilled and trained contractors to serve and implement program measures to ensure high quality installation, including a comprehensive apartment-wide building envelop audit, to assess the comprehensive needs of the property. Leverage contractors' client relationships and industry profile.

Objective of the Pilot & Researchable Questions

1) Test program design parameters to support single-point of contact
    a. How best to leverage and coordinate resources and savings across programs (i.e., ESA program, MIDI program ,EUC-MF program expenses, etc.)
2) Program results reporting and quality control & inspection
    a. How to address program installation verification and inspection process, and exceptions
    b. Accuracy of the energy savings reported by the contractors
    c. Appropriate program process steps, and QA & QC requirements without overburdening the program/s
    d. Scope of the program inspection plan for the pilot, and the scaled program
3) Determine the optimal program implementation tools and tracking system for the scaled program
    a. Which savings methodology(ies) or tool(s) should be adopted by the program to serve this market segment
    b. What is the scope of the appropriate program tracking system
4) Implement best practices and lessons learned from prior evaluations or industry practices
    a. Did the program implement lessons learned and/or industry best practice? If yes, what are the results? What improvements are necessary as next steps?

Preliminary EUC-MF M&E Statement of Work (SOW)

The IOUs will work jointly with ED to finalize the actual research plan. This project will likely have the following study components:

1) Ongoing Rapid M&E feedback
    a. Previously, the M&E team implemented a rapid feedback process to take an in-depth review of the program's energy savings results and associated realization rates and program cycle-time. This information is used to fine-tune and streamline program design. The EUC-MF pilot will continue this practice.
2) Process evaluation
    a. Verification of program theory and program logic model
    b. Verification of program process and design, and assess the effectiveness of implementation and the program team's ability for ongoing process improvement, using the list of researchable questions above as the starting place
    c. Verification of program QA/QC process and improvements

d. Verification of energy savings methodology(ies) and tool(s) using an independent third party evaluation team
e. Collect customer feedback from all touch points (e.g. Property owners/managers, contractors, tenants and various program teams)
f. Implement appropriate segmentation question batteries to allow for data analysis across key target groups
g. Recommendations for program design, implementation and marketing activities for the 2013 – 2014 full-scale program

IOU success will be defined by reaching the expected outcomes described in section 7. Lessons learned from each IOU will be shared and will inform the development of a statewide program.

Consistent with all M&E studies, the IOUs will adhere to the collaborative framework agreed to by all parties.

The PG&E pilot will test a multifamily program delivery model using participating professionals in a range of building types, configurations and climate zones and help identify the most cost effective measures for multifamily buildings and the contractor/trade support required for implementing this complex program. PG&E will also test combustion appliance safety protocols in a multifamily context, use a single point of contact approach to optimize and customize the customer experience and integrate with the existing low income and core multifamily offerings.

SDG&E will test the proposed MF whole building performance design aimed at achieving 20% average building performance energy savings utilizing a whole building approach similar to EUC SF in order for the MF segment to participate in and enjoy the benefits of comprehensive deep energy savings through whole building retrofits. Success will be achieved by reaching the expected outcomes described in section 7. Unique features SDG&E is testing through this pilot to achieve these outcomes are utilizing the consultant model vs. contractor model (Per SW HERCC recommendations); utilizing a single point of contact to assist property owners and raters in identifying comprehensive opportunities and leveraging of available programs and financing options. The pilot will also be testing ESAP integration processes with the whole building retrofit process.

The EM&V method that will be used to determine the success of disseminating information associated with this pilot will be a survey instrument distributed to pilot participants. In the fall of 2012, a meeting will be held of the multifamily HERC participants, and the survey will be distributed at that meeting. The survey will include questions related to the best practices and procedures of energy saving methods for multifamily housing. The survey will be developed to determine if the participants were satisfied with the methods of information dissemination, which dissemination practices worked the best and the level of information that was retained by the participants. The goal of the survey would be to determine if participants retained knowledge that was provided through the program and which methods were

most effective achieving the goal of relaying energy saving information. From this survey, SDG&E is hoping to determine which methods are the best to disseminate information for multifamily whole house programs and to gain insight into the pilot activities that were most successful.

Energy Upgrade California Program

ATTACHMENT A1:
SCE/SCG Multifamily Energy Upgrade California Pilot

1. **Projected Program Budget Table**
   Table 1 –

IOU	Total Administrative Cost	Total Marketing and Outreach	Total Direct Implementation Non-Incentive	Total Incentives	Total Program Budget by IOU*
SCE	$200,000	$100,000	$238,000	$1,462,000	$2,000,000
SCG	$100,000	$50,000	$112,000	$738,000	$1,000,000
Total	$300,000	$150,000	$350,000	$2,200,000	$3,000,000

*Does not include funding being leveraged into the treated buildings for services provided through other core EE programs and the ESA program.

2. **Projected Program Gross Impacts Table – by calendar year**
   Table 2 –

	# of MF properties	# of MF units	kWh Savings	kW Savings	Therm Savings
SCE/SCG	20	1,700	1,416,100	1,360	116,025

3. **Program Objectives**

In accordance with the Strategic Plan, the MF EUC Program Pilot will coordinate with the Energy Savings Assistance Program (ESAP) and core EE Programs, such as MFEER. This integrated approach combines market-rate and income-qualified energy efficiency measures.

This integration effort provides the opportunity to educate building owners on the benefits of energy efficiency and conservation efforts spanning the range of needs for the multifamily market.

MF EUC Pilot will field test a single-point-of-contact approach to guide property owners through the various programs in retrofitting their multifamily property. This approach will provide support in understanding the various program rules and assistance in determining eligibility. The customer will be guided through a "clipboard audit" to establish feasibility and estimate project cost for MF EUC, with an eye toward leveraging all eligible programs.

The primary purpose of this pilot program is to test performance based approaches to the multifamily property owner market. Other considerations to meet all income strata and address split incentives for property owners and tenants may include a direct install strategy, as well as prescriptive rebates through the existing MFEER Program.

While programs will be coordinated and integrated, their respective policies and procedures will be followed in the delivery of services. For example, the ESA

program measures will be installed at no cost to income-qualified customers within the ESA program guidelines established at 200% or below Federal Poverty Guidelines (FPG), while MF EUC and MFEER will address incomes above 200%. Operational efficiencies will be employed to streamline eligibility, income verification, and installation of measures.

Program Pilot objectives:

1. Achieve deep energy savings reduction for all participating properties, targeting 20% or greater savings,
2. Implement comprehensive measures that go beyond lighting,
3. Help participants better understand energy efficiency and its many opportunities, and maintain program savings by leveraging the Integrated Energy Audit Tool (scheduled for launch in early 2012).

SCE/SCG intends to offer the Investment Grade Assessment at no cost to participants during the Pilot. SCE/SCG will utilize a professional energy consulting/auditing firm that has experience working with multifamily properties. It is expected that the selected firm will have consultants with qualifications such as Engineering degrees, Building Performance Institute (BPI) certifications, Home Energy Rating System (HERS) certifications, Leadership in Energy and Environmental Design (LEED) Accredited Professionals, and GreenPoint Rated Professionals.

4. Program Strategy

The program strategy is to offer attractive incentives to multifamily property owners/managers to overcome a wide array of regulatory, market, and financial barriers which may otherwise prevent the rehabilitation of existing multifamily properties. These incentives will partially offset the cost to achieve energy use reductions.

Energy savings for each project will be calculated using industry accepted energy assessment protocols. Additionally, energy savings will be verified by a certified energy rater or qualified professional before payments of incentives are issued to a property owner.

The MF EUC Pilot will offer incentives to property owners and managers with scheduled project rehabilitations who are willing to invest in a performance-based, whole-building approach. The incentives are designed to influence the implementation of comprehensive measures as part of the scope of previously planned rehabilitations.

5. Program Implementation

The program will provide financial incentives to owners/managers of multifamily buildings who undertake a comprehensive approach to energy efficiency retrofits and are able to achieve a minimum energy savings target. The program will establish standards and verification procedures to provide quality assurance, and validate energy savings.

The program aims to leverage the long-established relationships between property managers and their preferred subcontractors. This approach provides property owners with the flexibility to select the trade allies of their choice.

There are several economic, financial or regulatory events that prompt a property owner to upgrade a facility. However, there are a few discrete points in a building's lifecycle when it is typically more convenient for energy efficiency improvements. To leverage these critical and infrequent opportunities, whole-building, performance-based incentives must be large enough to motivate owners to incorporate energy efficiency improvements.

6. Incentives

Incentives will partially offset costs to retrofit measures needed to achieve targeted energy-use reductions. Incentives will be offered on a tiered structure, paid on a "per dwelling unit" basis according to the total building energy savings percentage. The tiered approach will reward participants for realizing deeper savings. While a "per unit" approach enables participants to experience economies of scale with larger multifamily buildings.

SCE/SCG

Energy Savings Achieved	Incentive per Dwelling Unit
10%	$ 700
15%	$ 800
20%	$ 1,000
25%	$ 1,200
30%	$ 1,400
> 35%	$ 1,600

7. Project Pre-Qualification

Property owners will be required to provide basic information to determine the scope of the project, existing conditions, and available funds. The information provided on the pre-qualification form will help to determine if the project can reach the preset minimum energy savings achieved percentage.

The pre-qualification process will be supported by the Integrated Energy Audit Tool when it becomes available.

Basic Energy Assessment (Basic Site Assessment)

The Basic Energy Assessment will provide an opportunity to meet with property owners to conduct a high level energy assessment, validate the data provided, and assess the potential for property savings. The Basic Energy Assessment will help gauge customer commitment and determine if the projects have the potential to

achieve minimum energy savings expectations. If the projects do not meet these savings targets, they will be referred to other applicable EE Programs.

Advanced Energy Assessment and Modeling (Test in, Investment Grade Assessment)
Investment Grade Assessments will be required to establish a baseline of the existing energy consumption for each property. The assessment will be conducted by an energy auditing professional using approved multifamily audit tools and procedures.

The audit tools evaluate potential measures based on least-cost, maximum benefit customized to each property's needs. The tool provides property owners with information to help them select a mix of measures that will achieve their energy savings goals.

Once a property owner has selected the desired savings target, the owner's own contractors implement the energy saving measures of the owner's choice.

The MF Pilot was designed to pilot a variety of approaches to modeling savings. At this late date, however, the program will solicit consulting engineering services with expertise using eQuest, or other proprietary system-based engineering approaches, such as those used in Retro-Commissioning. Given the short time frame and limited budget, a comparative analysis of TREAT, EnergyPro, and other tools will have to wait for a post-occupancy EM&V study.

Perform Post Project Verification and Quality Assurance (Test Out, Savings Verification)
At completion, the owner submits the required documentation for verification by an independent energy auditor. The energy auditor will verify the installation of measures, compliance with product specifications, and determine the savings target achievement. The auditor will use multifamily audit and modeling tools to determine savings.

The energy auditor will then submit a project report for IOU review and application processing.

8. Customer Description

The program will target multifamily owners and managers of properties located in SCG and SCE service Territory.

- Multifamily properties must contain a minimum of three dwelling units.
- Properties must be designated as multifamily residential by the Title 24 Building Energy Efficiency Standards, Part 6, which is defined as three or more attached dwelling units in a building.
- Properties cannot exceed four stories.
- Both affordable and market-rate properties qualify.

Non-Qualifying Properties

- Single-family homes - A single-family residential building is defined by the California Building Code as a single detached unit. Single-family homes may qualify for incentives through the EUC Single Family Program.
- Single-room occupancy (SRO) facilities, such as dormitories and assisted living facilities do not qualify.
- Non-residential buildings
- Hotels and Motels

9. SCE/SCG's Cost Effectiveness (E3 Calculator):

Figure 1. E3 Calculator showing cost-effectiveness for Multifamily Energy Upgrade California.

Refer to E3.

10. Energy Savings and Demand Reduction Level Data:

Program Impacts (Gross)					
	Annual Gross kWh	Lifecycle Gross kWh	Annual Gross Therms	Lifecycle Gross Therms	User Entered kW
2010-2012	1,666,000	29,988,000	136,500	2,457,000	1,600

11. Program M&E Plan for SCE and SCG

Energy Upgrade California: Multifamily Energy Upgrade California Pilot is proposed for implementation in two stages:

- Stage-1: Initial pilot phase to test program logistics and implementation requirements with a few raters and a few contractors.
- Stage-2: Scale the program for full deployment in 2012 and beyond.

11.1. The M&E plan for Stage-1 will focus on Rapid Feedback Analyses. Here are a few of the items to be considered:

- Is the program implemented as designed? If yes, are the results of the program activities acceptable from an end-to-end perspective?
- Can this program be evaluated given the program output and tracking data? If not, how can output and data be improved?
- Is the program design and implementation effective?
    - Is the program qualification acceptable?
    - Is the program processing acceptable?
    - Is the program QA/QC process acceptable?
    - What are the key issues and concerns for participating property owners/managers, renters, contractors and program contractors and HERS Raters? How can the program be improved?
    - Is the overall program cycle time acceptable?
    - Is the program energy savings accurate? If not, how can it be improved?

  - Is the program interaction with other programs, local government entities and stakeholders acceptable? If not, what is missing and how can it be improved?
- Is this program meeting its stated objectives given the output and outcomes of this early implementation?
- Verification of the program implementation barriers and identify ways to overcome the observed barriers.

11.2. The M&E plan for stage-2 will focus on the following items:

- Establish baseline condition for SCE multifamily energy usage profile as of 2008 and 2011 prior to program intervention.
- Has the program acted upon the rapid feedback? If yes, what are the changes?
- Is the program generating deep energy savings as expected?
- Is the program consistent with its program theory, logic model and attribution claims?

Repeat the evaluation items identified above, in the context of a scaled program. SCE and SCG will work closely with ED's M&E team to develop an approved M&E study plan. Currently, we have identified the need for this study in the 2010-2012 M&E study plan.

Attachment A2.2: SCE EUC Enhanced Basic/Modified Flex Path PIP Public Version (Clean)

Southern California Edison

CUSTOMER ENERGY EFFICIENCY and SOLAR DIVISION

PROGRAM IMPLEMENTATION PLANS

2013 - 2014

1d

1. **Sub-Program Name:** Energy Upgrade California Program (EUC)

2. **Sub-Program ID number:** SCE-13-SW-001d

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

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

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

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

7. **Projected Sub-program Total Resource Cost (TRC) and Program Administrator Cost (PAC):** TRC ___0.49_ PAC _0.67_

8. **Projected Sub-Program Budget:**

Table 1: Projected Sub-Program Budget, by Calendar Year[1]

SCE-13-SW-001d	PROGRAM YEARS		
Sub-Program	**2013**	**2014**	**Total**
Total Administrative Cost (Actual)	$ 623,263	$ 606,211	$ 1,229,474
Total Marketing & Outreach Cost (Actual)	$ 604,261	$ 603,656	$ 1,207,917
Total Direct Implementation (Actual)	$ 7,149,200	$ 7,424,190	$ 14,573,390
Integration Budget Allocated to other Programs (If Applicable)	$ -	$ -	$ -
Total Budget by Program (Actual)	$ 8,376,724	$ 8,634,057	$ 17,010,781

Note: SCE does not have any incremental budget from the 2012 Multifamily EUC Program to carry over into 2013-14.

9. **Sub-Program Description, Objectives and Theory:**

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

a) Sub-Program Description and Theory:

According to a report released by the Office of the Vice President, "homes in the United States generate more than 20 percent of our nation's carbon dioxide emissions, making them a significant contributor to global climate change."[2] The challenge of addressing residential emissions has been a significant topic for California stakeholders and was addressed when D.09-09-047 acknowledged, "Improving the energy efficiency of all households is necessary to achieve the target outcome for the 2020 existing residential *Strategic Plan* goals."[3]

The Office of the Vice President report also identifies three market barriers to comprehensive residential retrofits:

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

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

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

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

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

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

4) Hassle of dealing with multiple contractors and visits required;
5) Time burden for tenants and owners;
6) Impact on rental income; and
7) Business policy/ voluntary expense from replacing equipment on burn-out and unwillingness to negate remaining life in building components requiring capital outlay.

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

1) Help to improve a property owner or manager's energy efficiency knowledge, the *Multifamily Path* seeks to leverage comprehensive investment grade building assessments to identify potential energy efficiency opportunities. (barrier 1).
2) Help to address split incentives and cost of upgrades, the *Multifamily Path* would integrate with the existing Energy Savings Assistance Program ("ESAP") and the Multifamily Energy Efficiency Rebate ("MFEER") Program. This would provide comprehensive services to the building, including "low cost" or "no cost" tenant measures in conjunction with the EUC *Multifamily Path* whole building incentives in order to maximize energy savings for the up-front investment. (barrier 2).
3) Provide incentives to assist property owners or managers with overcoming a wide array of market and financial barriers which may otherwise prevent energy efficiency upgrades (barrier 1 and 5).
4) Create a single point of contact that would assist the property owner or manager navigate through the incentive and retrofitting process. This approach would provide support in understanding the various program rules and assistance in determining eligibility. The property owner or manager would be guided through an easy and streamlined preliminary assessment to establish feasibility and estimate project cost for the *Multifamily Path*, with an eye toward leveraging all eligible programs. (barrier 4).
5) Target buildings planning on or undergoing renovation projects to limit customer time burden and lost rental income. (barrier 4 and 5).
6) Address the wide diversity of multifamily properties which can be segmented by: 1.) rental rate (low – medium – or high; and/or 2.) size of the building and also size of the company that owns or manages the building. Defining the unique concerns and needs of building owners and managers by these variables of tenant socio-economic status and ownership/management structure will allow much more effective messaging and marketing communications. (barrier 1, 2, 3, 4, 7)
7) Address statewide EE energy efficiency financing (SW Fin) which could be focused on the tenant or the common property energy agendas. This program will provide access to capital to fund investments in energy efficiency upgrades for buildings at an attractive interest rate. (barrier 2, 3, 7).
   See Attachments A and A1 for the Multifamily EUC PIP.

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

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

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

The Energy Upgrade California Program (EUC) is a Market Transformation-oriented program and is a continuing program which began in the 2010-2012 residential energy efficiency portfolio of the four California Investor Owned Utilities (IOUs) – Pacific Gas & Electric Company (PG&E), Southern California Edison (SCE), San Diego Gas & Electric Company (SDG&E) and Southern California Gas Company (SoCalGas).

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

This Program Implementation Plan (PIP) is for the statewide EUC that will be offered consistently across the IOU service territories. The PIP is intended to

align with the goals established in the *Strategic Plan* and is a culmination of ongoing statewide efforts to design EUC.

EUC is designed to build customer and contractor[4] awareness of the house-as-a-system approach to residential retrofits and the many corresponding benefits of improving the energy-savings potential and comfort of their dwelling. It promotes the idea that energy efficiency measures are most effective when taking into account interactive effects of measures.

The EUC moves customers from a prescriptive, widget or single-measure based approach to energy efficiency to one of deeper, comprehensive energy retrofits that respect the energy efficiency loading order [5], and which takes the approach that a house is a series of interdependent systems that must be considered holistically.

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

Customer outreach and education efforts for the EUC will be coordinated with other IOU Demand Side Management (DSM) program offerings (e.g. HEER, MFEER), Energy Advisor, Plug Load and Appliance (PLA), Comprehensive HVAC, and other Residential Demand Response programs, Energy Savings Assistance Program, California Solar Initiative (CSI)) to leverage multiple customer touch points.

For single family residences, the whole house approach of EUC promotes two paths, a prescriptive based *Enhanced Basic/Modified Flex Path* and a

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

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

comprehensive, measured *Advanced Path*. These complimentary paths will be presented to customers[6] as one comprehensive offering.

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

In sum, these paths will provide an ideal platform to utilize the concept of continuous energy improvement for residential customers; tracking and encouraging a logical sequence of energy improvements made by customers over time, creating an ongoing, actionable dialogue with each customer regarding their energy use.

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

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

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

[6] Residential customers include homeowners, renters, and multifamily properties. Paths will be presented to these customers when the services are available to them.

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

The *Enhanced Basic/Modified Flex Path* will also educate contractors and customers on the benefits of implementing comprehensive whole house retrofits on existing buildings that will provide systematic reductions in energy use. The *Enhanced Basic/Modified Flex Path* will help to:

- Utilize no-cost (to customer) surveys (Energy Advisor) as an entry point to identify opportunities for efficiency improvements[7];
- Offer targeted marketing campaigns to engage participants that receive stand-alone EE and/or CSI rebates for completing qualified home improvement measures;
- Promote completion of retrofits based on preferred building science loading order;
- Offer incentives to encourage progression along a preferred approach towards comprehensive retrofits;
- Continuously engage customers over time as they progress toward a home performance approach;
- Inform customers about available local or third-party financing options and other complementary revitalization efforts that may be available within a particular jurisdiction;
- Offer a holistic path towards home performance by aggregating key elements of a dwelling into its core elements: building envelope; heating, cooling, hot water, and appliances;
- Coordinate with communities, local governments, workforce education & training, industry organizations and allied third-parties for outreach on local retrofit and contractor training opportunities available.

[7] The Energy Advisor provides residential customers with entry-level energy surveys online, over the phone, or by mail. The surveys are not intended to serve as an audit but are meant to provide consistent messaging and an easy on-ramp to EUC. The Energy Advisor surveys are also an ideal link between the California Solar Initiative (CSI) and EUC WHRP. This synergy will be discussed later in the document.

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

EUC *Multifamily Path:*

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

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

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

The *Multifamily Path* is envisioned as a logical next step to the prescriptive based MFEER and would be coordinated with Energy Savings Assistance Program and MFEER (much like EUC Basic Path is to the Advanced Path in single family homes) to present a singular and streamlined approach for multifamily tenants, property owners and property managers, in accordance with the Strategic Plan. A key feature of the *Multifamily Path* would be a single point of contact to assist multifamily customers and to streamline their experience. The single point of contact will assist multifamily owners and property managers and advise customers of the program(s) that best suit their needs.

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

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

b) Sub-Program Energy and Demand Objectives:

Table 2: Projected Sub-Program Net Energy and Demand Impacts, by Calendar Year:
See Section 5 of Program Overview SCE-13-SW-001

c) Program Non-Energy Objectives:

Table 3. Quantitative Program Targets (PPMs)
See Attachment 2

In addition to the quantitative program targets (PPMs) in Table 3 in Attachment 2, SCE considered the following when determining the Program's participation for program year 2013-2014:

SCE			
Scenario	2013	2014	Assumptions
	SF Homes	SF Homes	
High Participation	990	990	Efficiencies and improvement in program model New financial options coming online Increase local government involvement & support

Since these forecasts were submitted in July 2012, there have been numerous policy changes, clarifications regarding IOU and REN territory, and program changes, all of which affect this forecast. At a meeting on 4 March 2013, with senior Commission staff, the RENs and IOUs were told we would have the opportunity to modify the forecasts in light of policy changes recommended by the Commission. We submit these high participation scenarios here, consistent with the controlling decision, but we look forward to the opportunity to clarify these numbers in light of subsequent changes.

d) Cost Effectiveness/Market Need:
The California IOUs look forward to continuing to play a lead role in collaboration with local governments and other stakeholders to move the existing residential homes market toward larger reductions in energy usage and towards the *Strategic Plan* goal of achieving 40% purchased energy reductions in all existing homes by 2020.

At this time, current market conditions and barriers are:
1. Relatively high cost of home assessments.
2. Relatively high gross costs of comprehensive energy upgrades.
3. Lack of market awareness of non-economic value of comprehensive energy upgrades (comfort, indoor air quality, safety, aesthetics, etc.).

4. Fledgling contracting and supporting industry for existing home energy upgrades.
5. Low consumer awareness of incentive programs and the concepts of comprehensive home energy assessments and upgrades.
6. Lack of common home rating protocols and common vernacular for the market to assign value to homes which undergo comprehensive energy upgrades.

The EUC seeks to address these barriers through:

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

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

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

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

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

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

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

	Driving Up Value	**Driving Down Costs**
	• Standard Ratings where the Market can assign value • Higher monthly utility bills	• More Qualified Providers • Higher Volume of Projects • Streamlined Processes • Market innovation

e) Measure Savings/ Work Papers:

i. EUC *Enhanced Basic/Modified Flex Path* utilizes deemed savings values by measure, climate zone, vintage, and number of stories.

EUC *Advanced Path* utilizes CEC-approved software (i.e. Energy Pro Res Module) for calculated project savings.

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

ii. Indicate work paper status for program measures:

Table 4 – Work paper Status

See Attachment 2

10. Program Implementation Details:

In addition to traditional marketing efforts, the IOUs will work through service providers and vendors to engage qualified tradespersons in the crafts that they

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

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

1) Training for all relevant aspects of the real estate industry and point-of-sale chain (real estate agents, lenders, inspectors, green/efficiency specialists, appraisers, rater's public agencies and contractors). An emphasis will be placed on training the cross-functional teams that already work together in the market, since all pieces of the process needs to be covered to be effective, especially on the financing side. The use of successful case studies will also be explored.
2) Driving customer demand for energy efficient homes via collaborative consumer education and outreach, using easy-to-understand messaging and including efforts such as the promotion of home energy improvements and "green" labeling around the time of purchase and sale of a home. This is a critical timing in the market that can be leveraged. The Joint Center for Housing Studies estimates that home buyers spend more than $6,000 per year on home improvements in the first two years after buying homes. In subsequent years, the annual average outlay drops to $2,500.[8]

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

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

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

Also, during the transition cycle the IOUs will explore expanding building science, combustion safety, and home evaluation and performance improvement certifications beyond BPI.

To increase the number of qualified participating contractors and contribute to the creation of a sustainable workforce, third party program implementers will solicit and screen qualified contractors. The program will also include marketing activities to help educate customers on program services and other activities to provide additional customer leads to trained contractors.

The program will employ a number of integrated delivery strategies:

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

Statewide Informal EUC Working Group:
Given the ambitious market transformation goals of EUC, its relatively new entrance into the IOU EE portfolio, and its challenges during the first two years of rollout, the IOUs during the 2013-2014 transition cycle are committed to providing the leadership and working with CPUC, CEC, local government staff, as well as relevant stakeholders to convene a statewide EUC Working Group to address relevant and significant issues for adoption in the 2015 IOU program cycle. The IOU's seek a cooperative design and implementation approach that involves all parties with an interest in EUC.

The Working Group will be co-chaired by one IOU, determined by IOU consensus, and one non-utility co-chair selected by the Working Group. The Working Group co-chairs will solicit views and direction from Commission staff on the Working Group operations. The Working group may choose to form subgroups and/or hold stakeholder outreach meetings as necessary.
The Working Group will be composed of all former EUC Steering Committee members, the REN's, EUC Contractors, and other interested stakeholders and

implementers, including the EUC implementers, Commission, and CEC staff, and CCSE as the statewide marketing and outreach coordinator.

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

In this regard, the IOU's will hire a market transformation consultant to assist with improvements to the long-term EUC design and to support a constructive IOU engagement in the AB758 process. The Working Group IOU co-chair will be the lead IOU for this contract. Members of the EUC Working Group will be offered the opportunity to substantively shape the work scope and priorities of the market transformation consultant.

The Working Group will as necessary focus on the following issues on a statewide level for consideration in the 2013-2014 program cycle:

1. Role of local governments
2. Software standards
3. Data collection standards
4. Home Assessment standards
5. Home Assessment reporting standards
6. HERS II Ratings and alignment with EUC EE Programs
7. Contractor certification standards
8. QA/QC standards
9. Streamlined project reporting and programmatic best practices
10. Integration of HVAC programs
11. Engagement of California Real Estate Market
12. Future of Basic Path
13. Identification of Market Transformation Milestones and Metrics
14. Cost effectiveness metrics aligned with Market Transformation goals.
15. Long term incentive structure
16. Applicable AB758 issues

In addition, the Working Group will provide substantive contributions to program design and implementation plans on the following items to be included in an updated PIP to be filed by a Tier 2 Advice Letter not later than April 1, 2013:

1. Final statewide aligned and streamlined protocols regarding heating, ventilation and air-conditioning (HVAC) emergency replacements and high performing contractors.
2. Final program design and implementation of *Enhanced Basic/Modified Flex* to include a tiered incentive require three measures at a minimum,

follow energy efficiency loading order to address shell improvements first, and support appropriate combustion safety testing protocols.
3. Provide updated targets for number of homes in Enhanced Basic
4. Discussion on subsidizing whole house audits and diagnostic test for EUC project if the project involves at least three energy efficiency measures.
5. Refined savings and technical details for the Enhanced Basic will also be included.

Three utilities, SDG&E, SoCalGas, and SCE plan to launch an *Enhanced Basic/Modified Flex Path* early 2013 to test systems and program design with a limited set of contractors. This effort should not be understood to prejudice the outcome of the stakeholder process to improve Basic as outlined in the Decision, but rather to Beta test an alternative delivery method. The participating IOUs remain open to further suggestions and refinements in *Enhanced Basic/Modified Flex*. We look forward to further work with the RENs in particular to improve our joint EUC offering in 2013.

a) Timelines:

Table 5: Sub-Program Milestones and Timeline:

See Attachment 2

b) Geographic Scope:

Table 6: Geographic Regions Where the Program Will Operate:

See Attachment 2

c) Program Administration

Table 7: Program Administration of Program Components:

See Attachment 2

d) Program Eligibility Requirements:

i. Customers:

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

Participating Contractors or Participating Raters shall be the single point of contact for customers and are responsible for submission of all program

requirements. Participating Contractors and Participating Raters will install or ensure installation of all measures in accordance with IOU QA/QC and Measures Installation Standards guidelines in accordance with applicable contractor/ rater participation agreements.

All single family EUC projects must install a minimum of three energy efficiency measures which support the energy efficiency loading order. In addition, all EUC projects will include pre- and post-construction combustion safety testing.

Table 8: Customer Eligibility Requirements:

See Attachment 2

ii. Contractors/Participants:

Participating Contractor Requirements for ***Enhanced Basic/Modified Flex*** **Path and** ***Advanced Path***

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

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

Participating Rater Requirements for All EUC Paths

Participating Energy Upgrade Raters must meet all requirements as a Participating Contractor and must be both HERS II certified and hold an

active BPI Building Analyst certification or BPI MF Building Analyst certification as may be applicable. EUC *Enhanced Basic/Modified Flex Path* and *Advanced Path* projects submitted by a Participating Rater must utilize a EUC Participating Contractor for installation of the measures specified by the Participating Rater.

Table 9: Contractor/Participant Eligibility Requirements:

See Attachment 2

e) Program Partners:

i. Manufacturer/Retailer/Distributor Partners:

Table 10: Manufacturer/Retailer/Distributor Partners:

See Attachment 2

ii. Other Key Program Partners:

Energy Division, California Energy Commission, local governments, BPI and other standards bodies, as well as other partners. See Cross-cutting Sub-program and Non-IOU Partner Coordination section of this PIP.

f) Measures and Incentive Levels:

***Advanced Path* Incentives:**

Incentives for the *Advanced Path* will be paid based upon modeled site savings energy utilizing any CEC approved simulation modeling software approved by IOUs. Incentives for *Advanced Path* are designed to encourage customers to reach for deep energy savings. *Advanced Path* incentives are for both gas and electric measures provided by the customers' participating utility program.[9]

Currently, Energy Pro simulation modeling software is the only approved software for use with EUC. During the 2013-2014 transition cycle, the IOUs will work collaboratively with the CEC and other stakeholders to identify potential approaches to adequately broaden the allowable software under the EUC while containing costs required for needed Commission Staff reviews.

Savings/ Participation Level: % Reduction	Incentive Amount

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

Basic Package: 10%	*$1,000*
10%	**$1,000**
15%	**$1,500**
20%	**$2,000**
25%	**$2,500**
30%	**$3,000**
35%	**$3,500**
40%	**$4,000**
45%+	**$4,500**

Enhanced Basic/Modified Flex Path **Incentives:**
The Enhanced Basic/Modified Flex Path incentives will also be a tiered incentive, driven by the customer's desired SOW. Incentives will begin at $1,000 for 100 points which will be roughly equivalent to 10% site energy savings. The incentive tier increases at each 50 point increment to encourage deeper energy retrofits. Each 50-point increase equates to an additional $500 incentive. The incentives align with Advanced Path incentives for similar saving percentages, but the Enhanced Basic/Modified Flex Path will max out at 250 points (a $2,500 incentive).

To encourage customers to more fully adhere to the loading order, customers may be eligible for additional bonus points for installing additional base measures. For customers who install a second or third base measures beyond the required one measure. In addition to the additional points associated with measure itself customers will receive 15 additional points for the second of three base measures, and 20 additional points for the third.

Participation Level: Points	**Incentive Amount**
100 Points	**$1,000**
150 Points	**$1,500**
200 Points	**$2,000**
250 Points	**$2,500**

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

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

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

Table 11: Summary Table of Measures, Incentive Levels and Verification Rates:

See Attachment 2

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

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

1. Greater cross marketing of PLA and EUC customers.
2. Work with EnergySoft to find solutions to pool pump modeling, if available.

3. Incorporate lighting and appliance options as a prominent feature in standard assessment reports to customers.

Enhanced Basic/Modified Flex Path

Eligible Whole Building Measures:

Base Measures (Pick one of three)
Whole Building Air Sealing
Attic Insulation & Attic Air Sealing
Duct Sealing or Duct Replacement

Flex Measures - Envelope
Floor Insulation
Wall Insulation
High Performance Windows
Attic Radiant Barrier

Flex Measures – Domestic Hot Water (DHW)
Gas Water Heater (including tankless)
Electric Water Heater

Flex Measures – HVAC
Gas Furnace
High Efficiency Air Conditioner
HVAC QI Kicker (pending QI workpaper)
Insulated Ducts

Required Measures – No points
Thermal Control Valve
Pipe Wrap

Stand-Alone Measures (do not count toward overall performance)

Variable Speed Pool Pump
Refrigerators
Dishwashers
Clothes washers
Whole House Fan
Refrigerator / Freezer Recycling

Ineligible Measures:

Screw-In Lighting Fixtures and Lamps
Solar Domestic Hot Water Heater System
Distributed Generation Systems – Solar, Wind, etc.

Advanced Path Whole Building Measures (Partial list):

Envelope

Attic Insulation
Cool Roof Installation (CRRC-certified)
Wall Insulation
Whole House Air Sealing
Windows

HVAC
Duct Test and Seal
Duct Insulation
Heating System
Cooling Systems

Domestic Hot Water
Low-Flow Shower Head
Domestic Hot Water Heater Upgrade (non-solar)
Thermostatic Shut-Off Valve

Other Measures as may be modeled and allowed by IOUs per regional market needs

Stand-alone Measures (do not count toward overall performance)

Variable Speed Pool Pump
Refrigerators
Dishwashers
Clothes washers
Whole House Fan
Refrigerator / Freezer Recycling

Ineligible Measures

Screw-In Lighting Fixtures and Lamps
Solar Domestic Hot Water Heater System
Distributed Generation Systems - Solar, Wind, etc.

Multifamily Building Eligible Measures (Partial list)

Envelope
Attic insulation
Wall Insulation
Floor insulation
Window replacements – 2008 T-24 standard or better
Cool roof – CRRC rated product
Radiant barrier
Window shading – permanent, non-retractable

HVAC
Duct Sealing - with HERS test

A/C equipment replacement – Must meet current T-20 standard
Furnace replacement – Must meet current T-20 standard
Premium efficiency motors (ECM included)
VFD controls for CHW, HW, CW pumps
VFD controls for cooling tower fans
Pipe insulation
Controls optimization

Domestic Hot Water
Boiler or DHW replacement – Must meet current T-20 standard
Insulate hot water piping – From ½-inch to 1-inch, or none to 1-inch
DHW tank insulation
Pipe insulation
Add VFD to circulation pump
Update central DHW pump to demand control – From no control to demand control

Lighting (pending CPUC policy)
Common area lighting fixtures – high efficacy hardwired fixtures
Dwelling unit lighting fixtures – high efficacy hardwired fixtures
Lighting controls – Occupancy sensor, photo sensor, or dimmer switch
Outdoor lighting retrofits – high efficacy hardwired fixtures
Controls optimization

Stand-alone Measures (do not count toward overall performance)
ENERGY STAR® Refrigerator
ENERGY STAR® Dishwasher (if a dishwasher is installed in pre-retrofit condition)

g) Additional Services:

Table 12: Additional Services:

See Attachment 2

h) Sub-Program Specific Marketing and Outreach:
IOUs will conduct integrated as well as program-specific marketing and outreach which will be coordinated with the statewide marketing and outreach program. The utilities may use a range of tactics such as; e-mails, flyers, on-Line marketing, direct mail, bill messaging, social media, local events, ethnic media, and other channels that suit the target audience, the message, and the resources. The program will increase its marketing and outreach budget for climate zone 9 through16 by at least 25 percent.

Marketing, Education and Outreach Plans:

1) Objectives:

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

2) Target Audiences:

EUC marketing and outreach aims to include all stakeholders in the retrofit process, throughout the life of the program. This will help to ensure that all audiences receive consistent information and will enable a more informed dialogue about program specifics, in an effort to continuously engage stakeholders in the energy efficiency retrofit process. The initial target group is comprised of the following audiences listed below, and is based on the results of statewide market survey research.

Target Group:

- Single family residential customers in proposed targeted segments with additional focus on Climate Zone 9 through 16
- Multifamily residential customers
- Residential customers with a history of prior EE engagement including, but not limited to: rebates, online tool enrollment and energy audits
- Local governments, community-based organizations and other stakeholders (i.e. the realtor community)
- Efforts may target select public events and work with local earned media to publicize the program's benefits.

3) Keys to Success:

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

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

i) Sub-Program Specific Training:

Specific workforce development efforts supporting EUC, as a market transformation program, include the following:

- CEC/EDD: California Clean Energy Workforce Training Program Community college programs; and
- IOU training offerings (IOU trainings will serve as backup if required. IOU courses do not duplicate modules available in the marketplace but will serve backup role in the event that a market need is identified and best served by the IOU Energy Training Centers).

EUC will be coordinated with the statewide IOU WE&T program, local government residential retrofit and contractor training programs that are tied directly to workforce education and training efforts on a state and federal level.

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

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

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

Contractor recruitment efforts will be conducted primarily by third party program implementers – a model that has proven successful in statewide IOU HVAC programs in the 2010-12 program cycle. Program implementers will continue to primarily recruit contractors through:

- The network of contractors already participating in HVAC, insulation and weatherization programs;
- Direct outreach through trade groups with locally active memberships;
- Workforce development departments (to target unemployed general contractors); and

Program implementers will verify and enroll Participating Contractors and Raters and provide required program participation related training. Once

enrolled, the Participating Contractor and Rater lists will be posted in a centralized location for customers to view. IOUs will direct customers to appropriate websites for lists of eligible Participating Contractors and Raters.

Upon completion of 2012 Energy Upgrade California process evaluations, the IOUs will convene a workshop to review workforce training needs, seek stakeholder input and identify timeline to implement suggested program improvements, as well as identify training needs

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

i. List all eligible software or similar tools required for sub-program participation.

- Energy Pro energy simulation modeling software
- eQuest, depending on resolution of Enhanced Basic/Modified Flex Path workpaper submittals

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

Advanced Path:
Pre-implementation audit required _x__ Yes ___ No
Post-implementation audit required _x__ Yes ___ No

Enhanced Basic/Modified Flex Path
Pre-implementation audit required ____ Yes _x_ No
Post-implementation audit required _x__ Yes ___ No

Enhanced Basic/Modified Flex Path will not require pre-implementation audits due to deemed baseline assumptions.

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

Table 13: Post-implementation Audits:

See Attachment 2

k) Sub-Program Quality Assurance Provisions:

Payment of customer incentives will be tied to the contractor's delivery of full job required program documentation. Program implementers will randomly select a portion of each participating contractor's reported retrofits for onsite job verification and review 100 percent of the job data inputs from contractors. Verifications may include homeowner interviews, intensive visual checklist inspections, and selective retesting of key items. A subset of these energy savings estimates may later be validated against the first year's

after-retrofit utility bills plus climate data and homeowner interviews as needed to identify changes in other factors affecting energy use. IOUs will collaborate to develop QA/QC plans and documents that reflect statewide uniformity to the greatest extent possible. QA/ QC documents and standards will be updated regularly with contractor input and will include:

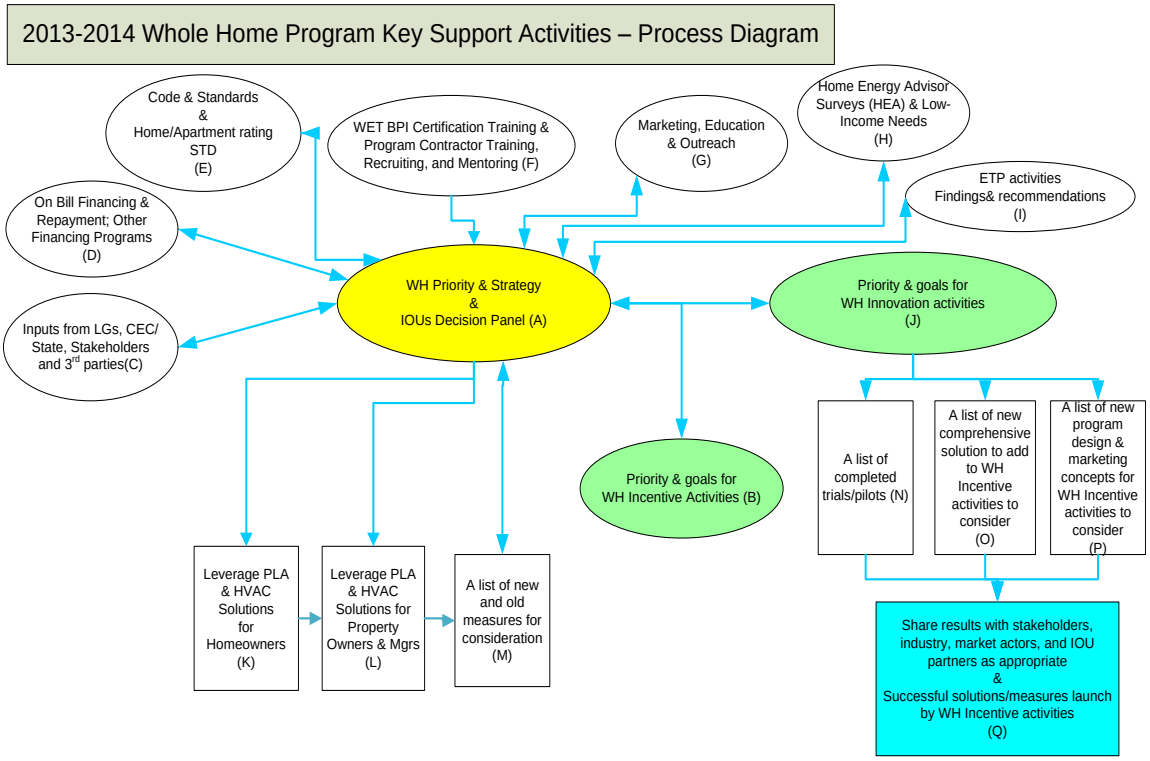
1. QA/QC Process and Protocols
2. Minimum installation standards for all allowable measures
3. Emergency and Fast Track equipment replacement protocols.
    a. Exhibit A attached includes existing and continuing IOU Emergency and Fast Track protocols.
4. Permitting requirements
    a. EUC shall support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

Table 14: Quality Assurance Provisions

See Attachment 2

l) Sub-Program Delivery Method and Measure Installation/Marketing or Training:

m) Sub-program Process Flow Chart:

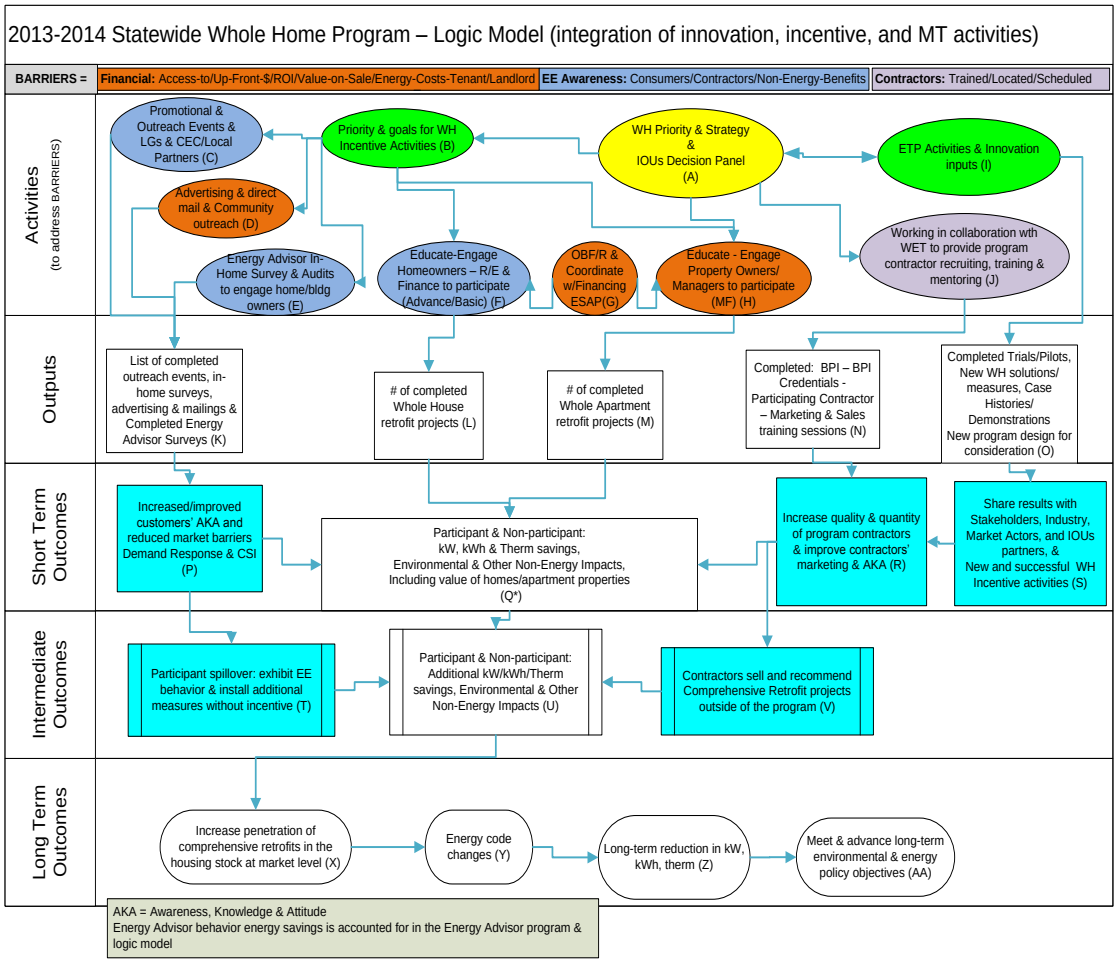


n) Cross-cutting Sub-program and Non-IOU Partner Coordination:

Table 15: Cross-cutting Sub-program and Non-IOU Partner Coordination

See Attachment 2

o) Logic Model:



11. Additional Sub-Program Information:

a) Advancing Strategic Plan Goals and Objectives:

The EUC is consistent with the requirements of the *Strategic Plan*. It addresses the Whole-House Strategy of the *Strategic Plan* by influencing contractors and customers to implement comprehensive home retrofit energy efficiency measures through either the *Enhanced Basic/Modified Flex Path* on-ramp, *Advanced Path* or *Multifamily Path*.

EUC responds to the need for much larger energy savings in existing homes and multifamily buildings than is possible with conventional checklist audits or single measure improvement (prescriptive) programs. It addresses the key "whole house" strategy of the *Strategic Plan* by influencing "decision triggers" to improving energy efficiency and understand advantages to expand participation to reach savings goals. This program is also a vehicle to increase penetration of shell upgrades and cost effective, high efficiency appliances, water heaters and HVAC upgrades. The *Strategic Plan* further states that a similar approach must be developed for multifamily housing. The program will help to achieve the following goals identified in Section 2 of the *Strategic Plan*:

Table 6. Energy Upgrade California Program Alignment with California Long Term Energy Efficiency *Strategic Plan*			
Residential and Low Income Goal 2: Existing Homes			
Goal Number	**Strategy**	**EUC Strategy**	**Integrated Programs & Activities**
2-1	Deploy full-scale Whole-House/Home programs.	Monitor performance of selected lower energy homes. Design implement, monitor and continuously improve full-scale programs for whole-house energy efficiency and renewable energy retrofits.	Programs: EUC, Solar, Demand Response, MFEER, Plug Loads, ESAP Marketing: Customer segmentation and local coordination EM&V: Studies to provide early feedback and establish baselines
2-2	Promote effective decision-making to create widespread demand for energy efficiency measures.	Continue to offer Energy Advisor programs online, by mail, and over-the-phone to provide customers with information to promote effective decision-making, in combination with other segment specific marketing outreach and educational activities.	Programs: Energy Advisor EUC, MFEER Marketing: Customer and contractor education to promote building efficiency and appropriate EE behaviors in a segmented manner
2-3	Manage research into new/advanced cost-effective innovations to reduce energy use in existing homes.	Coordinate with Emerging Technologies and other programs to integrate market-ready technologies into the Whole House offering when appropriate. Promote commercialization of home energy management tools including AMI-based monitoring and display tools	Programs: Emerging Technologies, Demand Response, Solar, and others
2-4	Develop financial products and programs such as on-bill financing to encourage demand for energy efficiency building products, home systems, and appliances.	Ensure that customers are aware of the most effective and attractive financing packages that are available to them.	Programs: EUC Coordination: Local government partnerships and other state/federal financing entities
2-5	Increase Title 24 compliance through specific measures leading to aggressive statewide enforcement.	Partner with local governments to expedite the permitting process to decrease the barriers to entry in the home performance industry.	Coordination: Local government partnerships

b) Integration:

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

The IOUs have identified IDSM as an important priority. The IOUs plan to monitor the progress of other IDSM efforts and to work closely to identify comprehensive integration approaches that feed into the overall statewide strategy and to implement best practices as rapidly as practical.

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

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

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

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

In addition, any contractors who work onsite with customers can provide delivery channels for DR programs information or installation of DR technology.

EUC will also serve as a platform to integrate technology advancements in DR and Advanced Metering. IDSM efforts will be part of an ongoing conversation with customers to enhance program offerings and increase their participation in DSM efforts over time.

Table 16: Non-EE Sub-Program Information:

See Attachment 2

ii. Integration across resource types:

EUC is designed to deliver comprehensive solutions to customers while integrating across resource types to maximize customer benefits not only in

terms of energy savings, but through improvements to occupant health, safety and comfort. Primarily, there are opportunities for water efficiency and indoor air quality improvements.

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

The embodied energy in water distribution may become an increasingly important part of utility programs. The consumer education process in the house-as-a-system approach will provide an opportunity for local governments to present customers with information on non-energy savings inherent in comprehensive retrofits.

c) Leveraging of Resources:

IOU's may leverage unique local government resources.

Local Governments

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

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

d) Trials/ Pilots:

IOUs may execute various trials/pilots. The Whole House program will have the option to conduct additional pilots/trials to test technologies, applications or other programmatic design and marketing possibilities. The learning from those activities is expected to contribute to the program innovation and further learning.

The Local MIDI Program will be offered by SCE and SoCalGas to eligible customers residing in single family and multifamily properties (multifamily common areas excluded) served by SCE and SoCalGas. The MIDI Program will coordinate with SCE and SoCalGas' Energy Savings Assistance Program (ESAP) to deliver MIDI measures through select ESAP contractors. ESA

Program infrastructure will be used to administer the MIDI Program. When working in joint SCE/SoCalGas territory, shared contractors will offer both IOU's Program measures. The MIDI Program will encourage residential owners/property managers of single family and multifamily properties to install comprehensive energy efficiency improvements.

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

SCE and SoCalGas propose:

- To implement a MIDI trial with a set goal of 2,000 units served
- Develop a scalable program design for larger rollout in future cycles.
- Evaluate delivery of MIDI Program utilizing existing ESA Program infrastructure.

To participate, the following eligibility guidelines must be met:

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

List of measures for this Local MIDI program include:
Power strips
Halogen Torchiere exchange
Specialty CFL exchange
Room AC exchange
Pool pumps (Single-family only)

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

12. Market Transformation Information:

a) Summary of the market transformation objectives of the program:
The EUC program is designed to fulfill the goals of the *Strategic Plan* by guiding and incenting home and building buyers, owners and renovators to implement a whole house approach in energy consumption undertaken in their purchase and use of existing and new homes and buildings, home and building equipment (e.g. HVAC systems), household appliances, lighting and "plug load" amenities. The target is all existing homes in an effort to realize the

maximum energy efficiency potential via the delivery of a comprehensive package of cost-effective whole-house and whole-building energy efficiency retrofit measures. These programs will include building shell upgrades, high-efficiency HVAC systems – appropriately sized for the building structure, and emerging deep energy reductions in the lighting, appliance, plug-load and other residential oriented sectors. This initiative will be structured around a comprehensive audit, installation of the variety of retrofits required across the entire building structure, and access to attractive financing programs. The EUC effort will be achieved via the parallel and coordinated efforts of the utility programs, partners and other private market actors, and the State and local government policies and programs made available. As IOUs implement a system of automatic meters and wide-area network to enable data transport, the IOUs and customers will have the opportunity to integrate additional home automatic systems and integrated energy management features into the home (i.e., interim Intelligent Home Network, comprehensive Home Automatic Network and etc.) to support IDSM integration and deployment. The Plug Load and Appliance Program will have the potential to offer not only hardware based energy savings, but also comprehensive behavior savings opportunities.

b) A description of the market, including identification of the relevant market actors and the relationships among them:

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

- Energy Upgrade California:
  - *Enhanced Basic/Modified Flex Path,*
  - *Advanced Path*
  - *Multifamily Path*

The Energy Upgrade California Program is a contractor-delivered program. The local contractor markets, recruits, and sells the concept of Whole House Retrofits, and completes the actual work. The Statewide Process Evaluation (5/1/12) revealed that 32% of participants first heard about the EUC program from a contractor. A number of Local Governments, most initially supported by CEC/ARRA funding during the 2010-12 time frame, also support the program via local marketing and incentive offerings.

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

Market Characterization:

The IOUs' statewide Energy Upgrade California Program has initially focused on training a pool of qualified contractors available to perform these comprehensive retrofits. The number of individuals with active BPI

certifications grew dramatically between January 1, 2010 and November 1, 2011. Total active certified individuals grew from 65 to 1,596. The number of certifications (individuals may have more than one type of BPI certification) grew from 88 to 2,349. The 2010-2012 PG&E and SCE Whole-House process evaluation study by SBW/ODC/ASW, produced a number of findings, including:

Overarching program participant profile:

- The program participation is primary through the *Advanced Path* and there is little engagement in the *Basic Path* service.
- *Advanced Path* jobs report energy savings of 25% average in this first program phase.
- The average cost per job ranges from $13,000 to $16,000
- The utility incentives covered 19% of the project cost on average.
- Despite the large supply of program contractors, only a limited pool of larger contractors complete the majority of the projects
- Many – 44% of participants – used financing to pay for their projects.

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

- There are widespread contractor performance gaps despite a certification requirement (i.e., BPI),
- The current contractors' participation training does not adequately prepare them for job processing expectations and the rigor of the QA/QC process,
- BPI certification does not guarantee a standardized job performance level
- The requirements for certification vary in method and emphasis e.g., (1) on-line training versus in-person classes, (2) Vermont trainers focus on heating, while California classes focus on AC).

In order to help improve contractor skills and understanding of the program, mandatory mentoring is required to be completed by all participating contractor during the initial period of program participation. It has been designed to provide contractors with an understanding of critical program processes.

Mandatory mentoring includes the following modules:

- Field Data Collection – in person training
- Witness QC – in person observation / training
- Project Processing – webinar based training
- Energy Modeling – webinar based training (Advanced Path Contractors Only)
- The Learning Center – Online documentation of the contractor's proficiency using a learning and testing environment.

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

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

Market Actors:

- Homeowners/renters & property owners/managers
- Contractors
- Real Estate Professionals
- Financial Institutions
- Property Appraisers
- Local governments

Relationship Among the Market Actors:

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

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

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

Opportunities to advance demand side management technologies and strategies:

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

Key Barriers & Opportunity for Intervention:

The barriers for this program for the homeowner sector are the:

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

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

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

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

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

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

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

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

(3) Expanded customer uptake through EUC incentives. (Barrier 1, 2, 5)
Intended Results: Use incentives to reduce the barrier of entry into the comprehensive retrofit projects

(4) Offering of Financing programs (by IOUs and/or other entities) (Barrier 1,2, 9)
Intended Results: Provide building owners the upfront cash they need to borrow to invest in a retrofit project, and amenable loan terms by which to repay that loan (note: this program component will be particularly important in the multifamily sector).

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

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

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

(1) To improve a property owner or manager's energy efficiency knowledge, the Multifamily Path would seek to leverage comprehensive investment grade building assessments to identify potential energy efficiency opportunities. (Barrier

(2) To address split incentives and cost of upgrades, the Multifamily Path would integrate with the existing Energy Savings Assistance Program ("ESAP") and the Multifamily Energy Efficiency Rebate ("MFEER") Program. This would provide comprehensive services to the building, including "low cost" or "no cost" tenant measures in conjunction with the EUC Multifamily Path whole building incentives in order to maximize energy savings for the up- front investment. (Barrier 2)

(3) Incentives would assist property owners or managers with overcoming a wide array of market and financial barriers which may otherwise prevent energy efficiency upgrades (Barrier 1, 5)

(4) Create a single point of contact that would assist the property owner or manager in navigating through the incentive and retrofitting process. This approach would provide support in understanding the various program rules and assistance in determining eligibility. The property owner or manager would be guided through an easy and streamlined preliminary assessment to establish feasibility and estimate project cost for the Multifamily Path, with an eye toward leveraging all eligible programs. (Barrier 4)

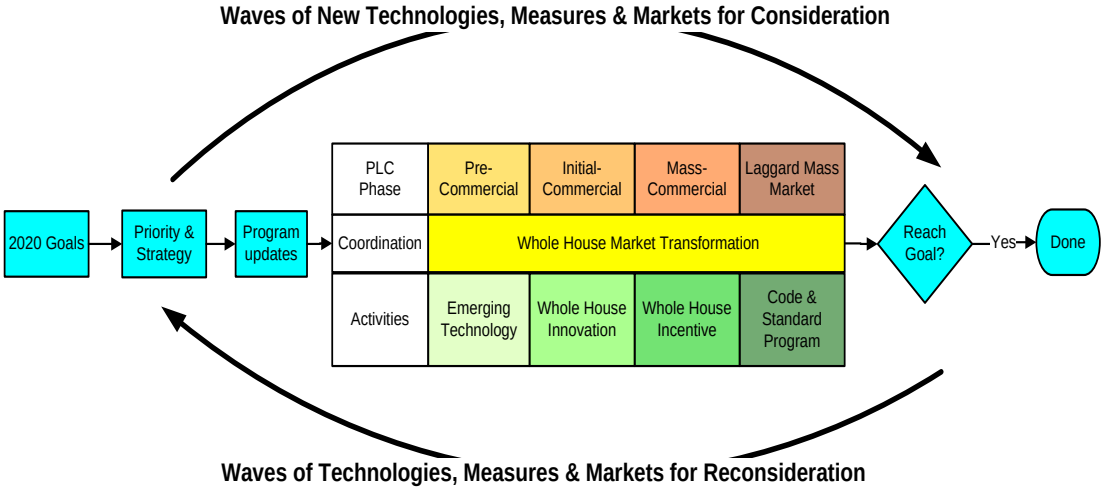
(5) Target buildings planning on or undergoing renovation projects to limit customer time burden and lost rental income. (Barrier 4, 5)

(6) Multifamily sector is comprised of a wide diversity of properties which can be segmented by: 1.) rental rate (low – medium – or high; and/or 2.) size of the building and also size of the company that owns or manages the building. Defining the unique concerns and needs of building owners and managers by these variables of tenant socio-economic status and ownership/management structure will allow much more effective messaging and marketing communications. (Barrier 1, 2, 3, 4, 7)

(7) On Bill Financing or Repayment program which could be focused on the tenant or the common property energy agendas. This program will provide access to capital to fund investments in energy efficiency upgrades for buildings at an attractive interest rate. (Barrier 2, 3, 7)

e) A coherent program or "market" logic model:

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



Within this context, a decision making body, the IOUs Decision Panel, is formed to manage and guide this process.

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

Decision Panel as indicated in the logic model (see Logic Model section above in this PIP). .

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

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

The expected outcome of this program includes increased and improved awareness, knowledge and attitude (AKA) of homeowners and apartment owners towards understanding the benefits of deep energy retrofits. After realizing these benefits from program participation, the participant further enjoys other non-energy benefits such as improved comfort of the house and increased value of their properties. The increased value in the property will become more pronounced as the state finalizes its home rating system, so the home purchasers will be aware of the inherent value of properties complete with deep energy reduction retrofits. All of these benefits will help the program participants to continue property improvements outside of the program and outside of the program offerings, leading to spillover effects. These participant and non-participant spillover effects will eventually change the overall composition of the housing stock at the market level, making housing and building code ratcheting possible for society. These codes and standards changes will lead to further reduction of energy consumption at the market level leading to fulfilling the objectives of the California Long-Term energy and environmental policies.

Additional key program support activities are diagramed as a process diagram, in the appropriate section above, for further illustration.

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

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

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

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

Market Transformation Indicators: DeepRetrofit-2: The number of households that elect to perform comprehensive energy upgrades. (This MTI was proposed for 2010-2012 and is planned to continue in this 2013-2014 subprogram). Market transformation indicator results shall be reported, as available, by Energy Division or the IOUs, depending upon who conducts the necessary market studies. (Res. 4385, 12/2/10)

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

judging; and case studies. But attribution using a "preponderance of evidence" approach would likely be expensive and still yield arguable results. Attribution by nature focuses on individual program efforts, and we believe the market transformation evaluation discourse should be focused on the overlapping synergy among all programs and influences in the market. We realize we all have a "Shared Mission" of meeting the CPUC's very aggressive Strategic Plan goals. We do not wish to not invest resources in teasing apart which program entity contributed how much, but instead will plan to focus on whether all the market forces across the State of California have succeeded in transforming the market.

13. Additional information as required by Commission decision or ruling or as needed:

SCE's Streamlined Emergency Replacement Protocol, Streamlined High Performing Contractor Protocol, and Streamlined Program Processing:

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

Eligibility:

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

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

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

Complete Emergency Replacement and Submit Paperwork:

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

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

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

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

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

- Contractor’s business name, address and phone number
- Date of removal
- Reason for replacement (operational failure; health and safety)
- Manufacturer's name and model number of space heating equipment
- Rated efficiency, output, input from the nameplate

- Fuel type (natural gas, electric)
- Type of system (forced air, hydronic/radiant or combo)
- Type of venting (e.g. chimney, side vent, barometric damper)

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

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

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

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

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

Mandatory Documentation for Domestic Hot Water Equipment Replacement:

The existing domestic hot water system must be replaced with equipment meeting Advanced Package Minimum Specifications. In addition, new

domestic hot water heaters must have an Energy Factor (EF) of 0.62 or greater, and new domestic thankless hot water heaters must have an Energy Factor (EF) of 0.82 or greater to qualify under the Emergency Equipment Replacement Policy.

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

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

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

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

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

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

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

b. Streamlined High Performing Contractor Protocol:
Contractors who have completed 10 Basic or 10 Advanced projects and have completed all of their field mentoring and online learning center modules with a passing score can be eligible for their projects to be randomly sampled.

c. Streamlined Project Processing:
In the 2010 – 2012 Program Cycle, SCE has made numerous improvements to streamline processing of projects. SCE will continue to implement the improvements that are working in order to reduce project cycle time and continuously improve and look for best practices. Below are some of the improvements that have been made to streamline the process:

- Provide QA/QC inspection handbook to participating contractor to inform contractors of the inspection process resulting in cleaner submittals.
- Initiated variance values to reduce processing times for projects whose test values are within the acceptable variance range.
- Implement Emergency Equipment Replacement policy
- Provide EnergyPro handbook to participating contractors to provide them with information on how to model projects in EnergyPro.
- Implement the ability for customers to switch from one participating contractor to another participating contractor during the project phase.
- Allowing contractors to use default values for blower door and duct test.
- Provide participating contractors with the ability to have witness quality control for test out.

ATTACHMENT 1

Program Non-Energy Objectives:
For New or Substantially changed programs and sub-programs, provide the following information for Program Non-Energy Objectives and follow the format used for the previous cycle Program Performance Metrics found in Resolution E-4385:

i. List the primary SMART[10] non-energy objectives of the program:
See Attachment 2, Table 3, which provides targets per approved PPM's for single family homes. Additional PPM's for multifamily may be developed as program develops.

ii. For each SMART objective, identify the quantitative targets, direction or percent of change that you hope to achieve during the program cycle11:

iii. For each proposed SMART objective, describe any relevant baseline data on current market conditions that you have assembled or plan to assemble and the sources:

iv. Quantitative program targets (PPMs):

Table 3: Quantitative Program Targets (PPMs):

See Attachment 2

[10] A SMART objective is one that is **S**pecific (i.e. quantitative and quantifiable generally, in terms of the results to be achieved**), M**easurable, **A**mbitious, **R**ealistic, and **T**ime-bound. For example, for a vender training component of an innovative commercial program, two SMART mid-term objectives and one long-term objective might be:

a) During the period 2013-2014, the number of HVAC installers in the SCE service territory who are able to perform quality installations of energy efficient packaged air conditioners will increase by 20%.
b) During the period 2013-2014, the number of installations of energy efficient packaged air conditions in the SCE service territory that are considered quality installations will increase by 25%.
c) By 2020, installations of energy efficient packaged air conditions in the SCE service territory that are considered quality installations will increase by 75%.

[11] Please also add any new program objectives and quantitative targets for statewide programs to the portfolio PPM/MTI reporting template.

ATTACHMENT 2
("Appendix C" New Program Tables)

Program Performance Metrics (PPMs)

The IOUs have evaluated *(or will evaluate)* 2010-2012 PPMs in Resolution E-4385 for applicability to the 2013-2014 program cycle and propose to work collaboratively with Energy Division to develop revised program targets and PPMs as appropriate for the 2013-2014 program cycle. The IOUs will propose revisions in an advice letter that will be developed with stakeholder input.

Table 3.1 Short-Term PPMs
On December 2, 2010, the Commission issued Resolution E-4385, approving short-term 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.

Table 3.1 Quantitative Program Targets (PPMs)

SW Program/Sub Program	PROGRAM PERFORMANCE METRIC (PPM)	Metric Type
Whole House Retrofit [Energy Upgrade California]	1. Number of homes treated in the program for 2010-2012. (Report by prescriptive and performance program.)	2a
	2. Number of enrolled contracting firms participating in the program	2a
	3. Average Ex-ante savings per home as reported (average kWh, therms, kW) for both performance and prescriptive programs by climate zone	2a
	4. Average and range of evaluated energy savings per home (prescriptive and performance programs)	2b
	5. Number and percentage of homes not passing Quality Assurance/ Quality Control review, by IOU	2a

Table 3.2 Long Term PPMs
SCE includes draft long term PPMs[12] per supplemental Energy Division guidance received in December 2012. As stated in the Joint Utilities' comments to the Commission in R.09-11-014, dated November 21, 2011, and discussed between IOUs and ED on January 9, 2013, IOUs plan to finalize long term PPMs in further discussions with involved stakeholders and propose updates to Energy Division at a later date.

[12] Unchanged from the Energy Division's file "Revised MTIs_10 27 11-formal-release-ED-May-2012.xlsx"

Table 3.2

2013-2014 Statewide Program - Subprogram PIP	MTI Index #	RE-CATEGORIZED Metric (LTPPM - or SPI) [E-4385 Appendix B original text except for noted edits]	Unresolved Issues
Residential - Energy Upgrade California	DeepRetrofit-3	MT Indicator 3: ~~The number and percent of audits performed compared to the number of customers signed up for an audit (NRDC, p.7)~~. Number of IOU customer households that undergo a deep retrofit (Advanced and/or IDSM) audit through IOU programs.	

PPMs for Multifamily path will need to be developed as this path progresses towards full program implementation.

Table 4 – Work paper Status

#	Work paper Number/Measure Name	Approved	Pending Approval	Submitted but Awaiting Review
1	SDG&E SF Prescriptive Deemed Savings			
2	WPSCREMI0004.0 Prescriptive Whole Home Retrofit Program		x	
3	PGECOALL104 Whole House Rebate			x
4	SCG SF Prescriptive Deemed Savings		x	
5	PGECOALL100_R3 Custom Measures		x	
6	SDG&E Custom Measures			?
7	SCE13MI005.0 - Basic Path Enhancement for Whole House (EUCA)			x

Table 5: Sub-Program Milestones and Timeline

Milestone	Date
Launch Multifamily Path trials	5/31/2013
Complete Multifamily Path trials	12/31/2013
IOU/ ED Monthly Progress Meetings	1/31/2013-12/31/2014

Table 6 Geographic Regions

Geographic Region	SDG&E	SCE	PG&E	SoCalGas
CEC Climate Zone 1			x	
CEC Climate Zone 2			x	
CEC Climate Zone 3			x	
CEC Climate Zone 4			x	x
CEC Climate Zone 5			x	x
CEC Climate Zone 6	x	x		x
CEC Climate Zone 7	x	x		x
CEC Climate Zone 8	x	x		x
CEC Climate Zone 9		x		x
CEC Climate Zone 10	x	x		x
CEC Climate Zone 11			x	
CEC Climate Zone 12			x	
CEC Climate Zone 13		x	x	x
CEC Climate Zone 14	x	x		x
CEC Climate Zone 15	x	x		x
CEC Climate Zone 16		**x**	**x**	**x**

Table 7: Program Administration of Program Components

Program Name	Program Component	Implemented by IOU Staff? (X = Yes)	Implemented by contractors to be selected by competitive bid process (if Yes then enter type of contractor/other market actor possibly used)	Implemented by contractors NOT selected by competitive bid process (list prime contractor and sub-contractor names)	Implemented by local government or other entity (X = Yes)
	SDG&E Marketing	x			
	SDG&E Program Administration	x			
	SDG&E Contractor/ Rater Training		X (EE program vendor with subject matter expertise)		
	SDG&E QA/QC		X (EE program vendor with subject matter expertise)		
	SCE Program Administration	x			x
	SCE Marketing	x			x
	SCE Recruitment, Training, & Support		X (EE program vendor with subject matter expertise)		x

	SCE Quality Assurance & Quality Control		X (EE program vendor with subject matter expertise)		x
	SCE MF Contractor/ Rater Training		X (EE program vendor with subject matter expertise)		
	SCE MF QA/QC		X (EE program vendor with subject matter expertise)		
	SCE MIDI Contractors		X (EE program vendor with subject matter expertise)		
	SCE MIDI QA/QC		X (EE program vendor with subject matter expertise)		
	PG&E Marketing and Outreach		X (EE program vendor with subject matter expertise)		x
	PG&E Program Administration		X (EE program vendor with subject matter expertise)		
	PG&E Contractor/ Rater Training		X (EE program vendor with subject matter expertise)		x
	PG&E QA/QC		X (EE program vendor with subject matter expertise)		
	SCG Marketing	x			
	SCG Program Administration	x			
	SCG Contractor/ Rater Training			ICF , Sub Contractor CBPCA	
	SCG QA/QC			ICF , Sub Contractor QC- RHA and QA AESC	
	SCG MIDI Contractor/ Rater Training		TBD	TBD	
	SCG MIDI QA/QC		TBD	TBD	
	SCG MF Contractor/ Rater Training		TBD	TBD	
	SCG MF QA/QC		TBD	TBD	

Table 8: Customer Eligibility Requirements (Joint Utility Table)

Customer Eligibility Requirement (list of	PGE	SCE	SDGE	SCG

requirements)				
Tennant or Owner of SF Bldg with active IOU account's)	x	x	x	x
Owner or property mgt. co. of MF Bldg with active IOU account's)	x	x	x	x
Must utilize participating EUC Contractor or Rater	x	x	x	x
Two to Four Unit Building with active individually metered accounts	x	x	x	x

Table 9: Contractor Eligibility Requirements (Joint Utility Table)

Contractor Eligibility Requirement (list of requirements)	PGE	SCE	SDGE	SCG
Contractor State Licensing Board (CSLB) in appropriate specialty	x	x	x	x
CSLB "B" General Contractor License (Advance Path Only)	x			
Bonding and in good standing	x	x	x	x
Insurance to IOU minimum standards	x	x	x	x
Execution of Contractor/ or Rater Participation Agreement	x	x	x	x
BPI Building Analyst Certified OR 3-day Basic Training (Basic Path Only)	x	x	x	x
BPI Building Analyst Certified on Staff (Advanced Path)	x	x	x	x
BPI MF Building Analyst Certified (MF Participating Rater Path)	TBD	TBD	x	TBD
HERSII Certified (MF Participating Rater Path)	TBD	TBD	x	TBD
HERSII and BPI BA Certified (SF Participating Rater Path)	x	x	x	x
2 Years of Relevant Work Experience	x	x		x
B, C-2 or C-20 license for Basic Only	x			

Table 10: Manufacturer/Retailer/Distributor Partners

Manufacturer/Retailer/Distributor Partner Information	PGE	SCE	SDGE	SCG
Manufacturers enrolled in program	none	none	none	none
Manufacturers targeted for enrollment in program	none	none	none	none
Retailers enrolled in program	none	none	none	none
Retailers targeted for enrollment in program	none	3	none	none
Distributors enrolled in program	none	none	none	none
Distributors targeted for enrollment in program	none	none	none	none

Redacted – Public Version

Table 11: Summary Table of Measures, Incentive Levels and Verification Rates

Measure Group	Market Actor Receiving Incentive or Rebate	PGE		SCE		SDGE		SCG	
		Incentive Level	Installation Sampling Rate	Incentive Level	Installation Sampling Rate	Incentive Level	Installation Sampling Rate	Incentive Level	Installation Sampling Rate
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Incentive level will be paid dependent on SCG shared utility service territory	
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted
Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted	Redacted

Table 12: Additional Services

Additional Services that the Sub-Program Will Provide	To Which Market Actors	PGE	SCE	SDGE	SCG
		[indicate the level at which the service will be incented or funded]	[indicate the level at which the service will be incented or funded]	[indicate the level at which the service will be incented or funded]	[indicate the level at which the service will be incented or funded]
N/A	N/A	N/A	N/A	N/A	N/A

Table 13: Program Related Audits

Levels at Which Program Related Audits Are Rebated or Funded	Who Receives the Rebate/Funding (Customer or Contractor)
None	

Redacted – Public Version

Table 14: Quality Assurance Provisions

QA Requirements	QA Sampling Rate (Indicate Pre/Post Sample)	QA Personnel Certification Requirements
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted

QA Requirements	QA Sampling Rate (Indicate Pre/Post Sample)	QA Personnel Certification Requirements
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted
Redacted	Redacted	Redacted

Table 15: Cross-cutting Sub-program and Non-IOU Partner Coordination

Sub-Program Name		
Other IOU Sub-program Name	Coordination Mechanism	Expected Frequency
PLA (HEER)	Meetings	Monthly/As-Needed
MFEER	Meetings	Monthly/As-Needed
Energy Advisor (HEES)	Meetings	Monthly/As-Needed
QI/ QM	Meetings	Monthly/As-Needed
CSI	Meetings	Monthly/As-Needed

Coordination Partners Outside CPUC		
CCSE	Meetings	Weekly/ Monthly
City of San Diego	Meetings	As-Needed
County of San Diego	Meetings	As-Needed
City of Chula Vista	Meetings	As-Needed
Retrofit Advisory Council (RAC)	Meetings	Quarterly
Los Angeles County	Meetings	Monthly
Santa Barbara County	Call	Monthly
City of San Bernardino	Call	As-Needed
City of Long Beach	Call	As-Needed
Efficiency First	Call	Bi-Weekly
ABAG	Meetings	As-Needed
County of San Francisco	Meetings	As-Needed
County of Marin	Meetings	As-Needed
County of Sonoma	Meetings	As-Needed
County of Solano	Meetings	As-Needed
County of Alameda	Meetings	As-Needed
County of Contra Costa	Meetings	As-Needed
County of Santa Clara	Meetings	As-Needed
County of San Mateo	Meetings	As-Needed
County of Fresno	Meetings	As-Needed
County of Santa Barbara	Meetings	As-Needed
SMUD	Meetings	As-Needed
MIST	Meetings	As-Needed

Table 16: Non-EE Sub-Program Information

EUC		
Non-EE Sub-Program	**Budget**	**Rationale and General Approach for Integrating Across Resource Types**
N/A	N/A	N/A

ATTACHMENT A:

Multifamily Energy Upgrade California Pilot Program Implementation Plan

1. **Program Name:** Multifamily Energy Upgrade California Pilot Program

2. **Program Type:** Core

3. **Program Descriptors**
   Market Sector: Existing Residential Multifamily Properties
   Program Classification: Statewide
   Program Status: Pilot

4. **Program Statement**
   The Multifamily Energy Upgrade California Pilot is an extension of the existing statewide Energy Upgrade California (EUC) Program within the statewide residential energy efficiency sector. EUC delivers comprehensive energy efficiency upgrades tailored to the needs of existing single family homes and their owners.

   The Multifamily Energy Upgrade California Pilot Program will specifically target the multifamily housing retrofit market. The Pilot will promote long-term energy benefits through comprehensive energy efficiency retrofit measures —including building shell upgrades, high-efficiency HVAC units, central heating and cooling systems, central domestic hot water heating and other deep energy reduction opportunities. These energy efficiency measures will be identified through an investment grade assessment.

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

5. **Program Rationale**
   Energy efficiency efforts for this segment must overcome a number of barriers; primarily: 1) lack of energy efficiency knowledge, 2) the economics of "split-incentives" where the building owner invests capital but the savings primarily benefit the tenants, and 3) access to investment capital. Up-front out-of-pocket costs pose a significant participation barrier for property owners and managers. The pilot will include a number of tactics, outlined below:

   - To improve a property owner or manager's energy efficiency knowledge, the pilot seeks to leverage comprehensive building assessments to identify potential energy efficiency opportunities.
   - To address split incentives and cost of upgrades, the Pilot will integrate with the existing Energy Savings Assistance Program ("ESAP") and Multifamily Energy Efficiency Rebate ("MFEER") Program. This will provide comprehensive services to the building, including "low cost" or "no cost"

measures in conjunction with the MF EUC incentives to maximize energy savings for the up-front investment . Additionally, low income tenants (ESAP) may qualify for additional "no cost" energy saving measures.

- Incentives will assist property owners or managers with overcoming a wide array of market and financial barriers which may otherwise prevent energy efficiency upgrades.
- A single point of contact will help the property owner or manager navigate through the incentive process.

MF EUC Pilot will field test a single-point-of-contact approach to guide property owners through the various programs in retrofitting their multifamily property. This approach will provide support in understanding the various program rules and assistance in determining eligibility. The customer will be guided through a "clipboard audit" to establish feasibility and estimate project cost for MF EUC, with an eye toward leveraging all eligible programs.

The primary purpose of this pilot program is to test performance based approaches to the multifamily property owner market. Other considerations to meet all income strata and address split incentives for property owners and tenants may include a direct install strategy, as well as prescriptive rebates through the existing MFEER Program.

While programs will be coordinated and integrated, their respective policies and procedures will be followed in the delivery of services. Operational efficiencies will be employed to streamline eligibility, income verification, and installation of measures.

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

- Building owners can leverage incentives to address common areas and systems as well as individual unit upgrades to make more cost effective improvements.
- Major rehabilitation projects are common in the multifamily sector. It is cost effective to include energy efficiency upgrades at the time of these renovation projects. These projects typically have well-financed construction budgets and broad scopes that could include energy efficiency measures.
- Multifamily properties tend to be operated and maintained by professional building staff. Providing resources to building staff increases the odds that the building will be operated efficiently after energy upgrades are installed, perpetuating savings benefits.

From the 2010-2012 EUC-WH Process Evaluation by SBW/ODC/ASW, SCE and PG&E have a set of lessons learned applicable to the single family Whole House Upgrade

Program design.

Below is a summary of EUC-WH Process Evaluation Recommendations:

1) Support contractors' marketing efforts,
2) Support a more flexible EUC website to allow IOU access to make modifications and access data to follow up on customer leads,
3) Marketing recommendations
    a. Foster peer to peer marketing
    b. Continue to promote main program benefits
    c. Continue email and direct mail to targeted groups of customers
    d. Continue with events and workshops,
    e. Offer brief, step-by-step explanation, with emphasis on whole house improvements
4) Convene quarterly statewide meetings of all entities implementing the program Contractor recruiting, training and mentoring recommendations
    a. Focus training and mentoring on top performers
    b. Reduce program required paperwork and adopt common statewide job reporting
    c. Offer financing options
5) SCE-Specific Training Recommendations
    a. For participant workshop, focus on EnergyPro training and job reporting documentation and process,
    b. For Basic/Advanced Path training –Improve detail on Basic/Advanced path training requirements
    c. Third Party BPI training – not all third party BPI training is equal, additional re-training may be needed to standardize the quality and content coverage
    d. On-line Learning Center – allow multiple representatives from the same contractor firm to participate, and provide more extensive training topic coverage
    e. Contractor Mentoring – standardize contractor mentoring service
6) Program Design
    a. Allow early installation of HVAC and hot water heaters prior to approval of preliminary application
    b. Modify or drop the Basic Upgrade Package
    c. Improve customer service to contractors and customers
    d. Offer contractor incentives, increase customer incentive and subsidize assessment costs
    e. Improve whole house energy modeling, including site-specific schedules

For the EUC-MF pilot program, there are a few key program design differences:

1) Smaller scale, and only a select few qualified contractors will be used for pilot program implementation,
2) The targeted customers are defined as property owners/managers, as well as

properties with low-income renters. This program target is in sharp contrast with the EUC-WH program which focuses on diverse single family homeowners. The marketing initiative for this pilot will be very focused and targeted.

3) The modeling software tool has yet to be determined for this program; however, tools are currently being assessed by program teams.
4) The single family comprehensive audit and whole building comprehensive audit are fundamentally different, leading to different skill requirements. As a result, the program team is planning to engage a few highly qualified contractors and raters to participate for quality control purposes.
5) Unlike the EUC-WH program, where program participation has experienced a slow uptake, SCE expects the EUC-MF pilot and subsequent program will experience greater participation due to what currently appears to be greater market demand. The expected increased participation in the MF program will require the IOUs to create a local, targeted marketing program and contractor infrastructure to ensure quality and consistent outcomes during the pilot.

List of Lessons learned applicable to EUC-MF pilot program:

SCE/SCG:

1. Utilize target marketing to property owners/managers
2. Offer "no cost" investment-grade audits to qualified customers to eliminate initial barrier of entry
3. Utilize EUC website as a resource for property owners/managers
4. Establish single point of contact to facilitate participation process, reduce paperwork and processing time.

PG&E:

1. Target marketing to property owners/managers using effective and proven messaging techniques
2. Continue to use the website as a resource for property owners /managers
3. Continue participation workshops and trainings with a focus on job reporting and incorporation of adult learning techniques
4. Continue to provide on field mentoring for participating professionals
5. Explore development of common paperwork requirements
6. Leverage single family program infrastructure to support participating professionals
7. As additional improvements are made to the single family EUC they will be considered for the MF EUC Pilot

<u>SDG&E:</u>

The SDG&E model is not a contractor model, but is a consultant model and utilizes a single point of contact to serve a market that is uniquely different than the single family market served by the EUC contractor model. Thus, many of the recommendations do not apply. Under the participating contractor model, participating contractors perform both assessments and installation of measures. Under the consultant model, customers may use the contractor of their choosing but must utilize a participating rater to perform

assessments and the test-in, test-out modeling to determine energy savings. Please reference p. A-31 for discussion regarding consultant model.

6. Support of the Strategic Plan

The Multifamily Energy Upgrade California Pilot, in support of the California Long Term Energy Efficiency Strategic Plan (Strategic Plan), pursues comprehensive energy efficiency measures and treats multifamily buildings as a system to seek deep energy reductions.

One of the goals of the Strategic Plan is the transformation of the home improvement market to apply whole-house energy solutions to existing homes. The overall objective of the goal is to reach all existing homes and maximize their energy efficiency potential through delivery of a comprehensive package of cost effective measures. The Strategic Plan further states that a similar approach must be developed for multifamily housing.

7. Expected Pilot Program Objectives and Outcomes

Objectives:

The Pilot Program seeks to transform the multifamily retrofit market from a prescriptive, one-size-fits-all approach, toward a comprehensive building analysis approach. The Pilot will leverage energy consultants and professionals to evaluate a wide range of energy efficiency options when rehabilitating multifamily properties. The creation of energy-efficient complexes provides benefits beyond the direct energy savings. Through the incorporation of energy efficient measures by multifamily property owners and managers, tenant behaviors can be influenced and comfort improved. The hope is that these behaviors can contribute to a virtuous cycle of energy efficiency - as tenants receive upgrades that reduce their energy costs and improve comfort, they in turn recruit and mentor other tenants.

Expected Pilot Program outcomes:

1. Deeper energy savings per building than otherwise possible, with a target of 10-20% or greater savings per building benefitting both property owners and tenants.
2. A broader suite of measures than in typical deemed programs, resulting in deeper savings (i.e., HVAC, envelope, domestic hot water).
3. Improved property owners' and managers' understanding of the benefits of a whole building approach.
4. More comprehensive maintenance follow-up for tenants and building by enrolling them into California Integrated Customer Energy Audit Tool (CA-ICEAT) to enable ongoing comparative energy usage, and energy goal setting, ensuring the persistence of savings after the EUC intervention is complete. *(PG&E will consider utilizing this tactic)*
   A better understanding of combustion safety as it relates to comprehensive (non-prescriptive) retrofits.

At the time of the original filing of the Advice Letter, the Multifamily IT tools developed using ARRA funding were under development. On March 9, 2012, the IOUs received a demo of the IT Tools including the EUC MF web portal, MF Funding Finder Navigation Tool and MF Tracking System (presumably the "Compass Portfolio Tracker"). The IOUs are still evaluating whether they will use these tools for this pilot.

SCE is initiating an evaluation to identify and evaluate best benchmarking tools for the multifamily market segment. In addition to Compass Portfolio Tracker, the evaluation will also include EnergyStar Portfolio Manager for multifamily facilities (scheduled to launch in June 2013), and EnergyScoreCards, as well as other tools that may be identified.

PG&E is interested in leveraging the tools developed; in particular, the single point of contact could use the Multifamily Funding Finder Navigation tool during the preliminary consultation with the property owner or manager. However, the maintenance and upkeep of these tools needs to be understood to ensure the information contained in the tool is current and accurate. PG&E is also interested in the MF Tracking Tool demonstrated in March 2012, and will work with the other IOUs to further evaluate the approach for the pilot.

SDG&E will not be utilizing the Compass Portfolio Tracker and is currently still evaluating the different functions of the tool.

In as much as the tool can provide a tracking mechanism for owners to follow the workflow of their projects, for the pilot, the single point of contact serves as this contact and notifies the participating rater when projects hit certain milestones. For example, when projects are submitted for review for both pre and post submittals, the single point of contact and participating rater are notified as projects are scheduled for inspection and when they are approved.

8. Innovation:

Integrated Program Design

In accordance with the Strategic Plan, the Multifamily EUC Pilot will engage with ESA and Core Energy Efficiency programs, such as MFEER. This unprecedented integrated approach combines market-rate and income-qualified energy efficiency measures that will benefit multifamily property owners and tenants.

Please see Attachments A1 to A3 for more details on how each utility plans to implement the Multifamily EUC Pilot.

9. Energy Measures:

9.1. Measure Information:

This updated measure list reflects the 2013-2014 IOUs' filed EE Applications. Additionally, low income tenants (ESAP) may qualify for additional "no cost" energy saving measures (denoted with an *) offered within the respective IOU service areas. Eligible measures may include but are not limited to:

- Screw-in CFL Reflector bulbs (ENERGY STAR® Qualified)
- Interior LED Lamps
- Interior CFL Fixtures (ENERGY STAR® Qualified) *
- T5 or Lamps w/electronic ballasts
- Exterior CFL fixtures (ENERGY STAR® Qualified) *
- Exterior LED lamps
- Exterior LED fixtures
- Occupancy sensors*
- Torchiere*
- Photocells
- Ceiling Fans (ENERGY STAR® Qualified)
- LED Pool and Spa lighting
- Vending Machine Controls
- Landscape/parking lighting
- High Performance Dual-Pane Windows
- Attic and/or wall insulation*
- Floor insulation
- Cool roofs/radiant barriers
- Space heating equipment
- Space cooling equipment
- Duct sealing and insulation
- Pipe insulation*
- Air sealing/envelope: outlet cover plate gaskets, attic access weather-stripping, door weather-stripping, caulking, and minor home repairs. Minor home repairs predominantly are door jamb repair / replacement, door repair, and window putty*
- Electric storage water heaters
- Central system natural gas water heaters
- Natural gas water heater and/or boiler controllers
- Natural gas storage water heater
- Faucet Aerator*
- Water Heater Blanket*
- Water heater repair & replacement*
- Package terminal air conditioners
- Unitary AC Units
- HVAC Quality Maintenance
- Brushless Fan Motor for Central AC
- Evaporative Coolers
- Programmable Thermostats
- A/C Tune-up (Central AC)*
- AC Time Delay*
- Evaporative coolers repair & replacement*
- Refrigerators (ENERGY STAR® Qualified)*

- High-efficiency Clothes Washers
- High-efficiency Dishwasher
- Central Natural Gas Furnace
- Furnace repair & replacement *
- Cold Water Clothes Washers
- Low flow water fixtures
- Microwave-(displacing gas or electric oven use) *
- Variable Speed Pool Pumps
- Programmable Thermostats (Common Areas only)
- Demand Control for Centralized Water Heater Recirculation Pump

Ineligible Measures

The following upgrade measures will not be considered as part of the energy analysis for program participation:

- Solar photovoltaic
- Solar Thermal
- Cold water savings devices (e.g. toilets, irrigation systems, weather controllers)
- Clothes dryers
- Green materials or certification
- Paint, carpet, cabinets, etc.

Combustion appliance safety testing will take place as appropriate.

10. Budget/Timeframe:

Please see Attachments A1 to A3 for details regarding each IOUs projected budget and timelines.

11. Program Performance Metrics:

In 2012, the first year of the pilot program and the last year of the current program cycle, data will be collected for baseline development. Program performance metrics may be developed, as applicable, in conjunction with the Energy Division's plans to develop a comprehensive process to determine program objectives and short and long term program performance metrics, as described in the Energy Division's "Framework of Indicators for Assessing Achievement of Long Term Energy Efficiency Objectives" for the 2013-2014 bridge period and beyond. The IOUs will report on pilot results in the Pilot Program Target Update Report for this program cycle.

12. Methodologies to Test Cost Effectiveness:

The IOUs will examine cost effectiveness of the various measures installed after gathering preliminary information from the pilot.

13. EM&V Plan:

Please see Attachment A1 for IOU plans for evaluation, measurement, and verification.

14. Plan for Disseminating Best Practices and Lessons Learned; transferring these lessons to resource programs; schedule/plan to expand the pilot to statewide usage:

Best practices and lessons learned for the Multifamily EUC Pilot will be disseminated via EUC and will likely include various channels, such as: incentives, education, and outreach programs. These channels will be used to inform resource programs on the successful practices and tools identified during the pilot.

A successful pilot would warrant ramping up the delivery of a comprehensive package of cost effective measures in order to reach existing multifamily homes and maximize their energy efficiency potential in future portfolio cycles.

EUC-MF-Pilot & 2013-2014 Program PIP

Identified multifamily market barriers to overcome: multifamily

1) Lack of customer (building owners and managers, and building tenants) awareness; limited program information available
2) Lack of access to financing
    a. Need to address split incentives and cost of upgrades for multifamily owners/managers,
    b. Integrate EUC-MF with Multifamily Energy Efficiency Rebate Program offerings
    c. Where applicable, leverage EE financing programs to provide financial assistance to building owners and managers to make the comprehensive upgrade possible
3) Lack of-skilled workers trained in energy efficiency concepts and installation

This pilot will not address barrier #2 until the latter half of 2012 when financing packages may be available.

To overcome other programmatic and design concerns, actions include:

a. Creating a single point of contact that would assist the property owners/managers to navigate the incentive and retrofit process regardless of "income qualification" requirements and different program rules
b. Targeting properties with planned or in-progress renovations to minimize time-burden and lost rental income,
c. Addressing wide diversity of the multifamily properties through segmentation to ensure broad coverage and to meet special requirements
d. Developing EE assessment and installation programs that minimize the disruption of tenants in the multifamily property market to multifamily properties on the basis of the company size; consider the number of individual units (bulk) that can be impacted via single program outreach efforts to the larger size property owners and managers.

e. Using highly skilled and trained contractors to serve and implement program measures to ensure high quality installation, including a comprehensive apartment-wide building envelop audit, to assess the comprehensive needs of the property. Leverage contractors' client relationships and industry profile.

Objective of the Pilot & Researchable Questions

1) Test program design parameters to support single-point of contact
    a. How best to leverage and coordinate resources and savings across programs (i.e., ESA program, MIDI program ,EUC-MF program expenses, etc.)
2) Program results reporting and quality control & inspection
    a. How to address program installation verification and inspection process, and exceptions
    b. Accuracy of the energy savings reported by the contractors
    c. Appropriate program process steps, and QA & QC requirements without overburdening the program/s
    d. Scope of the program inspection plan for the pilot, and the scaled program
3) Determine the optimal program implementation tools and tracking system for the scaled program
    a. Which savings methodology(ies) or tool(s) should be adopted by the program to serve this market segment
    b. What is the scope of the appropriate program tracking system
4) Implement best practices and lessons learned from prior evaluations or industry practices
    a. Did the program implement lessons learned and/or industry best practice? If yes, what are the results? What improvements are necessary as next steps?

Preliminary EUC-MF M&E Statement of Work (SOW)

The IOUs will work jointly with ED to finalize the actual research plan. This project will likely have the following study components:

1) Ongoing Rapid M&E feedback
    a. Previously, the M&E team implemented a rapid feedback process to take an in-depth review of the program's energy savings results and associated realization rates and program cycle-time. This information is used to fine-tune and streamline program design. The EUC-MF pilot will continue this practice.
2) Process evaluation
    a. Verification of program theory and program logic model
    b. Verification of program process and design, and assess the effectiveness of implementation and the program team's ability for ongoing process improvement, using the list of researchable questions above as the starting place
    c. Verification of program QA/QC process and improvements

d. Verification of energy savings methodology(ies) and tool(s) using an independent third party evaluation team
e. Collect customer feedback from all touch points (e.g. Property owners/managers, contractors, tenants and various program teams)
f. Implement appropriate segmentation question batteries to allow for data analysis across key target groups
g. Recommendations for program design, implementation and marketing activities for the 2013 – 2014 full-scale program

IOU success will be defined by reaching the expected outcomes described in section 7. Lessons learned from each IOU will be shared and will inform the development of a statewide program.

Consistent with all M&E studies, the IOUs will adhere to the collaborative framework agreed to by all parties.

The PG&E pilot will test a multifamily program delivery model using participating professionals in a range of building types, configurations and climate zones and help identify the most cost effective measures for multifamily buildings and the contractor/trade support required for implementing this complex program. PG&E will also test combustion appliance safety protocols in a multifamily context, use a single point of contact approach to optimize and customize the customer experience and integrate with the existing low income and core multifamily offerings.

SDG&E will test the proposed MF whole building performance design aimed at achieving 20% average building performance energy savings utilizing a whole building approach similar to EUC SF in order for the MF segment to participate in and enjoy the benefits of comprehensive deep energy savings through whole building retrofits. Success will be achieved by reaching the expected outcomes described in section 7. Unique features SDG&E is testing through this pilot to achieve these outcomes are utilizing the consultant model vs. contractor model (Per SW HERCC recommendations); utilizing a single point of contact to assist property owners and raters in identifying comprehensive opportunities and leveraging of available programs and financing options. The pilot will also be testing ESAP integration processes with the whole building retrofit process.

The EM&V method that will be used to determine the success of disseminating information associated with this pilot will be a survey instrument distributed to pilot participants. In the fall of 2012, a meeting will be held of the multifamily HERC participants, and the survey will be distributed at that meeting. The survey will include questions related to the best practices and procedures of energy saving methods for multifamily housing. The survey will be developed to determine if the participants were satisfied with the methods of information dissemination, which dissemination practices worked the best and the level of information that was retained by the participants. The goal of the survey would be to determine if participants retained knowledge that was provided through the program and which methods were

most effective achieving the goal of relaying energy saving information. From this survey, SDG&E is hoping to determine which methods are the best to disseminate information for multifamily whole house programs and to gain insight into the pilot activities that were most successful.

ATTACHMENT A1:
SCE/SCG Multifamily Energy Upgrade California Pilot

1. **Projected Program Budget Table**
   Table 1 –

IOU	Total Administrative Cost	Total Marketing and Outreach	Total Direct Implementation Non-Incentive	Total Incentives	Total Program Budget by IOU*
SCE	$200,000	$100,000	$238,000	$1,462,000	$2,000,000
SCG	$100,000	$50,000	$112,000	$738,000	$1,000,000
Total	$300,000	$150,000	$350,000	$2,200,000	$3,000,000

*Does not include funding being leveraged into the treated buildings for services provided through other core EE programs and the ESA program.

2. **Projected Program Gross Impacts Table – by calendar year**
   Table 2 –

	# of MF properties	# of MF units	kWh Savings	kW Savings	Therm Savings
SCE/SCG	20	1,700	1,416,100	1,360	116,025

3. **Program Objectives**

In accordance with the Strategic Plan, the MF EUC Program Pilot will coordinate with the Energy Savings Assistance Program (ESAP) and core EE Programs, such as MFEER. This integrated approach combines market-rate and income-qualified energy efficiency measures.

This integration effort provides the opportunity to educate building owners on the benefits of energy efficiency and conservation efforts spanning the range of needs for the multifamily market.

MF EUC Pilot will field test a single-point-of-contact approach to guide property owners through the various programs in retrofitting their multifamily property. This approach will provide support in understanding the various program rules and assistance in determining eligibility. The customer will be guided through a "clipboard audit" to establish feasibility and estimate project cost for MF EUC, with an eye toward leveraging all eligible programs.

The primary purpose of this pilot program is to test performance based approaches to the multifamily property owner market. Other considerations to meet all income strata and address split incentives for property owners and tenants may include a direct install strategy, as well as prescriptive rebates through the existing MFEER Program.

While programs will be coordinated and integrated, their respective policies and procedures will be followed in the delivery of services. For example, the ESA

program measures will be installed at no cost to income-qualified customers within the ESA program guidelines established at 200% or below Federal Poverty Guidelines (FPG), while MF EUC and MFEER will address incomes above 200%. Operational efficiencies will be employed to streamline eligibility, income verification, and installation of measures.

Program Pilot objectives:

1. Achieve deep energy savings reduction for all participating properties, targeting 20% or greater savings,
2. Implement comprehensive measures that go beyond lighting,
3. Help participants better understand energy efficiency and its many opportunities, and maintain program savings by leveraging the Integrated Energy Audit Tool (scheduled for launch in early 2012).

SCE/SCG intends to offer the Investment Grade Assessment at no cost to participants during the Pilot. SCE/SCG will utilize a professional energy consulting/auditing firm that has experience working with multifamily properties. It is expected that the selected firm will have consultants with qualifications such as Engineering degrees, Building Performance Institute (BPI) certifications, Home Energy Rating System (HERS) certifications, Leadership in Energy and Environmental Design (LEED) Accredited Professionals, and GreenPoint Rated Professionals.

4. Program Strategy

The program strategy is to offer attractive incentives to multifamily property owners/managers to overcome a wide array of regulatory, market, and financial barriers which may otherwise prevent the rehabilitation of existing multifamily properties. These incentives will partially offset the cost to achieve energy use reductions.

Energy savings for each project will be calculated using industry accepted energy assessment protocols. Additionally, energy savings will be verified by a certified energy rater or qualified professional before payments of incentives are issued to a property owner.

The MF EUC Pilot will offer incentives to property owners and managers with scheduled project rehabilitations who are willing to invest in a performance-based, whole-building approach. The incentives are designed to influence the implementation of comprehensive measures as part of the scope of previously planned rehabilitations.

5. Program Implementation

The program will provide financial incentives to owners/managers of multifamily buildings who undertake a comprehensive approach to energy efficiency retrofits and are able to achieve a minimum energy savings target. The program will establish standards and verification procedures to provide quality assurance, and validate energy savings.

The program aims to leverage the long-established relationships between property managers and their preferred subcontractors. This approach provides property owners with the flexibility to select the trade allies of their choice.

There are several economic, financial or regulatory events that prompt a property owner to upgrade a facility. However, there are a few discrete points in a building's lifecycle when it is typically more convenient for energy efficiency improvements. To leverage these critical and infrequent opportunities, whole-building, performance-based incentives must be large enough to motivate owners to incorporate energy efficiency improvements.

6. Incentives

Incentives will partially offset costs to retrofit measures needed to achieve targeted energy-use reductions. Incentives will be offered on a tiered structure, paid on a "per dwelling unit" basis according to the total building energy savings percentage. The tiered approach will reward participants for realizing deeper savings. While a "per unit" approach enables participants to experience economies of scale with larger multifamily buildings.

SCE/SCG

Energy Savings Achieved	Incentive per Dwelling Unit
10%	$ 700
15%	$ 800
20%	$ 1,000
25%	$ 1,200
30%	$ 1,400
> 35%	$ 1,600

7. Project Pre-Qualification

Property owners will be required to provide basic information to determine the scope of the project, existing conditions, and available funds. The information provided on the pre-qualification form will help to determine if the project can reach the preset minimum energy savings achieved percentage.

The pre-qualification process will be supported by the Integrated Energy Audit Tool when it becomes available.

Basic Energy Assessment (Basic Site Assessment)

The Basic Energy Assessment will provide an opportunity to meet with property owners to conduct a high level energy assessment, validate the data provided, and assess the potential for property savings. The Basic Energy Assessment will help gauge customer commitment and determine if the projects have the potential to

achieve minimum energy savings expectations. If the projects do not meet these savings targets, they will be referred to other applicable EE Programs.

Advanced Energy Assessment and Modeling (Test in, Investment Grade Assessment)

Investment Grade Assessments will be required to establish a baseline of the existing energy consumption for each property. The assessment will be conducted by an energy auditing professional using approved multifamily audit tools and procedures.

The audit tools evaluate potential measures based on least-cost, maximum benefit customized to each property's needs. The tool provides property owners with information to help them select a mix of measures that will achieve their energy savings goals.

Once a property owner has selected the desired savings target, the owner's own contractors implement the energy saving measures of the owner's choice.

The MF Pilot was designed to pilot a variety of approaches to modeling savings. At this late date, however, the program will solicit consulting engineering services with expertise using eQuest, or other proprietary system-based engineering approaches, such as those used in Retro-Commissioning. Given the short time frame and limited budget, a comparative analysis of TREAT, EnergyPro, and other tools will have to wait for a post-occupancy EM&V study.

Perform Post Project Verification and Quality Assurance (Test Out, Savings Verification)

At completion, the owner submits the required documentation for verification by an independent energy auditor. The energy auditor will verify the installation of measures, compliance with product specifications, and determine the savings target achievement. The auditor will use multifamily audit and modeling tools to determine savings.

The energy auditor will then submit a project report for IOU review and application processing.

8. Customer Description

The program will target multifamily owners and managers of properties located in SCG and SCE service Territory.

- Multifamily properties must contain a minimum of three dwelling units.
- Properties must be designated as multifamily residential by the Title 24 Building Energy Efficiency Standards, Part 6, which is defined as three or more attached dwelling units in a building.
- Properties cannot exceed four stories.
- Both affordable and market-rate properties qualify.

Non-Qualifying Properties

- Single-family homes - A single-family residential building is defined by the California Building Code as a single detached unit. Single-family homes may qualify for incentives through the EUC Single Family Program.
- Single-room occupancy (SRO) facilities, such as dormitories and assisted living facilities do not qualify.
- Non-residential buildings
- Hotels and Motels

9. SCE/SCG's Cost Effectiveness (E3 Calculator):

Figure 1. E3 Calculator showing cost-effectiveness for Multifamily Energy Upgrade California.

Refer to E3.

10. Energy Savings and Demand Reduction Level Data:

Program Impacts (Gross)					
	Annual Gross kWh	Lifecycle Gross kWh	Annual Gross Therms	Lifecycle Gross Therms	User Entered kW
2010-2012	1,666,000	29,988,000	136,500	2,457,000	1,600

11. Program M&E Plan for SCE and SCG

Energy Upgrade California: Multifamily Energy Upgrade California Pilot is proposed for implementation in two stages:

- Stage-1: Initial pilot phase to test program logistics and implementation requirements with a few raters and a few contractors.
- Stage-2: Scale the program for full deployment in 2012 and beyond.

11.1. The M&E plan for Stage-1 will focus on Rapid Feedback Analyses. Here are a few of the items to be considered:

- Is the program implemented as designed? If yes, are the results of the program activities acceptable from an end-to-end perspective?
- Can this program be evaluated given the program output and tracking data? If not, how can output and data be improved?
- Is the program design and implementation effective?
    - Is the program qualification acceptable?
    - Is the program processing acceptable?
    - Is the program QA/QC process acceptable?
    - What are the key issues and concerns for participating property owners/managers, renters, contractors and program contractors and HERS Raters? How can the program be improved?
    - Is the overall program cycle time acceptable?
    - Is the program energy savings accurate? If not, how can it be improved?

    - Is the program interaction with other programs, local government entities and stakeholders acceptable? If not, what is missing and how can it be improved?
- Is this program meeting its stated objectives given the output and outcomes of this early implementation?
- Verification of the program implementation barriers and identify ways to overcome the observed barriers.

11.2. The M&E plan for stage-2 will focus on the following items:

- Establish baseline condition for SCE multifamily energy usage profile as of 2008 and 2011 prior to program intervention.
- Has the program acted upon the rapid feedback? If yes, what are the changes?
- Is the program generating deep energy savings as expected?
- Is the program consistent with its program theory, logic model and attribution claims?

Repeat the evaluation items identified above, in the context of a scaled program. SCE and SCG will work closely with ED's M&E team to develop an approved M&E study plan. Currently, we have identified the need for this study in the 2010-2012 M&E study plan.

Attachment A3.1: SoCalGas EUC Enhanced Basic/Modified Flex Path PIP
(Redline)

Attachment A3.1
Southern California Gas Company

2013-2014 Energy Efficiency Programs
California Statewide Program for Residential Energy Efficiency
Program Implementation Plan (Redline)

1) **Program Name: Energy Upgrade California (EUC)**
   Program ID: SCG 3705
   Program Type: Statewide Core Program

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

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

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

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

6) **Projected Sub-program Total Resource Cost (TRC) and Program Administrator Cost (PAC)** TRC ~~—~~ 0.25 PAC ~~—~~ 0.40

7) **Projected Sub-Program Budget**

   Table1. Projected Sub-Program Budget, by Calendar Year
   [Table-1 Refer to Attachment A3.3~~2~~ to this PIP]

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

   a) **Sub-Program Description and Theory:**

Attachment A3.1
Southern California Gas Company

2013-2014 Energy Efficiency Programs
California Statewide Program for Residential Energy Efficiency
Program Implementation Plan (Redline)

According to a report released by the Office of the Vice President, "homes in the United States generate more than 20 percent of our nation's carbon dioxide emissions, making them a significant contributor to global climate change."[1] The challenge of addressing residential emissions has been a significant topic for California stakeholders and was addressed when D.09-09-047 acknowledged, "Improving the energy efficiency of all households is necessary to achieve the target outcome for the 2020 existing residential *Strategic Plan* goals."[2]

The Office of the Vice President report also identifies three market barriers to comprehensive residential retrofits:

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

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

1) Offer a statewide entry level pre-set measures based approached (*Enhanced Basic/Modified Flex Path* ~~*Basic Path*~~) and a comprehensive and flexible performance based approach (*Advanced Path*) whole house incentives to help build the home performance contracting industry and offer customers and building owners and managers an easy entry point on the path to home performance (barrier 1);
2) Educate customers on the house-as-a-system concept and to encourage behavior changes that increase residential energy efficiency (barrier 1);
3) Educate contractors on the benefits of learning how to properly sell and install whole house measures as part of coordinated WE&T efforts (barrier 1& 3);
4) Offer incentives that influence customers to undertake comprehensive residential retrofits (barrier 1); and
5) Coordinate with relevant utility financing programs and external funding and financing mechanisms at the county, state and federal levels (barrier 2).

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

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

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

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

1) To improve a property owner or manager's energy efficiency knowledge, the *Multifamily Path* would seek to leverage comprehensive investment grade building assessments to identify potential energy efficiency opportunities. (barrier 1).
2) To address split incentives and cost of upgrades, the *Multifamily Path* would integrate with the existing Energy Savings Assistance Program ("ESAP") and the Multifamily Energy Efficiency Rebate ("MFEER") Program. This would provide comprehensive services to the building, including "low cost" or "no cost" tenant measures in conjunction with the EUC *Multifamily Path* whole building incentives in order to maximize energy savings for the up-front investment. (barrier 2).
3) Incentives would assist property owners or managers with overcoming a wide array of market and financial barriers which may otherwise prevent energy efficiency upgrades (barrier 1 and 5).
4) Create a single point of contact that would assist the property owner or manager navigate through the incentive and retrofitting process. This approach would provide support in understanding the various program rules and assistance in determining eligibility. The property owner or manager would be guided through an easy and streamlined preliminary assessment to establish feasibility and estimate project cost for the *Multifamily Path*, with an eye toward leveraging all eligible programs. (barrier 4).
5) Target buildings planning on or undergoing renovation projects to limit customer time burden and lost rental income. (barrier 4 and 5).

6) Multifamily sector is comprised of a wide diversity of properties which can be segmented by: 1.) rental rate (low – medium – or high; and/or 2.) size of the building and also size of the company that owns or manages the building. Defining the unique concerns and needs of building owners and managers by these variables of tenant socio-economic status and ownership/management structure will allow much more effective messaging and marketing communications. (barrier 1, 2, 3, 4, 7)
7) Statewide EE energy efficiency financing (SW Fin) which could be focused on the tenant or the common property energy agendas. This program will provide access to capital to fund investments in energy efficiency upgrades for buildings at an attractive interest rate. (barrier 2, 3, 7).

Other considerations to meet all income strata and address split incentives for property owners and tenants may include a direct install strategy, as well as prescriptive rebates through the existing MFEER Program. While programs will be coordinated and integrated, their respective policies, and procedures will be followed in the delivery of services. Efforts at operational efficiencies would be made to streamline eligibility, income verification, and installation of measures.
Despite the noted barriers, the multifamily sector presents a significant opportunity for whole building energy efficiency programs with a deep energy reduction approach. A whole building offering has the potential to achieve deep energy savings because:

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

EUC is a Market Transformation orientated program and is a continuing program which began in the 2010-2012 residential energy efficiency portfolio of the four

Attachment A3.1
Southern California Gas Company

2013-2014 Energy Efficiency Programs
California Statewide Program for Residential Energy Efficiency
Program Implementation Plan (Redline)

California Investor Owned Utilities (IOUs) – Pacific Gas & Electric Company (PG&E), Southern California Edison (SCE), San Diego Gas & Electric Company (SDG&E) and Southern California Gas Company (SoCalGas).

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

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

EUC is designed to build customer and contractor[3] awareness of the house-as-a-system approach to residential retrofits and the many corresponding benefits of improving the energy savings potential and comfort of their dwelling. It promotes the idea that energy efficiency measures are most effective when taking into account interactive effects of measures.

EUC moves customers from a prescriptive, widget or single-measure based approach to energy efficiency to one of deeper, comprehensive energy retrofits that respect the energy efficiency loading order [4], and which takes the approach that a house is a series of interdependent systems that must be considered holistically.
In addition, this approach optimizes building shell (thermal boundary) provides increased comfort and indoor air quality while enabling smaller and more affordable space conditioning equipment and reduced energy use associated with space heating and cooling. The thermal boundary consists of two layers or components – air barrier and insulation – which should both be continuous as well as contiguous (in contact with each other) for optimum performance. Because of the interaction between the thermal boundary and space conditioning loads, heating or cooling system upgrades are ideally not to be performed until the building shell is optimized. Building shell

[3] A successful program recognizes the need to develop the pool of qualified home retrofit contractors (with the help of third party implementers) to engage in – and have the opportunity to profit from – performing quality work. Through comprehensive training curricula (currently available in the marketplace) broken into the key elements of a home: Building Envelope and Lighting, and Heating, Cooling and Hot Water delivery (major systems); skilled tradespersons will have the opportunity to enter the home retrofit market and grow their businesses.
[4] The loading order specifies improvements in the following sequence: (1) air sealing to obtain a tight building envelope; (2) insulation to complete the thermal boundary; (3) proper sizing, design, installation and commissioning of space heating and cooling systems; (4) proper sizing, design, installation, commissioning and insulation of the hot water system, including distribution; (5) efficient lighting and appliances, and demand response measures; and (6) renewables.

and duct air sealing will be addressed in conjunction with combustion appliance safety and indoor air quality tests. Base load reduction measures involving major electrical appliances, lighting, plug loads, and demand response can be performed at any time without compromising the loading order.

Customer outreach and education efforts for EUC will be coordinated with other IOU Demand Side Management (DSM) program offerings (e.g. Energy Advisor, Plug Load and Appliance (PLA), Comprehensive HVAC, SmartAC and other Residential Demand Response programs, Energy Savings Assistance program, California Solar Initiative (CSI)) to leverage multiple customer touch points.

For single family residences, the whole house approach of EUC promotes two paths, a prescriptive based ~~*Basic Path*~~ *Enhanced Basic/Modified Flex Path* and a comprehensive, measured *Advanced Path*. These complimentary paths will be presented to customers[5] as one comprehensive offering.

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

In sum, these paths will provide an ideal platform to utilize the concept of continuous energy improvement for residential customers; tracking and encouraging a logical sequence of energy improvements made by customers over time, creating an ongoing, actionable dialogue with each customer regarding their energy use.

EUC *Advanced Path*
EUC *Advanced Path* offers customers a customized path to comprehensive whole house energy efficiency that drives the customer to deep retrofits. *Advanced Path* solutions will require Participating Contractors to obtain higher levels of expertise than those who perform the Enhanced *Basic/ Modified Flex~~e~~ Path* installations. Customers can also participate in *Advanced Path* by using a Participating Rater. The *Advanced Path* requires diagnostic "test-in" and "test-out" whole house assessments. The "test-in" assessments will generate a comprehensive work scope and the "test-out" assessments will be used to document that specified improvements have been properly sized and installed. The *Advanced Path* will build off of the pre-set measures of the *EUC Enhanced Basic/Modified Flex Path* ~~*Basic Path*~~ and:

The *Advanced Path* delivers comprehensive energy efficiency improvement packages tailored for both the home resale and home remodeling markets. The *Advanced Path*

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

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

EUC ~~*Basic* Path~~*Enhanced Basic/Modified Flex Path*

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

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

~~The *Basic Path* will also educate contractors and customers on the benefits of implementing comprehensive whole house retrofits on existing buildings that will provide systematic reductions in energy use. The *Basic Path* will help to:~~

- ~~Utilize no cost (to customer) surveys (Energy Advisor) as an entry point to identify opportunities for efficiency improvements[6];~~
- ~~Offer targeted marketing campaigns to engage participants that receive stand-alone EE rebates for completing qualified home improvement measures;~~
- ~~Promote completion of retrofits based on preferred building science loading order;~~
- ~~Offer incentives to encourage progression along a preferred approach towards comprehensive retrofits;~~

[6] ~~The Energy Advisor provides residential customers with entry-level energy surveys online, over the phone, or by mail. The surveys are not intended to serve as an audit but are meant to provide consistent messaging and an easy on-ramp to EUC. The Energy Advisor surveys are also an ideal link between the California Solar Initiative (CSI) and EUC WHRP. This synergy will be discussed later in the document.~~

- ~~Continuously engage customers over time as they progress toward a home performance approach;~~

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

- ~~Offer a holistic path towards home performance by aggregating key elements of a dwelling into its core elements: building envelope and fixed lighting; heating, cooling and hot water, and appliances;~~

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

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

Accordingly, the IOUs, SoCalREN and BayREN, consistent with D.12-11-015, propose replacing the existing IOU EUC Basic Path and REN Flex Path programs with alternate models that:

1. Meet the Commissions criteria for both Customer and Contractor Eligibility.
2. Require a minimum of three (3) measures, under a framework that supports the loading order, incentivizes additional measures, encourages more robust savings, and serves as a foundation for whole-home energy efficiency upgrades.
3. Maintains standards of quality and safety.
4. Reflect a common design, avoid public confusion, and meet the objective of the 2013-2014 Energy Efficiency Transition Period to test market and transformative drivers.
5. Can be offered seamlessly across all territories.
6. Compliments the EUC Advanced Path for comprehensive home performance energy upgrades.

The Enhanced Basic/Modified Flex has a mix of Base and Flex energy efficiency measures to allow a contractor to tailor each project to the needs of the customer. The new program will be delivered through existing EUC participating contractors and, further, will broaden and diversify the service pool by recruitment of specialty contractors. Moreover, eligible upgrades have been specifically designed to support the loading order and foster deeper or further retrofits, and all work will include appropriate combustion safety testing at test-in and test-out.

The comprehensive menu of point-based measures effectively streamlines the project development process in replacing preliminary modeling simulations and multiple visits to the retrofit property. A rebate amount can easily be determined during the contractor's first visit. This enhances the ease of program adoption for both the customer and the contractor, and promotes the ability of the Enhanced Basic/Modified Flex Path to scale the EUC Program more rapidly.

SoCalGas Gas Only Whole House Retrofit Program 2013-2014

SoCalGas will continue implementing a "gas only" Whole House Retrofit program that will service those customers that are in a municipal electric service provider territory. This enables SoCalGas to reach out to approximately 1.7 million customers who are not eligible for the joint SCE/SoCalGas Energy Upgrade California Whole House program. Due to our single fuel utility effort, we can only substantiate the therm savings for our program hence the difference in the incentive amounts from the other IOU incentives. SoCalGas will continue to look for additional partnership opportunities with municipalities' EE programs to maximum savings to shared customers.

SoCalGas has entered into an agreement with the Los Angeles Department of Water and Power to jointly implement the *Enhanced Basic / Modified Flex and Advanced Path* programs in their portfolios to provide more comprehensive services to their joint territory customers and to save on overall program costs. Additionally, SoCalGas and Burbank Water and Power are implementing a joint evaluation direct install program with all Basic Path measures for both gas and electric.

SCG will be offering the EUC Advanced Path throughout the entire service territory, including where SCG services municipalities and shares its territory with PG&E and SDG&E. The EE Decision directed the RENs to implement the EUC Enhanced Basic/Modified Flex Path in the geographic areas they cover while the IOUs implemented the

program in the rest of the territory. [7]As such, the Gas Only EUC Enhanced Basic/Modified Flex Path and EUC Advanced Path programs will be offered solely by SCG within the municipalities unless after due time the SoCalREN proves its potential for successful implementation in those areas and enters into a formal agreement with the specific municipality.

SoCalGas will ~~also~~ continue ~~its efforts to implement~~with its ~~a~~ joint program with SDG&E that ~~would~~ results in a shared application and single streamlined process ~~for~~ that is more efficient and less confusing for our contractors and the customers in our shared teritory. Additionally, besides QA/QC shared costs, SoCalGas will look for other synergies between our programs in our joint PG&E/SoCalGas service territories (i.e.; one shared application, processing).

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

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

This performance-based approach would assist property owners and managers with making informed decisions, identify measures for energy savings, and to maximize energy reductions for each property owner, manager, and tenant, as applicable. The *Multifamily Path* is envisioned as a logical next step to the prescriptive based MFEER and would be coordinated with the ESA Program and MFEER to present a singular and streamlined approach for multifamily tenants, property owners and property managers, in accordance with the Strategic Plan. A key feature of the *Multifamily Path* would be a single point of contact to assist multifamily raters and customers and to streamline their experience. The single point of contact will recruit and assist multifamily owners and property managers to evaluate specific property and advise the program that best suits the needs of particular buildings.

[7] D.12-11-015, at p. 23

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

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

The IOU's will organize and convene a workshop on lessons learned and best practices in their multifamily pilot programs in late 2013 or early 2014 and notice the workshop to the service list and RENs for this proceeding.

~~**SoCalGas Gas Only Whole House Retrofit Program 2013-2014**~~
~~SoCalGas will continue implementing a "gas only" Whole House Retrofit program that will service those customers that are in a municipal electric service provider territory. This enables SoCalGas to reach out to approximately 1.7 million customers who are not eligible for the joint SCE/SoCalGas Energy Upgrade California Whole House program. Due to our single fuel utility effort, we can only substantiate the therm savings for our program hence the difference in the incentive amounts from the other IOU incentives. SoCalGas will look for additional partnership opportunities with municipalities' EE programs to maximum savings to shared customers.~~

~~SoCalGas will also continue its efforts to implement a joint program with SDG&E that would result in a shared application and single streamlined process for our contractors and the customers. Additionally, besides QA/QC shared costs, SoCalGas will look for other synergies between our programs in our joint PG&E/SoCalGas service territories (i.e.; one shared application, processing).~~

a) Sub-Program Energy and Demand Objectives-

Table 2. Projected Sub-Program Net Energy and Demand Impacts, by Calendar Year
[Table-2 Refer to Attachment A3.3~~2~~ to this PIP]

b) **Program Non-Energy Objectives**:
Table-16: Non-Energy Objective
[Table-16 Refer to Attachment A3.3~~2~~ to this PIP]

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

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

EUC seeks to address these barriers through:

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

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

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

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

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

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

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

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

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

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

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

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

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

b. Indicate work paper status for program measures:

Table 4 – Work paper Status
[Table 4 Refer to Attachment A3.3~~2~~ to this PIP]

9) Program Implementation Details

In addition to traditional marketing efforts, the IOUs will work through service providers and vendors to engage qualified tradespersons in the crafts that they have chosen and will continue to invite input from stakeholders to further develop additional ways to meet program objectives.

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

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

2) Driving customer demand for energy efficient homes via collaborative consumer education and outreach, using easy to understand messaging and

> including efforts such as the promotion of home energy improvements and "green" labeling around the time of purchase and sale of a home. This is a critical timing in the market that can be leveraged. The Joint Center for Housing Studies estimates that home buyers spend more than $6,000 per year on home improvements in the first two years after buying homes. In subsequent years, the annual average outlay drops to $2,500.[8]

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

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

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

The program will employ a number of integrated delivery strategies:

1) Educate contractors and residential customers on the concept of home performance;
2) Coordinate with existing residential program offerings (e.g. ESA, HVAC, HEER, Energy Advisor and MFEER) within the utility portfolios;

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

3) Provide robust quality assurance and quality control protocols that encourage quality installation and drive contractors to obtain additional training and qualifications;
4) Provide robust EM&V feedback loops to inform program enhancements;
5) Integrate with marketing efforts of the broadened statewide "Energy Upgrade California" brand, when launched, and deliver complementary marketing messaging to drive customer demand and contractor participation;
6) Coordinate contractor training, marketing and outreach efforts with local governments, as appropriate; and
7) Develop an incentive structure that drives customers to undertake comprehensive residential retrofits.

Statewide Informal EUC Working Group

Given the ambitious market transformation goals of EUC, it's relatively new entrance into the IOU EE portfolio, and its challenges during the first two years of rollout, the IOUs during the 2013-2014 transition cycle are committed to providing the leadership and working with CPUC, CEC, local government staff, as well as relevant stakeholders to convene a statewide EUC working group to address relevant and significant issues for adoption in the 2015 IOU program cycle. The IOUs seek a cooperative design and implementation approach that involves all parties with an interest in EUC.

The Working Group will be co-chaired by one IOU, determined by IOU consensus, and one non-utility co-chair selected by the Working Group. The Working Group co-chairs will solicit views and direction from Commission staff on the Working Group operations. The Working group may choose to form subgroups and/or hold stakeholder outreach meetings as necessary.

The Working Group will be composed of all former EUC Steering Committee members, the REN's, EUC Contractors, and other interested stakeholders and implementers, including the EUC implementers, Commission, and CEC staff, and CCSE as the statewide marketing and outreach coordinator.

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

In this regard, the IOUs will hire a market transformation consultant to assist with improvements to the long-term EUC design and to support a constructive IOU engagement in the AB758 process. The Working Group IOU co-chair will be the lead

IOU for this contract. Members of the EUC Working Group will be offered the opportunity to substantively shape the work scope and priorities of the market transformation consultant. Timelines and general framework for the market transformation consultant will begin at the first meeting of the Working Group in January 2013.

The Working Group will, as necessary, focus on the following issues on a statewide level for consideration in the 2015 program cycle:

1. Role of local governments
2. Software standards
3. Data collection standards
4. Home Assessment standards
5. Home Assessment reporting standards
6. HERS II Ratings and alignment with EUC Programs
7. Contractor certification standards
8. QA/QC standards
9. Streamlined project reporting and programmatic best practices
10. Integration of HVAC programs
11. Engagement of California Real Estate Market
12. Future of Basic Path
13. Identification of Market Transformation Milestones and Metrics
14. Cost effectiveness metrics aligned with Market Transformation goals.
15. Long term incentive structure
16. Applicable AB 758 Issues

In addition, the Working Group will provide substantive contributions to program design and implementation plans on the following items to be included in an updated PIP to be filed by a Tier 2 Advice Letter not later than April 1, 2013:

~~1. Final statewide aligned and streamlined protocols regarding heating, ventilation and air-conditioning (HVAC) emergency replacements and high performing contractors.~~
~~2. Final program design and implementation of BasicPath~~

1. Final statewide aligned and streamlined protocols regarding heating, ventilation and air-conditioning (HVAC) emergency replacements and high performing contractors.
2. Final program design and implementation of Enhanced Basic to include a tiered incentive, require three measures at a minimum, follow energy efficiency loading order to address shell improvements first, and support appropriate combustion safety testing protocols.
3. Provide updated targets for number of homes in Enhanced Basic

4. Discussion on subsidizing whole house audits and diagnostic test for EUC project if the project involves at least three energy efficiency measures.
5. Refined savings and technical details for the Enhanced Basic will also be included.

Three utilities, SDG&E, SoCalGas, and SCE plan to launch an *Enhanced Basic Path /Modified Flex Path* early 2013 to test systems and program design with a limited set of contractors. This effort should not be understood to prejudice the outcome of the stakeholder process to improve Basic as outlined in the Decision, but rather to be able to have an informed discussion on market acceptance of an alternative delivery method. The participating IOUs remain open to further suggestions and refinements in Enhanced Basic. We look forward to further work with the RENs in particular to improve our joint EUC offering in 2013.

Upon approval of the Advice Letter, the IOUs and RENs will submit the updated EUC PIPs, including all necessary revisions, to Energy Division for posting on the Commission's EEGA website at http://eega.cpuc.ca.gov/.

~~a)~~b) **Timelines:**

Table 5: Sub-Program Milestones
[Table-5 Refer to Attachment A3.3~~2~~ to this PIP]

~~b)~~c) **Geographic Scope**:

Table 6: Geographic Regions Where the Program Will Operate
[Table 6 Refer to Attachment A3.3~~2~~ to this PIP]

~~c)~~d) **Program Administration**

Table 7: Program Administration of Program Components
[Table 7 Refer to Attachment A3.3 ~~2~~ to this PIP]

~~d)~~e) **Program Eligibility Requirements:**

i. Customers:

Single family or multi-family building customers with an active IOU account OR owners or property management firms who own or operate single family or multifamily buildings that are served by an active IOU account, may participate

in EUC provided they utilize a Participating Contractor or a Participating Rater per program guidelines.

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

Per program requirements, process, and protocol, for all EUC projects, customers must install a minimum of three energy efficiency measures which support the energy efficiency loading order and must perform appropriate combustion safety testing. SoCalGas is exempted from this requirement.

Table 8: Customer Eligibility Requirements (Joint Utility Table)
[Table 8 Refer to Attachment A3.3~~2~~ to this PIP]

ii. Contractors/Participants:

Participating Contractor Requirements for Basic Path and *Advanced Path*
Participating EUC Contractors must be certified and licensed according to all applicable federal, state and local laws. Participating Contractors shall meet, and provide sufficient evidence and supporting documentation for the following minimum requirements:

1. Contractor State Licensing Board (CSLB) license in the appropriate specialty;
2. Bonding and in good standing.
3. Insurance to IOU minimum insurance standard;
4. Execution of a contractor participation agreement;
5. Completion of all utility training course requirements, including Participation Workshop and a 3-Day Basic and/or Energy Upgrade Training, Workshop, if not BPI-certified Basic or Advanced Training, as appropriate;
6. BPI-certified Building Analyst (BA) to complete Combustion Safety and Carbon Monoxide Protection and all other minimum Health and Safety Requirements specified in the BPI Technical Standards for Building Analyst Professional;

7. Ensure HVAC permits will be pulled on all work that is appropriate per local jurisdiction requirements;
8. Participating Contractors who participate in *Advanced Path* projects, must employ at least one staff person who holds an active BPI Building Analyst certification. BPI accreditation is strongly encouraged and may be required of all participating contractors at some point during the program cycle;
9. Additional IOU requirements, as appropriate.

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

Table 9: Contractor/Participant Eligibility Requirements (Joint Utility Table**)**
[Table 9 Refer to Attachment A3.3 ~~2~~ to this PIP]

~~e)~~f)**Program Partners:**

a. **Manufacturer/Retailer/Distributor partners:**
Table 10: Manufacturer/Retailer/Distributor Partners
[Table 10 Refer to Attachment A3.3~~2~~ to this PIP]

b. **Other key program partners**:
Table 15: Energy Division, California Energy Commission, local governments, BPI and other standards bodies, as well as other partners
[Table 15 Refer to Attachment A3.3~~2~~ to this PIP]

~~f)~~g)**Measures and incentive levels**:

***Advanced Path* Incentives**
Incentives for the *Advanced Path* will be paid based upon modeled site savings energy utilizing any CEC approved simulation modeling software approved by IOUs. Incentives for *Advanced Path* are designed to encourage customers to

reach for deep energy savings. *Advanced Path* incentives are for both gas and electric measures provided by the customers' participating utility program.[9] Currently, Energy Pro simulation modeling software is the only approved software for use with EUC. During the 2013-2014 transition cycle, the IOUs will work collaboratively with the CEC and other stakeholders to identify potential approaches to adequately broaden the allowable software under the EUC while containing costs required for needed Commission Staff reviews.

In order to encourage customers to more fully adhere to the loading order, customers may be eligible for additional bonus points for installing additional base measures. For customers who install 1 or 2 additional base measures beyond the required one measure, customers will receive additional points-based incentive for each additional base measure installed.

SoCalGas will explore the possibility of providing additional incentives to customers who embrace the whole house retrofit concept providing a higher range of incentives for those who exceed the programs current limits. This will encourage the customer to strive for deeper –retro-fit measures while planning their home upgrade projects.

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

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

40%	$4,000
45%+	$4,500

Enhanced Basic/Modified Flex ~~***Basic***~~ ***Path*** **Incentives**

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

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

The Enhanced Basic/Modified Flex Path incentives will be a tiered incentive, driven by the customer's desired SOW. Incentives will begin at $1,000 for 100 points which will be equivalent to 10% site energy savings. The incentive tier increase at each 50 point incremental improvement, to encourage deeper energy retrofits. Each 50 point increment will equate to an additional $500 incentive. The incentives align with Advanced Path incentives for similar saving percentages, but the Enhanced Basic/Modified Flex Path Path will max out at 250 points (a $2,500 incentive).

Participation Level: Points	Incentive Amount
100 Points	$1,000
150 Points	$1,500
200 Points	$2,000
250 Points	$2,500

To encourage customers to more fully adhere to the loading order, customers may be eligible for additional bonus points for installing additional base measures. For customers who install 1 or 2 additional base measures beyond the required one measure, customers will receive additional points-based incentive for each additional base measure installed.

***Multifamily Path* Incentives**

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

Ten Year Stepwise Incentive Structure

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

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

Table 11: Summary Table of Measures, Incentive Levels and Verification Rates
[Table 11 Refer to Overarching Program Table in this PIP]

Permitting Requirements

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

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

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

Enhanced Basic/Modified Flex ~~**Required *Basic***~~ ***Path*** **Measures Installed Per Measures Installation Standards:**

Base Measures
Whole House Air Sealing
Attic Insulation
Duct Test and Seal
Domestic Hot Water Pipe Insulation
Thermostatic Shut-Off Valve
Low-Flow Shower Head

Flex Measures – Envelope:
Floor Insulation
Wall Insulation
High Performance Windows
Attic Radiant Barrier

Flex Measures – Domestic Hot Water (DHW)
Gas Water Heater (including Tankless gas water heater)
Electric Water Heater

Flex Measures – HVAC
Gas Furnace
High Efficiency Air Conditioning
HVAC QI (pending QI work paper)
Insulated Ducts

Additional Stand Alone Measures

Variable Speed Pool Pump
Refrigerators
Dishwashers
Clothes washers
Whole House Fan
Refrigerator / Freezer Recycling

Ineligible Measures:

Screw-In Lighting Fixtures and Lamps
Solar Domestic Hot Water Heater System
Distributed Generation Systems - Solar PV, Fuel Cell, Wind, etc.

Advanced Path **Measures Installed Per Measures Installation Standards:**

- Attic Insulation
- Cool Roof Installation (CRRC-certified)
- Cooling System Upgrade
- Domestic Hot Water Heater Upgrade (non-solar- including Tankless water heater~~)~~
- Domestic Hot Water Pipe Insulation
- Duct Insulation
- Duct Test and Seal
- Exterior Lighting Upgrade – Permanently Installed High-Efficacy
- Floor Insulation
- Heating System Upgrade
- Interior Lighting Upgrade – Permanently Installed High-Efficacy
- Low-Flow Shower Head
- Radiant Barrier Installation
- Thermostatic Shut-Off Valve
- Wall Insulation
- Whole House Fan Installation
- Whole House Air Sealing
- Window Upgrade

- Other Measures as may be modeled and allowed by IOUs per regional market needs

Required measures:

- Thermostatic Shut-Off Valve
  Required measure (no point value)

Ineligible Measures

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

Multifamily Building Eligible Measures

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

g)h) **Additional Services:**

Table 12: Additional Service

[Table 12 Refer to Attachment A3.32 to this PIP]

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

IOUs will conduct integrated as well as program-specific marketing and outreach which will be coordinated with the statewide marketing and outreach program. The utilities may use a range of tactics such as; e-mails, flyers, on-Line

marketing, direct mail, bill messaging, social media, local events, ethnic media, and other channels that suit the target audience, the message, and the resources.

Marketing, Education and Outreach plans

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

2) **Target Audiences**
   EUC marketing and outreach aims to include all stakeholders in the retrofit process, throughout the life of the program. This will help to ensure that all audiences receive consistent information and will enable a more informed dialogue about program specifics, in an effort to continuously engage stakeholders in the energy efficiency retrofit process. The initial target group is comprised of the following audiences listed below. Based on the results of the statewide market survey research.

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

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

   - Continue to utilize a statewide brand and message; and a creative envelope for EUC marketing efforts to avoid market confusion;

- Co-brand where feasible;
- Coordinate with local governments;
- Engage contractors, stakeholders and local governments in generating customer demand; and
- Provide collateral pieces to participating contractors to assist in lead generation and education;
- Employ expanded community based marketing approach; and
- Use a variety of innovative marketing strategies such as time of sale assessment vouchers.

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

Specific workforce development efforts supporting EUC include the following:

- CEC/EDD: California Clean Energy Workforce Training Program Community college programs;
- Third party programs; and
- IOU training offerings (IOU trainings will serve as backup if required. IOU courses do not duplicate modules available in the marketplace but will serve backup role in the event that a market need is identified and best served by the IOU Energy Training Centers).

EUC will be coordinated with the statewide IOU WE&T program, local government residential retrofit and contractor training programs that are tied directly to workforce education and training efforts on a state and federal level. In addition, IOU WE&T programs will continue to offer both building-block house as a system courses that educate students on the concepts that form the foundation of home retrofit programs when a needs assessment determines that these areas require attention. Those concepts include:

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

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

Contractor recruitment efforts will be conducted primarily by third party program implementers – a model that has proven successful in statewide IOU HVAC programs in the 2010-12 program cycle. Program implementers will continue to primarily recruit contractors through:

- The network of contractors already participating in IOU HVAC, insulation and weatherization programs;
- Direct outreach through trade groups with locally active memberships;
- Workforce development departments (to target unemployed general contractors)

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

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

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

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

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

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

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

   Table 13: Post-implementation Audits
   [Table 13 Refer to Attachment A3.3~~2~~ to this PIP]

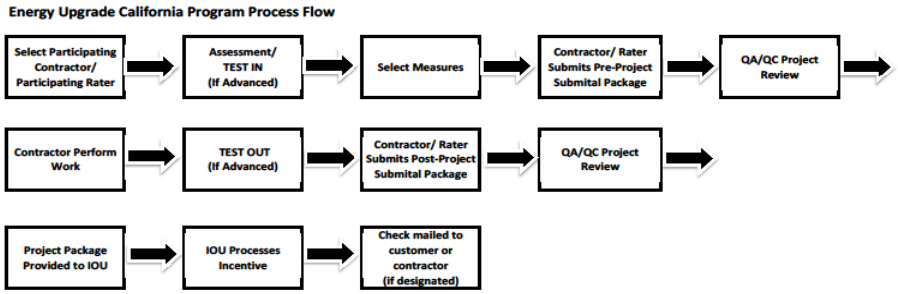
~~k)~~l) **Sub-Program Quality Assurance Provisions:**

Payment of customer incentives will be tied to the contractor's delivery of full job required program documentation. Program implementers will randomly select a minimum of 5 percent of each participating contractor's reported retrofits for onsite job verification and review 100 percent of the job data inputs from contractors. Verifications will include homeowner interviews, intensive visual checklist inspections, and selective retesting of key items. A subset of these energy savings estimates may later be validated against the first year's after-retrofit utility bills plus climate data and homeowner interviews as needed to identify changes in other factors affecting energy use. IOUs will collaborate to develop QA/QC plans and documents that reflect statewide uniformity to the greatest extent possible. QA/ QC documents and standards will be updated regularly with contractor input and will include:

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

Table 14: Quality Assurance Provisions
[Table 14 Refer to Attachment A3.3~~2~~ to this PIP]

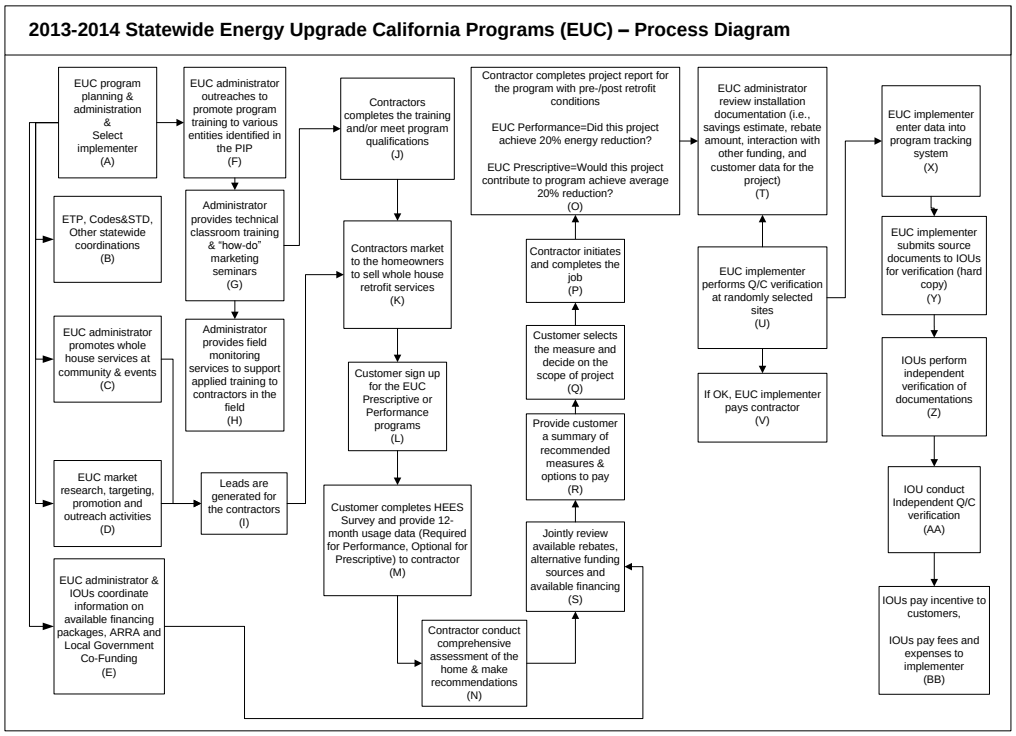
~~l~~m) **Sub-program Process Flow Chart:**



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

Table 15: Cross-cutting Sub-program and Non-IOU Partner Coordination
[Table 15 Refer to Attachment A3.3~~2~~ to this PIP]

n) **Logic Model:**



10) Additional Sub-Program Information

a) **Advancing Strategic Plan Goals and Objectives**:
The EUC is consistent with the requirements of the *Strategic Plan*. The program addresses the Whole House Strategy of the *Strategic Plan* by influencing contractors and customers to implement comprehensive home retrofit energy efficiency measures through either the *Basic Path* on-ramp, *Advanced Path* or *Multifamily Path*.

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

HVAC upgrades. The *Strategic Plan* further states that a similar approach must be developed for multifamily housing. The program will help to achieve the following goals identified in Section 2 of the *Strategic Plan*:

Table 6. Whole House Alignment with California Long Term Energy Efficiency *Strategic Plan*			
Residential and Low Income Goal 2: Existing Homes			
Goal Number	**Strategy**	**EUC Strategy**	**Integrated Programs & Activities**
2-1	Deploy full-scale Whole-House programs.	Monitor performance of selected lower energy homes. Design implement, monitor and continuously improve full-scale programs for whole-house energy efficiency and renewable energy retrofits.	Programs: EUC, Solar, Demand Response, MFEER, Plug Loads, ESAP Marketing: Customer segmentation and local coordination EM&V: Studies to provide early feedback and establish baselines
2-2	Promote effective decision-making to create widespread demand for energy efficiency measures.	Continue to offer Energy Advisor programs online, by mail, and over-the-phone to provide customers with information to promote effective decision-making, in combination with other segment specific marketing outreach and educational activities.	Programs: Energy Advisor EUC, MFEER Marketing: Customer and contractor education to promote building efficiency and appropriate EE behaviors in a segmented manner
2-3	Manage research into new/advanced cost-effective innovations to reduce energy use in existing homes.	Coordinate with Emerging Technologies and other programs to integrate market-ready technologies into the Whole House offering when appropriate. Promote commercialization of home energy management tools including AMI-based monitoring and display tools	Programs: Emerging Technologies, Demand Response, Solar, and others
2-4	Develop financial products and programs such as on-bill	Ensure that customers are aware of the most effective and attractive financing packages	Programs: EUC

	financing to encourage demand for energy efficiency building products, home systems, and appliances.	that are available to them.	Coordination: Local government partnerships and other state/federal financing entities
2-5	Increase Title 24 compliance through specific measures leading to aggressive statewide enforcement.	Partner with local governments to expedite the permitting process to decrease the barriers to entry in the home performance industry.	Coordination: Local government partnerships

b) Integration

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

The IOUs have identified IDSM as an important priority. The IOUs plan to monitor the progress of other IDSM efforts and to work closely to identify comprehensive integration approaches that feed into the overall statewide strategy and to implement best practices as rapidly as practical.
The statewide EUC is a platform for integration of solutions to the residential customer and is intended to provide an easy entry point for customers and contractors that ultimately integrate other programs for whole house and customer solutions. As awareness of the cost-effective opportunities in whole house retrofits grows through training and education efforts, customers will be presented with the ability to integrate Demand Response and properly-sized onsite generation.

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

opportunity to deliver the whole house message to parties interested in installing solar systems.

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

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

In addition, any contractors who work onsite with customers can provide delivery channels for DR programs' information or installation of DR technology.

EUC will also serve as a platform to integrate technology advancements in DR and Advanced Metering. IDSM efforts will be part of an ongoing conversation with customers to enhance program offerings and increase their participation in DSM efforts over time.

Table 16: Non-EE Sub-Program Information
[Table 16 Refer to Attachment A3.3~~2~~ to this PIP]

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

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

One of the major benefits of comprehensive home retrofits is improved indoor air quality. Residents will notice more consistent temperatures throughout their home and in many cases, improved indoor air quality.
The embodied energy in water distribution will become an increasingly important part of utility programs. The consumer education process in the house-as-a-system approach will provide an opportunity for local governments to present customers with information on non-energy savings inherent in comprehensive retrofits.

[This information can be found in Table 16 Non-EE Sub-Program Information. Refer to Attachment ~~2~~ A3.3 to this PIP]

c) **Leveraging of Resources**:

Local Governments

i. SDG&E

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

Over the course of the last few years, SDG&E has worked closely with each local government to ensure local programs are closely coordinated and achieve the highest level of collaboration and consistency across the region. Building off the lessons learned over the course of the last few years as well as the unique authorities afforded local governments, SDG&E and the local government program advisory group has developed the following list of key roles that local governments will play to advance Energy Upgrade California during the transition cycle.

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

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

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

4. Coordinate workforce education and training program activities;

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

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

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

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

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

EUC will coordinate IOU incentives and marketing outreach with local government efforts in neighborhood outreach and contractor recruitment. This effort allows for multiple levels of engagement that, through coordination with local entities, will reach to a neighborhood level that will drive awareness and market adoption.

ii. PG&E

During the development and implementation of the 2010-2012 Whole House Program PG&E partnered and coordinated closely with recipients of American Recovery Reinvestment Act (ARRA), State Energy Program (SEP), and Energy Efficiency & Conservation Block Grant (EECBG) statewide and within

the PG&E service territory. In the 2013-2014 Transition Period, PG&E plans to continue to work with and leverage these partners as described in further detail in the Local Government PIP.

iii. SoCalGas

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

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

iv. SCE

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

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

d) **Trials/ Pilots:**

Attachment A3.1
Southern California Gas Company

2013-2014 Energy Efficiency Programs
California Statewide Program for Residential Energy Efficiency
Program Implementation Plan (Redline)

1) SCE/ SoCalGas Moderate Income Direct Install-MIDI

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

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

SCE and SoCalGas propose:

- To implement a MIDI trial with a set goal of 2,000 units served per year
- Per the Commission's instruction to to double the number of projected participants for the MIDI program and associated budget increases, SoCalGas requires a budget of $2 million per year for a total of $4 million for the 2013-2014 cycle. Develop a scalable program design for larger rollout in future cycles.
- Evaluate delivery of MIDI Program utilizing existing ESA Program infrastructure.

1. Customer/Living Unit Eligibility

To participate, the following guidelines must be met:

a) participants must be income eligible (between 201% and 250% of FPG)

b) living unit must not have received ESAP services after January 1st, 2002

c) living unit must meet the current ESAP/MIDI minimum measure requirements

2. Measures

ESA Program approved measures excluding appliances

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

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

11) Market Transformation Information:

1) **Summary of the market transformation objectives of the program.**
The EUC Program is designed to fulfill the goals of the *Strategic Plan* by guiding and incenting home and building buyers, owners and renovators to implement a whole house approach in energy consumption undertaken in their purchase and use of existing and new homes and buildings, home and building equipment (e.g. HVAC systems), household appliances, lighting and "plug load" amenities. The target is all existing homes in an effort to realize the maximum energy efficiency potential via the delivery of a comprehensive package of cost-effective whole-house and whole-building energy efficiency retrofit measures. These programs will include building shell upgrades, high-efficiency HVAC systems – appropriately sized for the building structure, and emerging deep energy reductions in the lighting, appliance, plug-load and other residential oriented sectors. This initiative will be structured around a comprehensive audit, installation of the variety of retrofits required across the entire building structure, and access to attractive financing programs. The EUC effort will be achieved via the parallel and coordinated efforts of the utility programs, partners and other private market actors, and the State and local government policies and programs made available. As IOUs implement a system of automatic meters and wide-area network to enable data transport, the IOUs and customers will have the opportunity to integrate additional home automatic systems and integrated energy management features into the home (i.e., interim Intelligent Home Network, comprehensive Home Automatic Network and etc.) to support IDSM integration and deployment. The Plug Load and Appliance Program will have the potential to offer not only hardware based energy savings, but also comprehensive behavior savings opportunities.

2) Identification of the relevant market actors and the relationships among them.

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

- ~~*Basic Path,*~~*Enhanced Basic/Modified Flex Path*
- *Advanced Path*
- *Multifamily Path*

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

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

Market Characterization

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

Overarching program participant profile

- The program participation is primary through the *Advanced Path* and there is little engagement in the *Basic Path* service.
- *Advanced Path* jobs report energy savings of 30% average in this first program phase.
- The average cost per job ranges from $13,000 to $16,000
- The utility incentives covered typically 23% to 27% of the project costs.

- Despite the large supply of program contractors, only a limited pool of larger contractors complete the majority of the projects
- Many – 44% of participants – used financing to pay for their projects.

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

- There are widespread contractor performance gaps despite a certification requirement (i.e., BPI).
- The current contractors' participation training does not adequately prepare them for job processing expectations and the rigor of the QA/QC process,
- BPI certification does not guarantee a standardized job performance level
- Since the requirements for certification often vary (i.e., (1) on-line training versus in-person classes, (2) different region may place different emphasis, i.e., Vermont may focus more on heating, while California may focus more on HVAC).

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

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

Market Actors:

- Homeowners/renters & property owners/managers
- Contractors

- Real Estate Professionals
- Financial Institutions
- Property Appraisers
- Local governments

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

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

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

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

Key Barriers & Opportunity for Intervention:

The barriers for this program for the homeowner sector are the:

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

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

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

(1) Lack of knowledge regarding energy efficiency as well as the comprehensive programs that are offered by the IOUs,
(2) Challenge of the "split incentive" where it is the building owner/manager who must pay for all building improvements, including those inside of the individual rental units. But it is the tenants of the unit that pay the energy bills and therefore receive the immediate benefits of the energy efficient investment (by the landlord),
(3) Multifamily buildings are managed as businesses, where capital for major improvements must be borrowed. But the extended ROI for most energy efficiency projects is longer than the few years that most business allow for recouping their investments,
(4) To implement a "whole building" retrofit, the apartment owner/manager must typically bring in several specialty contractors for multiple visits, which in tenant occupied units is a very challenging task,
(5) Tenants having to out of the rental units during retrofit work, as well as the management time required on behalf of the building owner/manager – is a costly investment of resources,

(6) Major retrofit often can only happen when the rental unit(s) is unoccupied – which is a significant loss of income for the owner/manager,
(7) Managed as a business – multifamily building owners/managers are not inclined to replace any major building component or energy system prior to its actual wear-out/break-down. Building retrofits usually take place toward the "end-of-life" of key components (HVAC – for example) – but not when they break-down. Building owners/managers cannot afford the impact on tenants of having key systems not functioning for any length of time.

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

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

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

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

3) Expanded customer uptake through EUC incentives. (Barrier 1, 2, 5)
Intended Results: Use incentives to reduce the barrier of entry into the comprehensive retrofit projects

4) Offering of Financing programs (by IOUs and/or other entities) (Barrier 1,2, 9)
Intended Results: Provide building owners the upfront cash they need to borrow to invest in a retrofit project, and amenable loan terms by which to repay that loan (note: this program component will be particularly important in the multifamily sector).

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

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

Attachment A3.1
Southern California Gas Company

2013-2014 Energy Efficiency Programs
California Statewide Program for Residential Energy Efficiency
Program Implementation Plan (Redline)

The IOU's considered the following when determining the Program's low, medium and high scenarios for program year 2013-2014:

SoCalGas					
Scenarios	**2013**		**2014**		**Assumptions**
	SF Homes	**Budget**	**SF Homes**	**Budget**	
Low	**508**		**508**		· *ARRA sunset more challenging than expected* · *Competition from Local Government programs* · *Further challenges with the economy*
Medium	725		725		· *Expected program performance*
High	**870**		**870**		· *Efficiencies and improvement in program model* · *New financial options coming online* · *Increase local government involvement & support*
Note: These scenarios include SoCalGas only and shared IOU territories.					

In D.12-11-015 the CPUC directed that "The IOUs should meet or exceed all of the targets in the high-participation scenarios filed in their EUC program implementation plans." The 2013-2014 high scenario EUC participation goal for SoCalGas is 1,740 single family units for gas-only projects (i.e., for the non-SCE or PG&E overlap territories). SoCalGas notes that any changes in the REN territory for offering EUC Enhanced Basic/Modified Flex Path during the 2013 – 2014 program cycle may impact the high scenario participation target.

Utility	Scenario: High
SoCalGas (2013-2014)	1,740

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

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

5) A coherent program or "market" logic model

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

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

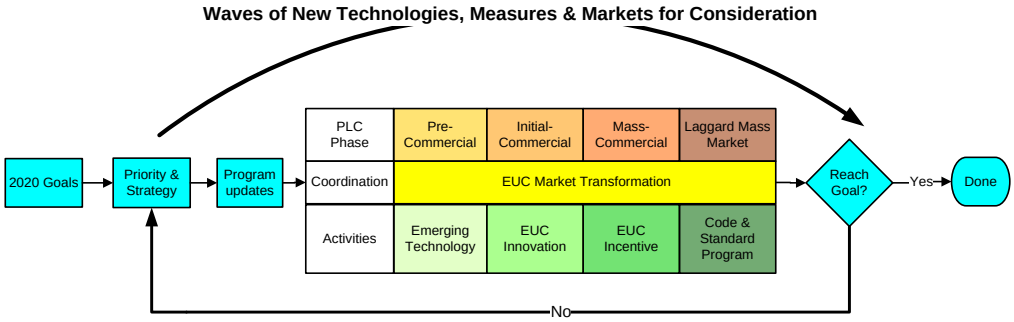
To reduce market barriers, the program's activities are designed to "get the word" out about the benefits of comprehensive retrofits through both mass marketing (D) as well as ground-up individual outreach for neighborhoods and communities (C), by working with local governments and entities. To help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

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

The expected outcome of this program includes increased and improved awareness, knowledge and attitude (AKA) of homeowners and apartment owners towards understanding the benefits of deep energy retrofits (P). After realizing these benefits from program participation, the participant further enjoys other non-energy benefits

such as improved comfort of the house and increased value of their properties. The increased value in the property will become more pronounced as the state finalizes its home rating system, so the home purchasers will be aware of the inherent value of properties complete with deep energy reduction retrofits (U). All of these benefits will help the program participants to continue property improvements outside of the program and outside of the program offerings, leading to spillover effects (T). These participant and non-participant spillover effects will eventually change the overall composition of the housing stock at the market level, making housing and building code ratcheting possible for society (X & Y). These codes and standards changes will lead to further reduction of energy consumption at the market level leading to fulfilling the objectives of the California Long-Term energy and environmental policies (AA).

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



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

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

2013-2014 Energy Efficiency Programs
California Statewide Program for Residential Energy Efficiency
Program Implementation Plan (Redline)

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:

The IOUs have evaluated 2010-2012 PPMs in Resolution E-4385 for applicability to the 2013-2014 program cycle and propose to work collaboratively with Energy Division to develop revised program targets and PPMs as appropriate for the 2013-2014 program cycle. The IOUs' will propose revisions in an advice letter, per additional guidance from Energy Division.

Table 3.1: Short-Term PPMs

On December 2, 2010, the Commission issued Resolution E-4385, approving Program Performance Metrics (PPMs) for Pacific Gas and Electric Company, Southern California Edison Company, Southern California Gas Company and San Diego Gas and Electric Company for 2010-2012 statewide energy efficiency

programs and subprograms. The Commission gave each PPM a metric type which indicated the reporting frequency: Metric type 2a indicates that the IOUs should report on the metric on an annual basis (unless indicated otherwise). Metric type 2b indicates the IOUs should report on the metric at the end of the program cycle.

Table 3.2 -Long Term PPMs

SoCalGas includes long term PPMs[10] per Energy Division guidance received in December 2012. As stated in the Joint Utilities' comments to the Commission in R. 09-11-014 dated November 21, 2011, and discussed between IOUs and ED on January 9, 2013, IOUs plan to finalize long term PPMs in further discussions with involved stakeholders and propose updates to Energy Division at a later date.

This information can be found in Tables 3.1 and 3.2- in Attachment ~~2~~ A3.3 to this PIP.

Market Transformation Indicators:
DeepRetrofit-2 The number of households that elect to perform comprehensive energy upgrades.

Market transformation indicator results shall be reported, as available, by Energy Division or the IOUs, depending upon who conducts the necessary market studies. (Res. 4385, 12/2/10)

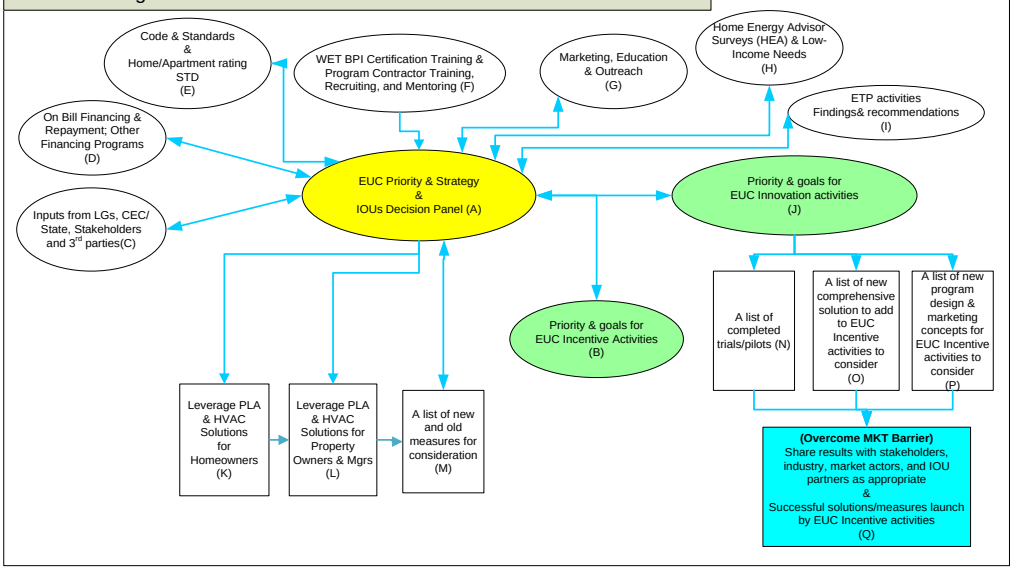
Resolution E-4385 identifies a preliminary list of objectives and market transformation indicators (MTIs) for statewide energy efficiency programs and subprograms. These MTIs will be presented at a public workshop to allow for public comments and discussion before being finalized. The Resolution further 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. Per guidance from Energy Division received in December 2012, the approved Market Transformation Indicators for 2013-2014 are filed as a Joint IOU matrix, included as Appendix F.

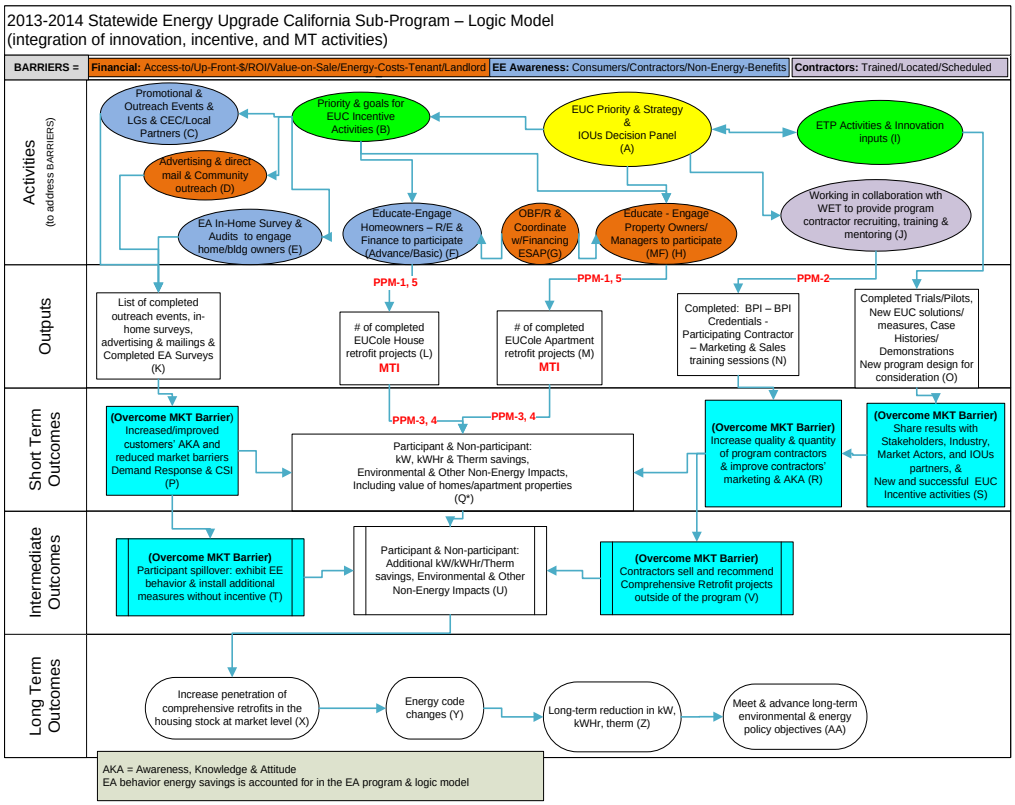
Attribution. Outside of California, most guidelines for evaluating market transformation acknowledge that it is very difficult to attribute market effects to any single program, and nearly impossible to partition out the respective contributions of several coordinated programs on market effects and market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

Attachment A3.1
Southern California Gas Company

2013-2014 Energy Efficiency Programs
California Statewide Program for Residential Energy Efficiency
Program Implementation Plan (Redline)

2013-2014 Energy Upgrade California Sub-Program Key Support Activities – Process Diagram





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

IOU Streamlined Emergency Replacement Protocol and Streamlined High Performing Contractor Protocol

1. SDG&E

a. Streamlined Emergency Replacement Protocol

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

7.0 Emergency Replacement of Major Systems

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

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

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

b. Streamlined High Performing Contractor Protocol

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

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

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

2. PG&E

a. Streamlined Emergency Replacement Protocol

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

The general policy for all equipment replacements performed within the PG&E program is that participating contractors and their subcontractors should wait for a Notice to Proceed to be issued before commencing work on a job for the program. However, in order to proceed with emergency replacements or expedited upgrades due to customer specific needs, contractors may proceed within the guidelines of this Fast Track Process. In order to be eligible for this Process, participating contractors must be active and in good standing under the PG&E program.

Upgrades may be started before the Notice to Proceed is issued if the participating contractor is confident that the job qualifies for the Program. Prior to adjusting or installing measures, the contractor must perform a comprehensive test-in, including combustion safety testing, to document the pre-existing conditions. The contractors should take pictures to document uncommon or unique situations.

Participating contractors that choose to perform work without the Notice to Proceed accept full liability that the rebate funds have not been reserved and that their customers may not be eligible.

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

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

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

Eligibility

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

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

Notification/Authorization Requirements

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

Step 1: Submit for Pre-Replacement Approval

1. The contractor is required to submit a Record of Emergency Equipment Replacement Form.
2. The contractor is required to complete Sections 1 – 4 of the Record of Emergency Equipment Replacement Form, sign and date the customer/contractor signature section, provide detailed photographic evidence of the existing equipement installed in the residence (clearly showing the area around the existing unit) to include

nameplate information (make, model, serial number, etc) and then provide a scanned copy in .PDF format to EUCA_Processing@icfi.com.

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

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

Step 3: Complete Emergency Replacement and Submit Final Paperwork

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

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

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

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

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

information collected regarding the existing space heating equipment shall include the following:

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

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

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

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

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

- Contractor's business name, address and phone number
- Date of installation
- Reason for replacement (operational failure; health and safety; Other, please explain)

- Manufacturer's name and model number of cooling equipment
- Type of system (central air, heat pump)
- Rated efficiency (SEER, HSPF),unit size, and cooling output from the nameplate

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

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

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

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

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

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

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

4. SoCalGas

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

Eligibility

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

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

Notification/Authorization Requirements

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

Step 1: Complete Emergency Replacement and Submit Paperwork
Upon completion of the installation of the new equipment the contractor shall complete the Record of Emergency Equipment Replacement Form (this form is available at **socalenergyupgradecontractors.com** under the View Resources tab), sign and date the customer/contractor signature section, and then provide ascanned copy in PDF format uploaded into the Vision DSM System within ten (10) business days of the new equipment installation.

Step 2: Receive Emergency Equipment Approval
Should documentation above be provided within the ten (10) calendar days of new equipment installation, Emergency Equipment Approval notification will be sent to the contractor and customer.

Step 3: Submit Pre-Retrofit Project Information
In the case of emergency replacement of major mechanical systems (space heating equipment or domestichot water equipment) as a result of actual or imminent system failure, the Contractor shall utilize this process to notify the program and submit pre-retrofit project information which must take place within 60 calendar days.

~~**Step 1: Submit for Pre-Replacement Approval**~~

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

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

~~**Step 3: Complete Emergency Replacement and Submit Final Paperwork**~~

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

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

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

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

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

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

The existing space heating equipment must be replaced with equipment meeting the Advanced Package Minimum Specifications. New gas-fired furnaces must have an

Annual Fuel Utilization Efficiency (AFUE) of 92% or greater to qualify under the Emergency Replacement Policy for HVAC Equipment.

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

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

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

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

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

The contractor shall provide a copy of the invoice for the new domestic hot water equipment and the Record of Emergency Equipment Replacement Form ~~to their~~

~~dedicated account manager~~ within ~~5~~ ten (10) business days of ~~written authorization to proceed with~~ the new equipment installation. At a minimum, the invoice for the new domestic hot water equipment shall include the following:

- Manufacturer's name and model number of domestic hot water equipment
- Type of system (gas, electric)
- Rated efficiency (energy factor)
- Unit size (gallons)
- Input from the nameplate (Btu's)

Mandatory Requirements for Emergency Equipment Replacement Approval
The contractor may immediately install the individual measures if the following conditions are met:~~Once administrative approval and written authorization to proceed is granted, the contractor may immediately install the individual measures if the following conditions are met:~~

1. Provide photographic evidence of the existing system installed in the residence clearly showing the area around the existing unit and detailed pictures of the existing equipment to include nameplate information (make, model, serial number, etc.).
2. The contractor shall provide a copy of the Invoice for the new space heating and/or cooling equipment and the completed Record of Emergency Equipment Replacement Form to their dedicated account manager within ~~5~~ ten (10) business days of the installation of the new equipment (if applicable).
3. The contractor shall provide a copy of the Invoice for the new domestic hot water equipment and the Record of Emergency Equipment Replacement Form to their dedicated account manager within ~~5~~ ten(10) business days of the installation of the new equipment (if applicable).
4. The contractor has a total of sixty (60) calendar days from the Emergency Equipment Replacement approval date to submit the pre-retrofit project information into the Vision DSM.

In the event the customer/contractor fail to meet the timelines indicated the project runs the risk of not being able to include the energy savings from the installation of the new equipment in the energy simulation (Energy Pro) model.

b. Streamlined High Performing Contractor Protocol
SoCalGas follows the Home Performance with ENERGY STAR® guidelines for QA/QC protocols. Since the implementation of the SoCalGas EUC Program, SoCalGas has established an adjustable onsite inspection rate for contractors based on job experience and performance.

SoCalGas conducts onsite inspections, at set inspection rates, of the work of all participating contractors. This inspection rate is reduced as the contractor gains experience in the program and as onsite inspections show the contractor is performing at a satisfactory level per program requirements. See chart below

a. Tier 1 Contractor- 60% onsite inspection of first five project
b. Tier 2 Contractor- 27% onsite inspection of next 15 projects
c. Tier 3 Contractor- 5% onsite inspection after 20th project

Below are some of the improvements that have been made to streamline the process for contractors:

- Provide QA/QC inspection handbook to participating contractor to inform contractors of the inspection process resulting in cleaner submittals.
- Implement Emergency Equipment Replacement policy
- Provide EnergyPro handbook to participating contractors to provide them with information on how to model projects in EnergyPro.
- Implement the ability for customers to switch from one participating contractor to another participating contractor during the project phase.
- Allowing contractors to use default values for blower door and duct test.
- Provide participating contractors with the ability to have witness quality control for test out.

Attachment A3.1
Southern California Gas Company

2013-2014 Energy Efficiency Programs
California Statewide Program for Residential Energy Efficiency
Program Implementation Plan (Redline)

~~**ATTACHMENT 1**~~

Program Non-Energy Objectives

Table 3 provides targets per approved PPM's for single family homes. Additional PPM's for multifamily may be developed as program develops.

Table 3. Quantitative Program Targets (PPMs)
[Table 3 Refer to Attachment ~~2~~ A3.3 to this PIP]

Attachment A3.1
Southern California Gas Company

2013-2014 Energy Efficiency Programs
California Statewide Program for Residential Energy Efficiency
Program Implementation Plan (Redline)

~~**ATTACHMENT A1:**~~

13) SCE/SCG Multifamily Energy Upgrade California Pilot

1. Projected Program Budget Table

Table 1 –

IOU	Total Administrative Cost	Total Marketing and Outreach	Total Direct Implementation Non-Incentive	Total Incentives	Total Program Budget by IOU*
SCE	$200,000	$100,000	$238,000	$1,462,000	$2,000,000
SCG	$100,000	$50,000	$112,000	$738,000	$1,000,000
Total	$300,000	$150,000	$350,000	$2,200,000	$3,000,000

*Does not include funding being leveraged into the treated buildings for services provided through other core EE programs and the ESA program.

2. Projected Program Gross Impacts Table – by calendar year

Table 2 –

	# of MF properties	# of MF units	kWh Savings	kW Savings	Therm Savings
SCE/SCG	20	1,700	1,416,100	1,360	116,025

3. Program Objectives

In accordance with the Strategic Plan, the MF EUC Program Pilot will coordinate with the Energy Savings Assistance Program (ESAP) and core EE Programs, such as MFEER. This integrated approach combines market-rate and income-qualified energy efficiency measures.

This integration effort provides the opportunity to educate building owners on the benefits of energy efficiency and conservation efforts spanning the range of needs for the multifamily market.

MF EUC Pilot will field test a single-point-of-contact approach to guide property owners through the various programs in retrofitting their multifamily property. This approach will provide support in understanding the various program rules and assistance in determining eligibility. The customer will be guided through a "clipboard audit" to establish feasibility and estimate project cost for MF EUC, with an eye toward leveraging all eligible programs.

The primary purpose of this pilot program is to test performance based approaches to the multifamily property owner market. Other considerations to meet all income strata and address split incentives for property owners and tenants may include a direct install strategy, as well as prescriptive rebates through the existing MFEER Program.

While programs will be coordinated and integrated, their respective policies and procedures will be followed in the delivery of services. For example, the ESA program measures will be installed at no cost to income-qualified customers within the ESA program guidelines established at 200% or below Federal Poverty Guidelines (FPG), while MF EUC and MFEER will address incomes above 200%. Operational efficiencies will be employed to streamline eligibility, income verification, and installation of measures.

Program Pilot objectives:

1. Achieve deep energy savings reduction for all participating properties, targeting 20% or greater savings,
2. Implement comprehensive measures that go beyond lighting,
3. Help participants better understand energy efficiency and its many opportunities, and maintain program savings by leveraging the Integrated Energy Audit Tool (scheduled for launch in early 2012).

SCE/SCG intends to offer the Investment Grade Assessment at no cost to participants during the Pilot. SCE/SCG will utilize a professional energy consulting/auditing firm that has experience working with multifamily properties. It is expected that the selected firm will have consultants with qualifications such as Engineering degrees, Building Performance Institute (BPI) certifications, Home Energy Rating System (HERS) certifications, Leadership in Energy and Environmental Design (LEED) Accredited Professionals, and GreenPoint Rated Professionals.

4. Program Strategy

The program strategy is to offer attractive incentives to multifamily property owners/managers to overcome a wide array of regulatory, market, and financial barriers which may otherwise prevent the rehabilitation of existing multifamily properties. These incentives will partially offset the cost to achieve energy use reductions.

Energy savings for each project will be calculated using industry accepted energy assessment protocols. Additionally, energy savings will be verified by a certified energy rater or qualified professional before payments of incentives are issued to a property owner.

The MF EUC Pilot will offer incentives to property owners and managers with scheduled project rehabilitations who are willing to invest in a performance-based, whole-building approach. The incentives are designed to influence the implementation of comprehensive measures as part of the scope of previously planned rehabilitations.

5. Program Implementation

The program will provide financial incentives to owners/managers of multifamily buildings who undertake a comprehensive approach to energy efficiency retrofits and are able to achieve a minimum energy savings target. The program will establish standards and verification procedures to provide quality assurance, and validate energy savings.

The program aims to leverage the long-established relationships between property managers and their preferred subcontractors. This approach provides property owners with the flexibility to select the trade allies of their choice.

There are several economic, financial or regulatory events that prompt a property owner to upgrade a facility. However, there are a few discrete points in a building's lifecycle when it is typically more convenient for energy efficiency improvements. To leverage these critical and infrequent opportunities, whole-building, performance-based incentives must be large enough to motivate owners to incorporate energy efficiency improvements.

6. Incentives

Incentives will partially offset costs to retrofit measures needed to achieve targeted energy-use reductions. Incentives will be offered on a tiered structure, paid on a "per dwelling unit" basis according to the total building energy savings percentage. The tiered approach will reward participants for realizing deeper savings. While a "per unit" approach enables participants to experience economies of scale with larger multifamily buildings.

SCE/SCG

Energy Savings Achieved	Incentive per Dwelling Unit
10%	$ 700
15%	$ 800
20%	$ 1,000
25%	$ 1,200
30%	$ 1,400
> 35%	$ 1,600

7. Project Pre-Qualification

Property owners will be required to provide basic information to determine the scope of the project, existing conditions, and available funds. The information provided on the pre-qualification form will help to determine if the project can reach the preset minimum energy savings achieved percentage.

The pre-qualification process will be supported by the Integrated Energy Audit Tool when it becomes available.

Basic Energy Assessment (Basic Site Assessment)

The Basic Energy Assessment will provide an opportunity to meet with property owners to conduct a high level energy assessment, validate the data provided, and assess the potential for property savings. The Basic Energy Assessment will help gauge customer commitment and determine if the projects have the potential to achieve minimum energy savings expectations. If the projects do not meet these savings targets, they will be referred to other applicable EE Programs.

Advanced Energy Assessment and Modeling (Test in, Investment Grade Assessment)

Investment Grade Assessments will be required to establish a baseline of the existing energy consumption for each property. The assessment will be conducted by an energy auditing professional using approved multifamily audit tools and procedures.

The audit tools evaluate potential measures based on least-cost, maximum benefit customized to each property's needs. The tool provides property owners with information to help them select a mix of measures that will achieve their energy savings goals.

Once a property owner has selected the desired savings target, the owner's own contractors implement the energy saving measures of the owner's choice.

The MF Pilot was designed to pilot a variety of approaches to modeling savings. At this late date, however, the program will solicit consulting engineering services with expertise using eQuest, or other proprietary system-based engineering approaches, such as those used in Retro-Commissioning. Given the short time frame and limited budget, a comparative analysis of TREAT, EnergyPro, and other tools will have to wait for a post-occupancy EM&V study.

Perform Post Project Verification and Quality Assurance (Test Out, Savings Verification)

At completion, the owner submits the required documentation for verification by an independent energy auditor. The energy auditor will verify the installation of measures, compliance with product specifications, and determine the savings target achievement. The auditor will use multifamily audit and modeling tools to determine savings.

The energy auditor will then submit a project report for IOU review and application processing.

8. Customer Description

The program will target multifamily owners and managers of properties located in SCG and SCE service Territory.

- Multifamily properties must contain a minimum of three dwelling units.
- Properties must be designated as multifamily residential by the Title 24 Building Energy Efficiency Standards, Part 6, which is defined as three or more attached dwelling units in a building.

- Properties cannot exceed four stories.
- Both affordable and market-rate properties qualify.

Non-Qualifying Properties

- Single-family homes - A single-family residential building is defined by the California Building Code as a single detached unit. Single-family homes may qualify for incentives through the EUC Single Family Program.
- Single-room occupancy (SRO) facilities, such as dormitories and assisted living facilities do not qualify.
- Non-residential buildings
- Hotels and Motels

9. SCE/SCG's Cost Effectiveness (E3 Calculator):

Figure 1. E3 Calculator showing cost-effectiveness for Multifamily Energy Upgrade California.

[Refer to Appendix A]

10. Energy Savings and Demand Reduction Level Data:

Program Impacts (Gross)					
	Annual Gross kWh	Lifecycle Gross kWh	Annual Gross Therms	Lifecycle Gross Therms	User Entered kW
2010-2012	1,666,000	29,988,000	136,500	2,457,000	1,600

11. Program M&E Plan for SCE and SCG

Energy Upgrade California: Multifamily Energy Upgrade California Pilot is proposed for implementation in two stages:

- Stage-1: Initial pilot phase to test program logistics and implementation requirements with a few raters and a few contractors.
- Stage-2: Scale the program for full deployment in 2012 and beyond.

11.1. The M&E plan for Stage-1 will focus on Rapid Feedback Analyses. Here are a few of the items to be considered:

- Is the program implemented as designed? If yes, are the results of the program activities acceptable from an end-to-end perspective?
- Can this program be evaluated given the program output and tracking data? If not, how can output and data be improved?
- Is the program design and implementation effective?
  - Is the program qualification acceptable?
  - Is the program processing acceptable?
  - Is the program QA/QC process acceptable?
  - What are the key issues and concerns for participating property owners/managers, renters, contractors and program contractors and HERS Raters? How can the program be improved?
  - Is the overall program cycle time acceptable?
  - Is the program energy savings accurate? If not, how can it be improved?
  - Is the program interaction with other programs, local government entities and stakeholders acceptable? If not, what is missing and how can it be improved?
- Is this program meeting its stated objectives given the output and outcomes of this early implementation?
- Verification of the program implementation barriers and identify ways to overcome the observed barriers.

11.2. The M&E plan for stage-2 will focus on the following items:

- Establish baseline condition for SCE multifamily energy usage profile as of 2008 and 2011 prior to program intervention.
- Has the program acted upon the rapid feedback? If yes, what are the changes?
- Is the program generating deep energy savings as expected?
- Is the program consistent with its program theory, logic model and attribution claims?

Repeat the evaluation items identified above, in the context of a scaled program.

SCE and SCG will work closely with ED's M&E team to develop an approved M&E study plan. Currently, we have identified the need for this study in the 2010-2012 M&E study plan.

14) Enhanced Basic/Modified Flex Path Option for SDG&E, SCE, SoCalREN and SoCalGas

~~As of July 2012, the Basic Path has represented only 4% of the statewide EUC volume among the four Investor Owned Utilities (IOUs). The Basic Path had been targeted to make up the volume of the program, however, after two years of implementing it has fallen well below expectations.~~

In the 2010-2012 program cycle, the Energy Upgrade California (EUC) Basic Path represented only 4% of the statewide volume among the four Investor Owned Utilities (IOUs): Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), San Diego Gas and Electric Company (SDG&E), and Southern California Gas Company (SoCalGas). The Basic Path had been targeted to make up the volume of the program; however, due to low program uptake during the 2010-2012 program cycle, there was a clear need for program redesign.

Formatted: Font: 12 pt

Customers will be required to install at least 1 of 3 base measures, supplemented to attain the 3-measure and point thresholds built into the programs, with additional motivation for installing additional base measures. This simple, menu-driven, flexible design is expected to greatly increase the volume of projects over the original Basic Path. Contractors will be trained and encouraged to develop work scopes that include more building envelope measures and go beyond core systems. The 2013-2014 Energy Efficiency Transition Period gives the IOUs and RENs the opportunity to test a program design targeted at achieving a higher volume of retrofits, meeting the Commission's program criteria, and demonstrably supporting the loading order.

~~Under the Basic Path, homeowners are required to install all 5 energy efficient measures (i.e. 1. attic insulation, 2. duct sealing, 3. air sealing, 4. insulation of domestic hot water pipes, and 5. thermostatic activated flow restriction valve with or without a showerhead) in order to qualify for the $1,000 incentive. The Basic Path does not allow for homeowner customization and has not provided the lower-cost on-ramp to Advanced Path. The Basic doesn't facilitate up-sell opportunities for major equipment (i.e. domestic hot water and HVAC). Overall, the Basic Path is a poor match to the diverse housing stock in California.~~

~~SDG&E, SCE and SoCalGas will continue to offer an enhancement to the Basic Path option from the 2010-2012 program cycle. Final program design will be coordinated between IOU's and RENs and will be submitted via Advice Letter not later than April 1, 2013. It will be referred to as the Enhanced Basic Path (EBP).~~

~~The Enhanced Basic Path will enable the program to move to scale, and to do so at greatly reduced administrative cost. It produced consistent incentive results. It will facilitate competitive bidding among contractors. The higher volume of projects and increased contractor competition, is also likely to lower incremental project costs.~~

~~The Enhanced Basic Path has a mix of energy efficiency measures to allow a contractor to tailor each project to the needs of the customer. It will also include combustion safety testing to ensure~~

~~that each home with a tightened building shell remains properly vented. The list below provides a list of measures to be included in the Enhanced Basic Path:~~

Combustion Appliance Safety/Zone Testing (CAS/CAZ):

The Enhanced Basic/Modified Flex Path will require the same CAS/CAZ as is currently required for the 2010 - 2012 Basic and Advanced Path safety protocols, and as directed by the March 18, 2013 Guidance Letter, consistent with the Building Performance Institute (BPI) standards. The program requires that all contractors perform Combustion Appliance Safety (CAS) testing both prior to work commencing and at work completion. This is done to identify any combustion safety issues prior to the job scope and bid being finalized.

Formatted: Font: 12 pt

CAS Testing Providers

The current CAS protocols, as implemented by the IOUs in the 2010-2012 programs, require the tests to be performed by a BPI Building Analyst (BPI BA). Other certifications, including the North American Technician Excellence (NATE) certification and the Home Energy Rating System (HERS) as implemented by Residential Energy Services Network (RESNET) have been proposed as supplemental, commensurate providers for CAS training and certification.

The IOUs and RENs are committed to creating a process to open the market to additional qualified providers. Evaluating more CAS protocols that may increase the number and types of providers is consistent with a desire to transform the market for deep energy reductions, and may reduce any appearance of unfairly privileging one provider over others. Doing so may also positively influence the number of jobs and providers able to perform the work in California.

To this end, the IOUs and RENs will work together in a stakeholder process to establish provider-neutral criteria for allowable CAS protocol providers. The IOUs and RENs commit to a speedy, effective process for evaluating other providers' CAS protocols, training, and certification programs, to determine if they meet those standards. Until that process is completed, the EUC Enhanced Basic/Modified Flex Path will continue to utilize the existing policy of using BPI BA and BPI protocols for both test-in and test-out CAS/CAZ testing.

Diagnostic Testing

When appropriate, diagnostic testing will be required to ensure the installation of measures meet the program specifications. For instance, a duct blaster test will be required when duct sealing and a blower door test will be required for air sealing.

Program Eligibility Requirements

Customer Requirements:

- Owns or rents a single –family detached home
- Receives gas or electric service from an IOU
- Home meets pre-upgrade standards, which vary by measure
- Uses a participating contractor(s) to perform the upgrade
- Ensures applicable permits are obtained and abides by all local, state and federal requirements (HVAC permit numbers will be required)

Participating Contractor/ Participating Raters:

Participating contractors or participating raters shall be the primary point of contact for customers and are responsible for submission of all required program documentation. Participating raters can assess a home, generate a scope of work, and in some instances, perform combustion appliance safety testing. Participating contractors install all measures in accordance with EUC QA/QC and Measures Installation Standards as stipulated in applicable program standards, and in accordance with applicable contractor participation agreements.

Participating Contractor Requirement

Only EUC participating contractors may install the measures in the Enhanced Basic/Modified Flex Path. Participating contractors must be certified and licensed according to all applicable federal, state and local laws. Participating contractors shall meet, and provide sufficient evidence and supporting documentation for the following minimum requirements:

- Contractor State Licensing Board (CSLB) license in the appropriate specialty;
- Bonding and in good standing;
- Insurance to EUC Program minimum standards;
- Execution of a contractor participation agreement;
- Completion of all utility training course requirements as applicable, including Participation Workshop, and if not BPI-certified, must attend equivalent training per program requirements;
- Ensure a BPI-certified Building Analyst (BA) conducts Combustion Safety and Carbon Monoxide Protection and all other minimum Health and Safety Requirements specified in the BPI Technical Standards for Building Analyst Professional until other CAS test certifications are approved. This work may be subcontracted to a third party;
- Ensure HVAC and all other permits will be pulled on all work that is appropriate per local, state, and federal jurisdiction requirements; and
- Additional IOU requirements, as appropriate.

Attachment A3.1
Southern California Gas Company

2013-2014 Energy Efficiency Programs
California Statewide Program for Residential Energy Efficiency
Program Implementation Plan (Redline)

Measures

Formatted: Font: 12 pt

Measures may vary somewhat regionally and across IOU and REN service territories, but the following measures demonstrate strong consistency across all programs, to the extent that differences in existing workpapers currently under review by CPUC allow:

Base Measures:

Required Base Measure	Measure	Post-Upgrade Condition	Measure	Post-Upgrade Condition
	REN: Base Measures		***IOU: Base Measures***	
1A	Attic Insulation & Attic Air Sealing	≥ R-44; Sealed Attic Top Plate	Attic Insulation & Attic Air Sealing	Insulation to R-30 or greater (R-38 in climate zones 1 and 11-16); Sealed attic plane
1B	Duct Insulation & Sealing OR Duct Replacement	Leakage ≤ 6 %; Insulation ≥ R-8	Duct Sealing OR Duct Replacement	Seal to ≤ 10% for existing systems and ≤ 6% for duct replacement
1C	Whole House Air Sealing	ASHRAE 62.2 ≤ ACHn ≤ 130% ASHRAE 62.2	Whole Building Air Sealing	≥ 30% or ≥ 15% leakage reduction from vintage table defaults

Flex Measures:

Required Base Measure	Measure	Post-Upgrade Condition	Measure	Post-Upgrade Condition

REN: Flex Measures – Envelope		
1C	Floor Insulation	≥ R-19
1C	Wall Insulation	≥ R-13
1C	High Performance Windows	EnergyStar or equivalent; U-factor ≤ 0.40; SHGC ≤ 0.25
1A	Attic Radiant Barrier	Continuous Rolled or Prelaminated Radiant Barrier

IOU: Flex Measures – Envelope	
Floor Insulation	≥ R-19
Wall Insulation	≥ R-13
High Performance Windows	TBD, Phase 2
Attic Radiant Barrier	N/A

Required Base Measure	Measure	Post-Upgrade Condition
REN: Flex Measures – DHW		
N/A	Gas Water Heater	Gas Storage Heater; ≥ 0.67 EF
		Gas On-Demand Tankless Heater; ≥ 0.88 EF
N/A	Electric Water Heater	Electric Storage Water Heater; ≥ 0.93 EF
		Electric Heat Pump Water Heater; ≥ 2.0 EF

Measure	Post-Upgrade Condition
IOU: Flex Measures – DHW	
Gas Water Heater	Gas Storage Heater EF ≥ 0.62; 0.67 for PG&E and SDG&E
	Gas On-Demand Tankless Heater; EF ≥ 0.82
Electric Water Heater	Electric Storage Water Heater; EF ≥ 0.93
	Electric Heat Pump Water Heater; ≥ 2.0 EF PG&E and SCE, not SDG&E

Attachment A3.1
Southern California Gas Company

2013-2014 Energy Efficiency Programs
California Statewide Program for Residential Energy Efficiency
Program Implementation Plan (Redline)

Required Base Measure	Measure	Post-Upgrade Condition	Measure	Post-Upgrade Condition
REN: Flex Measures – HVAC*			***IOU: Flex Measures – HVAC****	
1B	Gas Furnace	Gas Furnace; ≥ 0.95 AFUE	Gas Furnace	Gas Furnace; ≥ 0.92 AFUE; 0.95 for PG&E in future
1B	High Efficiency AC	Central AC; ≥ 15 SEER; ≥ 11 EER	High Efficiency AC	Central AC; ≥ 14 SEER; ≥ 12 EER
N/A	Right-Size HVAC Kicker	AC Unit	Right-Size HVAC Kicker	N/A until QI work paper approval
		Heat Pump		N/A until QI work paper approval
1B	Buried Ducts Kicker	Fully Buried Ducts	Duct Insulation**	Insulation ≥ R-8

* If selecting to install any HVAC measures, customer must select duct replacement/duct sealing plus one qualifying envelope measure

** The IOUs will not offer a buried ducts kicker.

Additional Stand-Alone Measures:

Required Base Measure	Measure	Post-Upgrade Condition	Measure	Post-Upgrade Condition
REN: Additional Flex Measures			***IOU: Stand Alone Measures****	

N/A	**Variable Speed Pool Pump**	Title 20 Compliant Variable Speed Pump & Controller (Existing condition can be single or dual speed)
N/A	**EnergyStar Lighting**	N/A (Upstream Incentive Program)

Variable Speed Pool Pump	Variable-Speed Pool Pump and Motor (Plug Load and Appliances Program (PLA)
EnergyStar Lighting	N/A (Upstream Incentive Program)
Refrigerators	PLA catalog
Dishwashers	PLA catalog; not offered by PG&E
Clotheswashers	PLA catalog
Whole House Fan	PLA catalog; not offered by PG&E
Refrigerator/ Freezer Recycling	Appliance Recycling Program

*Note: For the IOU Additional Stand-Alone Measures, the list provided is an example set of measures that can be added-on to the whole house retrofit package. The fully inclusive list, provided uniquely by each IOU, is drawn from the Deemed offerings to residential customers.

~~**Base Measure Upgrades Requirements**~~

~~Whole House Air Sealing 30% reduction from vintage table~~
~~Attic Insulation with Attic Plane Air Sealing Insulate to R-30 or greater~~
~~Duct Sealing/ Replacement 10% sealing/ 6% Replacement~~

~~**Building Shell Upgrades Requirements**~~

~~Wall Insulation Insulate to R-13 or greater~~

~~Floor Insulation — Insulate to R-19 or greater~~
~~Duct Insulation — Insulate to R-8 or greater~~

~~**HVAC Upgrades — Requirements**~~

~~Furnace — 92% AFUE or greater~~
~~Air Conditioner — 14 SEER, 12 EER or greater~~

~~**Water Heating — Requirements**~~

~~Natural Gas Water Heater — Energy Factor of 0.67 or greater~~
~~Electric Water Heater — Energy Factor of 0.93 or greater, 30 gl or greater~~
~~Showerhead with Thermostatic Control Valve — Low Flow showerhead 1.5 gpm with TCV~~
~~Thermostatic Control Valve — TCV installed on Low Flow showerhead of 1.5 gpm~~ or lower

Incentives:

The Enhanced Basic/Modified Flex Path incentives will be tiered, driven by the customer's desired SOW. Incentives will begin at $1,000 for 100 points which will be equivalent to 10% site energy savings. The incentive tier increase at each 50 point incremental improvement, to encourage deeper energy retrofits. Each 50 point increment will equate to an additional $500 incentive. The incentives align with Advanced Path incentives for similar saving percentages, but the Enhanced Basic/Modified Flex Path will max out at 250 points (a $2,500 incentive).

To encourage customers to more fully adhere to the loading order, customers are eligible for additional bonus points for installing additional base measures. When installing 1 or 2 additional base measures beyond the required one measure, customers will receive bonus points for each additional base measure installed.

Participation Level: Points	Incentive Amount
100 Points	$1,000
150 Points	$1,500

200 Points	**$2,000**
250 Points	**$2,500**

QA/QC Requirements:

QA/QC will be performed by the IOUs or the RENs per program QA/QC process and protocols. To ensure quality, participating contractors will be trained on installation specification requirements and will validate measures installed with diagnostic testing, where appropriate. The Enhanced Basic/Modified Flex Path will not require a pre-project submittal. All test-in data can be submitted with post project package submittal as long as pre-retrofit conditions are clearly documented for verification purposes. There will be 100% application desktop review for completed upgrades and there will be tiered or sample-based in-field quality assurance.

Energy savings calculation will be conducted by the IOUs engineering team working collaboratively with Energy Division (ED) engineering to develop a hybrid-deemed work paper. The work paper analysis eliminates custom modeling for each project, but allows, via a combination of deemed values, a custom SOW for each project. This lowers the contractors' cost, and reduces the burden on the Utility for Quality Control. Participating contractors will be spend more time selling and installing jobs, and less time creating custom simulations.

~~The Enhanced Basic Path incentives will be a tiered incentive, driven by the customer's desired SOW. Incentive will begin at $1,000 for 10% energy savings, consistent with the original Basic Path program. The Tier increase at each 5% incremental improvement, to encourage deeper energy retrofits, while preserving the low barrier to entry. Incentives will be identical to Advanced Path incentives for saving percentages but for Enhanced Basic Path will max out at $3,500 for 35% savings.~~

~~The IOUs are positioning the Enhanced Basic Path to capture the majority of current Advanced Path projects, which have an average of 25% - 31% energy savings. Participating contractors can participate in the Advanced Path if they wish, as it will continue to start at 10%, but rise all the way to 45%. That is, for the range between 10% and 35%, the incentive structure is the same as Advanced Path.~~

~~The Enhanced Basic Path will be delivered through existing participating contractors in the Energy Upgrade California Program. Participating contractors will utilize a mobile application. This allows them to change potential SOWs directly with the customer, giving real time feedback on savings and incentives, instead of having to develop modeling simulation and having to return to the customers' home with the potential incentive amount.~~

~~**Participation in the Enhanced Basic Path are as follows:**~~

~~- Step One: Select two of three qualifying base measures:~~

~~- Step Two: Select at least one other optional measure.~~

~~- Step Three: Add in stand-alone deemed measures, if desired~~

~~- Savings: Selections made in Step Two & Three will be calculated through the Hybrid Deemed engine to determine savings and incentives; Step 3 will have stand-alone savings consistent with the existing HEER program.~~

~~- Step Two and Three Incentives use the same tiered incentive structure as Advanced Path~~

~~Step Three incentives match those offered by the HEER program~~

Participation Process

1. Select a participating contractor or participating rater.
2. Participating contractor or participating rater performs a combustion appliance safety CAS testing (pre-and post- installation).
3. Determine a scope of work:
    a. Select a minimum of one of three base measures.
    b. Select additional base or other flex measures for a minimum of three total measures.
    c. If selecting to install any HVAC measures, in addition to duct replacement/duct sealing, customer must select one qualifying envelope measure.
    d. Select any stand-alone measure(s) if desired (stand-alone measures do not count towards three measure minimum or marginal savings).
4. Participating contractor or participating rater performs a combustion appliance safety CAS testing (pre-and post- installation) and install measures.
5. Participating contractor or participating rater to submit project information for Quality Assurance/Quality Control (QA/QC) as applicable to measures installed.
6. Incentive paid to customer, or if designated by customer, to participating contractor.

Formatted: Font: 12 pt

Attachment A3.1
Southern California Gas Company

2013-2014 Energy Efficiency Programs
California Statewide Program for Residential Energy Efficiency
Program Implementation Plan (Redline)

Attachment A3.2: SoCalGas EUC Enhanced Basic/Modified Flex Path PIP
(Clean)

Attachment A3.2
Southern California Gas Company

2013-2014 Energy Efficiency Programs
California Statewide Program for Residential Energy Efficiency
Program Implementation Plan

1) **Program Name: Energy Upgrade California (EUC)**
   Program ID: SCG 3705
   Program Type: Statewide Core Program

2) **Type of Sub-Program: _X Core __Third Party __Partnership**

3) **Market sector or segment that this sub-program is designed to serve:**
   a. _X_ Residential
      i. Including Low Income? __ Yes _X_ No;
      ii. Including Moderate Income? _X_ Yes __ No.
      iii. Including or specifically Multifamily buildings _X_ Yes __ No.
      iv. Including or specifically Rental units? __ Yes _X_ No.
   b. __ Commercial (List applicable NAIC codes: _____)
   c. __ Industrial (List applicable NAIC codes: _____)
   d. __ Agricultural (List applicable NAIC codes: _____)

4) **Is this sub-program primarily a:**
   a. Non-resource program ___ Yes _X_ No
   b. Resource acquisition program ___ Yes _X_ No
   c. Market Transformation Program _X_ Yes ___ No

5) **Indicate the primary intervention strategies:**
   a. Upstream ___ Yes _X_ No
   b. Midstream ___ Yes _X_ No
   c. Downstream _X_ Yes ___ No
   d. Direct Install __ Yes _X_ No.
   e. Non Resource __ Yes _X_ No.

6) **Projected Sub-program Total Resource Cost (TRC) and Program Administrator Cost (PAC)** TRC 0.25__ PAC _0.40_

7) **Projected Sub-Program Budget**

   Table1. Projected Sub-Program Budget, by Calendar Year
   [Table-1 Refer to Attachment A3.3 to this PIP]

8) **Sub-Program Description, Objectives and Theory**

   a) **Sub-Program Description and Theory:**

2013-2014 Energy Efficiency Programs
California Statewide Program for Residential Energy Efficiency
Program Implementation Plan

According to a report released by the Office of the Vice President, "homes in the United States generate more than 20 percent of our nation's carbon dioxide emissions, making them a significant contributor to global climate change."[1] The challenge of addressing residential emissions has been a significant topic for California stakeholders and was addressed when D.09-09-047 acknowledged, "Improving the energy efficiency of all households is necessary to achieve the target outcome for the 2020 existing residential *Strategic Plan* goals."[2]

The Office of the Vice President report also identifies three market barriers to comprehensive residential retrofits:

1) Lack of customer and contractor awareness and access to information;
2) Lack of access to financing; and
3) Lack of access to skilled workers.

A shift in market perception, both for contractors and customers, towards a whole house approach must take place to drive customer action. EUC is designed to offer a one-stop approach to whole-house energy efficient improvements that recognize the need for customers to participate over varied timelines. To assist in the effort to overcome these problems and market barriers, EUC for single family residences will:

1) Offer a statewide entry level pre-set measures based approached (*Enhanced Basic/Modified Flex Path*) and a comprehensive and flexible performance based approach (*Advanced Path*) whole house incentives to help build the home performance contracting industry and offer customers and building owners and managers an easy entry point on the path to home performance (barrier 1);
2) Educate customers on the house-as-a-system concept and to encourage behavior changes that increase residential energy efficiency (barrier 1);
3) Educate contractors on the benefits of learning how to properly sell and install whole house measures as part of coordinated WE&T efforts (barrier 1& 3);
4) Offer incentives that influence customers to undertake comprehensive residential retrofits (barrier 1); and
5) Coordinate with relevant utility financing programs and external funding and financing mechanisms at the county, state and federal levels (barrier 2).

In addition, energy efficiency efforts for the multifamily (MF) segment must overcome a number of barriers, primarily:

[1] Middle Class Task Force. Council on Environmental Quality. "*Recovery Through Retrofit."* October, 2009. Page 1.
[2] D. 09-09-047. Page 110.

1) Lack of knowledge regarding energy efficiency, as well as the comprehensive energy efficiency EE programs offered by IOUs;
2) The economics of "split-incentives" where the building owner invests capital but the savings primarily benefit the tenants;
3) Access to investment capital and insufficient return on investment (ROI). Up-front out-of-pocket costs and extended payback periods required pose a significant participation barrier for property owners and managers;
4) Hassle of dealing with multiple contractors and visits required;
5) Time burden for tenants and owners;
6) Impact on rental income; and
7) Business policy/ profit incentive from replacing equipment on burn-out and unwillingness to negate remaining life in building components requiring capital outlay.

The *Multifamily Path* is envisioned to include a number of tactics to overcome these barriers, primarily:

1) To improve a property owner or manager's energy efficiency knowledge, the *Multifamily Path* would seek to leverage comprehensive investment grade building assessments to identify potential energy efficiency opportunities. (barrier 1).
2) To address split incentives and cost of upgrades, the *Multifamily Path* would integrate with the existing Energy Savings Assistance Program ("ESAP") and the Multifamily Energy Efficiency Rebate ("MFEER") Program. This would provide comprehensive services to the building, including "low cost" or "no cost" tenant measures in conjunction with the EUC *Multifamily Path* whole building incentives in order to maximize energy savings for the up-front investment. (barrier 2).
3) Incentives would assist property owners or managers with overcoming a wide array of market and financial barriers which may otherwise prevent energy efficiency upgrades (barrier 1 and 5).
4) Create a single point of contact that would assist the property owner or manager navigate through the incentive and retrofitting process. This approach would provide support in understanding the various program rules and assistance in determining eligibility. The property owner or manager would be guided through an easy and streamlined preliminary assessment to establish feasibility and estimate project cost for the *Multifamily Path*, with an eye toward leveraging all eligible programs. (barrier 4).
5) Target buildings planning on or undergoing renovation projects to limit customer time burden and lost rental income. (barrier 4 and 5).

6) Multifamily sector is comprised of a wide diversity of properties which can be segmented by: 1.) rental rate (low – medium – or high; and/or 2.) size of the building and also size of the company that owns or manages the building. Defining the unique concerns and needs of building owners and managers by these variables of tenant socio-economic status and ownership/management structure will allow much more effective messaging and marketing communications. (barrier 1, 2, 3, 4, 7)
7) Statewide EE energy efficiency financing (SW Fin) which could be focused on the tenant or the common property energy agendas. This program will provide access to capital to fund investments in energy efficiency upgrades for buildings at an attractive interest rate. (barrier 2, 3, 7).

Other considerations to meet all income strata and address split incentives for property owners and tenants may include a direct install strategy, as well as prescriptive rebates through the existing MFEER Program. While programs will be coordinated and integrated, their respective policies, and procedures will be followed in the delivery of services. Efforts at operational efficiencies would be made to streamline eligibility, income verification, and installation of measures.
Despite the noted barriers, the multifamily sector presents a significant opportunity for whole building energy efficiency programs with a deep energy reduction approach. A whole building offering has the potential to achieve deep energy savings because:

1) Building owners can leverage incentives to address common areas and systems as well as individual unit upgrades to make more cost effective improvements.
2) Major rehabilitation projects are common in the multifamily sector. It is theoretically more cost effective to include energy efficiency upgrades at the time of these renovation projects. These projects typically have well-financed construction budgets and broad scopes that could include energy efficiency measures.
3) Multifamily properties tend to be operated and maintained by professional building staff. Providing resources to building staff would theoretically increase the odds that the building will be operated efficiently after energy upgrades are installed, perpetuating savings benefits.
4) Within the tenant units, the energy efficiency upgrades will often be duplicated – allowing for efficiency in bulk purchases of supplies and equipment, as well as hiring of specialized workers with less non-productive set-up/break-down and travel time.

EUC is a Market Transformation orientated program and is a continuing program which began in the 2010-2012 residential energy efficiency portfolio of the four

California Investor Owned Utilities (IOUs) – Pacific Gas & Electric Company (PG&E), Southern California Edison (SCE), San Diego Gas & Electric Company (SDG&E) and Southern California Gas Company (SoCalGas).

As a recognized market transformation program only halfway through its second full year of statewide rollout, EUC is expected to be a major contributor to achieving the goals of the California Long Term Energy Efficiency Strategic Plan (*Strategic Plan*) as it relates to existing residential homes, and it faces significant hurdles in customer and contractor awareness, industry and workforce development, and traditional cost effective metrics towards measuring effectiveness and success.

This Program Implementation Plan (PIP) is for the statewide EUC that will be offered consistently across the IOU, SoCalREN and BayREN service territories. The PIP is intended to align with the goals established in the *Strategic Plan* and is a culmination of ongoing statewide efforts to design EUC.

EUC is designed to build customer and contractor[3] awareness of the house-as-a-system approach to residential retrofits and the many corresponding benefits of improving the energy savings potential and comfort of their dwelling. It promotes the idea that energy efficiency measures are most effective when taking into account interactive effects of measures.

EUC moves customers from a prescriptive, widget or single-measure based approach to energy efficiency to one of deeper, comprehensive energy retrofits that respect the energy efficiency loading order [4], and which takes the approach that a house is a series of interdependent systems that must be considered holistically.
In addition, this approach optimizes building shell (thermal boundary) provides increased comfort and indoor air quality while enabling smaller and more affordable space conditioning equipment and reduced energy use associated with space heating and cooling. The thermal boundary consists of two layers or components – air barrier and insulation – which should both be continuous as well as contiguous (in contact with each other) for optimum performance. Because of the interaction between the thermal boundary and space conditioning loads, heating or cooling system upgrades are ideally not to be performed until the building shell is optimized. Building shell

[3] A successful program recognizes the need to develop the pool of qualified home retrofit contractors (with the help of third party implementers) to engage in – and have the opportunity to profit from – performing quality work. Through comprehensive training curricula (currently available in the marketplace) broken into the key elements of a home: Building Envelope and Lighting, and Heating, Cooling and Hot Water delivery (major systems); skilled tradespersons will have the opportunity to enter the home retrofit market and grow their businesses.

[4] The loading order specifies improvements in the following sequence: (1) air sealing to obtain a tight building envelope; (2) insulation to complete the thermal boundary; (3) proper sizing, design, installation and commissioning of space heating and cooling systems; (4) proper sizing, design, installation, commissioning and insulation of the hot water system, including distribution; (5) efficient lighting and appliances, and demand response measures; and (6) renewables.

and duct air sealing will be addressed in conjunction with combustion appliance safety and indoor air quality tests. Base load reduction measures involving major electrical appliances, lighting, plug loads, and demand response can be performed at any time without compromising the loading order.

Customer outreach and education efforts for EUC will be coordinated with other IOU Demand Side Management (DSM) program offerings (e.g. Energy Advisor, Plug Load and Appliance (PLA), Comprehensive HVAC, SmartAC and other Residential Demand Response programs, Energy Savings Assistance program, California Solar Initiative (CSI)) to leverage multiple customer touch points.

For single family residences, the whole house approach of EUC promotes two paths, a prescriptive based *Enhanced Basic/Modified Flex Path* and a comprehensive, measured *Advanced Path*. These complimentary paths will be presented to customers[5] as one comprehensive offering.

For multifamily buildings, building owners and managers will be able to participate in the EUC *Multifamily Path*. EUC will offer a consistent program model that can be contractor or rater driven and/or adopted by local governments for roll-out in their communities.

In sum, these paths will provide an ideal platform to utilize the concept of continuous energy improvement for residential customers; tracking and encouraging a logical sequence of energy improvements made by customers over time, creating an ongoing, actionable dialogue with each customer regarding their energy use.

EUC *Advanced Path*

EUC *Advanced Path* offers customers a customized path to comprehensive whole house energy efficiency that drives the customer to deep retrofits. *Advanced Path* solutions will require Participating Contractors to obtain higher levels of expertise than those who perform the *Enhanced Basic/Modified Flex Path* installations. Customers can also participate in *Advanced Path* by using a Participating Rater. The *Advanced Path* requires diagnostic "test-in" and "test-out" whole house assessments. The "test-in" assessments will generate a comprehensive work scope and the "test-out" assessments will be used to document that specified improvements have been properly sized and installed. The *Advanced Path* will build off of the pre-set measures of the *EUC Enhanced Basic/Modified Flex Path* and:

The *Advanced Path* delivers comprehensive energy efficiency improvement packages tailored for both the home resale and home remodeling markets. The *Advanced Path*

[5] Residential customers including homeowners, renters, and multifamily properties when these services are available to them.

solicits, screens, and trains qualified residential repair and renovation contractors and HERS II Raters, to assemble capable contracting teams and perform whole-house diagnostics, propose a comprehensive energy efficiency improvement package, and install the improvements. The program also includes marketing activities to help educate customers on program services, and in some cases may provide additional customer leads to trained and experienced contractors. Incentives and resources for available financing options will be provided to help offset the initial homeowners cost for the energy efficiency improvements.

EUC *Enhanced Basic/Modified Flex Path*
During the 2013-2014 transition cycle, the IOUs will convene interested stakeholders at the state and/or regional level to propose one or more statewide and/or regional pilot programs to explore potential changes to the current *Basic Path* in order to make it more appealing to customers, particularly moderate income households.

Accordingly, the IOUs, SoCalREN and BayREN, consistent with D.12-11-015, propose replacing the existing IOU EUC Basic Path and REN Flex Path programs with alternate models that:

1. Meet the Commissions criteria for both Customer and Contractor Eligibility.
2. Require a minimum of three (3) measures, under a framework that supports the loading order, incentivizes additional measures, encourages more robust savings, and serves as a foundation for whole-home energy efficiency upgrades.
3. Maintains standards of quality and safety.
4. Reflect a common design, avoid public confusion, and meet the objective of the 2013-2014 Energy Efficiency Transition Period to test market and transformative drivers.
5. Can be offered seamlessly across all territories.
6. Compliments the EUC Advanced Path for comprehensive home performance energy upgrades.

The Enhanced Basic/Modified Flex has a mix of Base and Flex energy efficiency measures to allow a contractor to tailor each project to the needs of the customer. The new program will be delivered through existing EUC participating contractors and, further, will broaden and diversify the service pool by recruitment of specialty contractors. Moreover, eligible upgrades have been specifically designed to support the loading order and foster deeper or further retrofits, and all work will include appropriate combustion safety testing at test-in and test-out.

The comprehensive menu of point-based measures effectively streamlines the project development process in replacing preliminary modeling simulations and multiple visits to the retrofit property. A rebate amount can easily be determined during the contractor's first visit. This enhances the ease of program adoption for both the customer and the contractor, and promotes the ability of the Enhanced Basic/Modified Flex Path to scale the EUC Program more rapidly.

SoCalGas Gas Only Whole House Retrofit Program 2013-2014

SoCalGas will continue implementing a "gas only" Whole House Retrofit program that will service those customers that are in a municipal electric service provider territory. This enables SoCalGas to reach out to approximately 1.7 million customers who are not eligible for the joint SCE/SoCalGas Energy Upgrade California Whole House program. Due to our single fuel utility effort, we can only substantiate the therm savings for our program hence the difference in the incentive amounts from the other IOU incentives. SoCalGas will continue to look for additional partnership opportunities with municipalities' EE programs to maximum savings to shared customers.

SoCalGas has entered into an agreement with the Los Angeles Department of Water and Power to jointly implement the *Enhanced Basic / Modified Flex and Advanced Path* programs in their portfolios to provide more comprehensive services to their joint territory customers and to save on overall program costs. Additionally, SoCalGas and Burbank Water and Power are implementing a joint evaluation direct install program with all *Enhanced Basic / Modified Flex* Path measures for both gas and electric.

SCG will be offering the EUC Advanced Path throughout the entire service territory, including where SCG services municipalities and shares its territory with PG&E and SDG&E. The EE Decision directed the RENs to implement the EUC Enhanced Basic/Modified Flex Path in the geographic areas they cover while the IOUs implemented the program in the rest of the territory. [6]As such, the Gas Only EUC Enhanced Basic/Modified Flex Path and EUC Advanced Path programs will be offered solely by SCG within the municipalities unless after due time the SoCalREN proves its potential for successful implementation in those areas and enters into a formal agreement with the specific municipality.

SoCalGas will continue with its joint program with SDG&E that results in a shared application and single streamlined process that is more efficient and less confusing

[6] D.12-11-015, at p. 23

for our contractors and the customers in our shared territory. Additionally, besides QA/QC shared costs, SoCalGas will look for other synergies between our programs in our joint PG&E/SoCalGas service territories (i.e.; one shared application, processing).

EUC *Multifamily Path*

The vision of a EUC *Multifamily Path* is to deliver comprehensive energy efficiency upgrades tailored to the needs of existing multifamily dwellings and their owners, tenants and management companies

The *Multifamily Path* is envisioned to specifically target the multifamily housing (MF) retrofit market and would promote long-term energy benefits through comprehensive whole building energy efficiency retrofit measures —including building shell upgrades, high-efficiency HVAC units, central heating and cooling systems, central domestic hot water heating and other deep energy reduction opportunities. These energy efficiency measures would be identified through an investment grade assessment.

This performance-based approach would assist property owners and managers with making informed decisions, identify measures for energy savings, and to maximize energy reductions for each property owner, manager, and tenant, as applicable. The *Multifamily Path* is envisioned as a logical next step to the prescriptive based MFEER and would be coordinated with the ESA Program and MFEER to present a singular and streamlined approach for multifamily tenants, property owners and property managers, in accordance with the Strategic Plan. A key feature of the *Multifamily Path* would be a single point of contact to assist multifamily raters and customers and to streamline their experience. The single point of contact will recruit and assist multifamily owners and property managers to evaluate specific property and advise the program that best suits the needs of particular buildings.

This integrated approach combines market-rate and income-qualified energy efficiency measures and educates building owners on the benefits of energy efficiency and conservation efforts spanning the range of needs for the multifamily market. The *Multifamily Path* will leverage and integrate the MFEER resource components and ESA Program offerings in a singular customer facing program that presents a simplified view from the customer perspective.

The *Multifamily Path* would guide multifamily customers towards deeper, comprehensive energy efficiency measures, including: whole house solutions, plug load efficiency, visual monitoring and displays, performance standards, local

government opportunities, and IDSM integration. The *Multifamily Path* will support the strategies, where possible, in the Low Income Proposed Decision.

The IOU's will organize and convene a workshop on lessons learned and best practices in their multifamily pilot programs in late 2013 or early 2014 and notice the workshop to the service list and RENs for this proceeding.

a) Sub-Program Energy and Demand Objectives-

Table 2. Projected Sub-Program Net Energy and Demand Impacts, by Calendar Year
[Table-2 Refer to Attachment A3.3 to this PIP]

b) **Program Non-Energy Objectives**:
Table-16: Non-Energy Objective
[Table-16 Refer to Attachment A3.3 to this PIP]

c) **Cost Effectiveness/Market Need**:
The California IOUs look forward to continue playing a leading role, in collaboration with local governments, in moving the existing residential homes market towards larger reductions in energy usage and towards the *Strategic Plan* goal of achieving 40% purchased energy reductions in all existing homes by 2020.
At this time, current market conditions and barriers are:

1. Relatively high cost of home assessments.
2. Relatively high gross costs of comprehensive energy upgrades.
3. Market unawareness of non-economic value to comprehensive energy upgrades.
4. Fledgling contracting and supporting industry for existing home energy upgrades.
5. Low consumer awareness of incentive programs and the concepts of comprehensive home energy assessments and upgrades.
6. Lack of common home rating protocols and common vernacular for the market to assign value to homes which undergo comprehensive energy upgrades.

EUC seeks to address these barriers through:

1. Continued marketing of Energy Upgrade California and whole house concepts. (barrier 3, 5).
2. Continued contractor recruitment (at a pace aligned with demand), training and mentoring. (barrier 4, 5).
3. Continued customer uptake through EUC incentives. (barrier 1, 2, 5).
4. Continued stakeholder outreach to address barriers. (barrier 1, 3, 4, 5,6).
5. Continued partnerships with local and state government to address barriers. (barrier 1, 2, 3, 4, 5, 6).

It will be critical to establish market transformation (MT) metrics and milestones that are in alignment with cost effective metrics that can more accurately assign cost effectiveness of resources expended towards MT goals. As the Value Proposition figure below represents, there currently is significant non-economic value being assigned by the marketplace towards whole house projects but which are not accounted for in cost effectiveness metrics currently used.

Non-economic value can be assigned as:
Gross Cost – (annual savings x EUL) – (assigned increased market value of home)

By this definition, and information regarding gross costs and savings to date, it would appear that the market currently is assigning significant non-economic value to EUC projects. However, current cost effective metrics assign all value towards economic value related to energy savings only. Failure to align MT goals and cost effective metrics will result in inaccurate measurement of resource impacts on MT goals.

The IOUs during the 2013-2014 cycle recommend the Commission remove the EUC from the EE portfolio cost effective analysis and to work with commission staff and relevant stakeholders to develop meaningful cost effective metrics during the 2013-2014 cycle that aligns MT goals of EUC towards the *Strategic Plan*.

VALUE PROPOSITION
(Greater the Value Proposition = Faster Market Transformation and Consumer Uptake)

	Consumer Value	**Consumer Costs**
Economic Value	• Monthly utility bill savings (kWh, kW, therm) • Recognized Market Value of EE home	• Gross Project Costs

Non-Economic Value	• Health & Comfort
	• Altruistic
	  • Environment
	  • National Security
	  • Being part of Green Movement
		• ***Offsets:***
		IOU Incentives
		Financing

	Driving Up Value	**Driving Down Costs**
	• Standard Ratings where the Market can assign value • Higher monthly utility bills	• More Qualified Providers • Higher Demand • Streamlined Processes • Innovative Marketplace

d) **Measure Savings/ Work Papers**:

a. EUC *Basic Path* utilizes deemed savings values by climate zone for building vintages pre-1979 and by climate zone post- 1979

EUC *Advanced Path* utilizes CEC approved software (i.e. Energy Pro Res Module at the time of this PIP) for calculated project savings.

EUC *Multifamily Path* envisions measured savings for all low-rise multi-family buildings utilizing the Energy Pro, Residential Performance Module (for Site savings calculations). For all high-rise buildings, would utilize the Non Res Module.

b. Indicate work paper status for program measures:

Table 4 – Work paper Status
[Table 4 Refer to Attachment A3.3 to this PIP]

9) Program Implementation Details

In addition to traditional marketing efforts, the IOUs will work through service providers and vendors to engage qualified tradespersons in the crafts that they have chosen and will continue to invite input from stakeholders to further develop additional ways to meet program objectives.

One of the avenues that the IOUs plan to pursue to advance the program's efforts to achieve deeper energy savings retrofits in homes is to build closer partnerships with California's real estate industry, including via such activities such as voluntary training and outreach partnerships. Based on input already gathered from relevant stakeholder groups, experts, and Commission Staff, the IOUs plan to implement the following main areas of activities for this initiative to leverage partnerships with the real estate industry:

1) Training for all relevant aspects of the real estate industry and point of sale chain (real estate agents, lenders, inspectors, green/efficiency specialists, appraisers, rater's public agencies and contractors). An emphasis will be placed on training the cross-functional teams that already work together in the market, since all pieces of the process needs to be covered to be effective, especially on the financing side. The use of successful case studies will also be explored.

2) Driving customer demand for energy efficient homes via collaborative consumer education and outreach, using easy to understand messaging and including efforts such as the promotion of home energy improvements and "green" labeling around the time of purchase and sale of a home. This is a critical timing in the market that can be leveraged. The Joint Center for Housing Studies estimates that home buyers spend more than $6,000 per year on home improvements in the first two years after buying homes. In subsequent years, the annual average outlay drops to $2,500.[7]

A key to success for this initiative is properly aligning design with the personal and business interests of the stakeholders involved particularly the Realtors, home buyers, and sellers. While promotion of energy efficiency and green building practices is the paramount objective, the initiative would remain consistent with stakeholders' interests. By remaining stakeholder focused, the initiative aligns short-term private interests with long-term public interests.

Further details and continuous improvement of this plan will be developed by inviting additional input from an ongoing set of stakeholder collaboration discussions. Identification of appropriate regional differences and their implications to implementation will be incorporated into the plan. And short- and long-term success criteria and a periodic assessment timeline for evaluation of this initiative will be developed.

[7] Joint Center for Housing Studies of Harvard University (2011), *The State of the Nation's Housing: 2011*, http://www.jchs.harvard.edu/research/state_nations_housing

Also, during the transition cycle the IOUs will explore potential of offering pilot tests of expanding building science certifications and home evaluation and performance improvement processes beyond BPI to potentially include equivalent certifications, and home evaluation and performance improvement processes such as those through ACCA. To increase the number of qualified participating contractors and contribute to the creation of a sustainable workforce, third party program implementers will solicit and screen qualified contractors. The program will also include marketing activities to help educate customers on program services and other activities to provide additional customer leads to trained contractors.

The program will employ a number of integrated delivery strategies:

1) Educate contractors and residential customers on the concept of home performance;
2) Coordinate with existing residential program offerings (e.g. ESA, HVAC, HEER, Energy Advisor and MFEER) within the utility portfolios;
3) Provide robust quality assurance and quality control protocols that encourage quality installation and drive contractors to obtain additional training and qualifications;
4) Provide robust EM&V feedback loops to inform program enhancements;
5) Integrate with marketing efforts of the broadened statewide "Energy Upgrade California" brand, when launched, and deliver complementary marketing messaging to drive customer demand and contractor participation;
6) Coordinate contractor training, marketing and outreach efforts with local governments, as appropriate; and
7) Develop an incentive structure that drives customers to undertake comprehensive residential retrofits.

Statewide Informal EUC Working Group

Given the ambitious market transformation goals of EUC, it's relatively new entrance into the IOU EE portfolio, and its challenges during the first two years of rollout, the IOUs during the 2013-2014 transition cycle are committed to providing the leadership and working with CPUC, CEC, local government staff, as well as relevant stakeholders to convene a statewide EUC working group to address relevant and significant issues for adoption in the 2015 IOU program cycle. The IOUs seek a cooperative design and implementation approach that involves all parties with an interest in EUC.

The Working Group will be co-chaired by one IOU, determined by IOU consensus, and one non-utility co-chair selected by the Working Group. The Working Group co-chairs will solicit views and direction from Commission staff on the Working Group operations.

The Working group may choose to form subgroups and/or hold stakeholder outreach meetings as necessary.

The Working Group will be composed of all former EUC Steering Committee members, the REN's, EUC Contractors, and other interested stakeholders and implementers, including the EUC implementers, Commission, and CEC staff, and CCSE as the statewide marketing and outreach coordinator.

Where feasible, necessary and relevant, the IOUs will retain the services of qualified consultants or other entities with experience in the whole house retrofit industry to assist in these efforts in the areas of research, facilitation, or other assistance as may be required. IOUs will also engage utilities, non-profits and other stakeholders who may have experience in other parts of the country in deploying whole house programs.

In this regard, the IOUs will hire a market transformation consultant to assist with improvements to the long-term EUC design and to support a constructive IOU engagement in the AB758 process. The Working Group IOU co-chair will be the lead IOU for this contract. Members of the EUC Working Group will be offered the opportunity to substantively shape the work scope and priorities of the market transformation consultant. Timelines and general framework for the market transformation consultant will begin at the first meeting of the Working Group in January 2013.

The Working Group will, as necessary, focus on the following issues on a statewide level for consideration in the 2015 program cycle:

1. Role of local governments
2. Software standards
3. Data collection standards
4. Home Assessment standards
5. Home Assessment reporting standards
6. HERS II Ratings and alignment with EUC Programs
7. Contractor certification standards
8. QA/QC standards
9. Streamlined project reporting and programmatic best practices
10. Integration of HVAC programs
11. Engagement of California Real Estate Market
12. Future of Basic Path
13. Identification of Market Transformation Milestones and Metrics
14. Cost effectiveness metrics aligned with Market Transformation goals.
15. Long term incentive structure
16. Applicable AB 758 Issues

In addition, the Working Group will provide substantive contributions to program design and implementation plans on the following items to be included in an updated PIP to be filed by a Tier 2 Advice Letter not later than April 1, 2013:

1. Final statewide aligned and streamlined protocols regarding heating, ventilation and air-conditioning (HVAC) emergency replacements and high performing contractors.
2. Final program design and implementation of Enhanced Basic to include a tiered incentive, require three measures at a minimum, follow energy efficiency loading order to address shell improvements first, and support appropriate combustion safety testing protocols.
3. Provide updated targets for number of homes in Enhanced Basic
4. Discussion on subsidizing whole house audits and diagnostic test for EUC project if the project involves at least three energy efficiency measures.
5. Refined savings and technical details for the Enhanced Basic will also be included.

Three utilities, SDG&E, SoCalGas, and SCE plan to launch an *Enhanced Basic/Modified Flex Path* early 2013 to test systems and program design with a limited set of contractors. This effort should not be understood to prejudice the outcome of the stakeholder process to improve Basic as outlined in the Decision, but rather to be able to have an informed discussion on market acceptance of an alternative delivery method. The participating IOUs remain open to further suggestions and refinements to the *Enhanced Basic/ Modified Flex Path*. We look forward to further work with the RENs in particular to improve our joint EUC offering in 2013.

Upon approval of the Advice Letter, the IOUs and RENs will submit the updated EUC PIPs, including all necessary revisions, to Energy Division for posting on the Commission's EEGA website at http://eega.cpuc.ca.gov/.

b) **Timelines:**
Table 5: Sub-Program Milestones
[Table-5 Refer to Attachment A3.3 to this PIP]

c) **Geographic Scope**:
Table 6: Geographic Regions Where the Program Will Operate
[Table 6 Refer to Attachment A3.3 to this PIP]

d) **Program Administration**

Table 7: Program Administration of Program Components
[Table 7 Refer to Attachment A3.3 to this PIP]

e) **Program Eligibility Requirements:**

i. Customers:

Single family or multi-family building customers with an active IOU account OR owners or property management firms who own or operate single family or multifamily buildings that are served by an active IOU account, may participate in EUC provided they utilize a Participating Contractor or a Participating Rater per program guidelines.

Participating Contractors or Participating Raters shall be the single point of contact for customers and are responsible for submission of all program requirements. Participating Contractors and Participating Raters will install or ensure installation of all measures in accordance with IOU QA/QC and Measures Installation Standards guidelines in accordance with applicable contractor/ rater participation agreements.

Per program requirements, process, and protocol, for all EUC projects, customers must install a minimum of three energy efficiency measures which support the energy efficiency loading order and must perform appropriate combustion safety testing. SoCalGas is exempted from this requirement.

Table 8: Customer Eligibility Requirements (Joint Utility Table)
[Table 8 Refer to Attachment A3.3 to this PIP]

ii. Contractors/Participants:

Participating Contractor Requirements for *Enhanced Basic/Modified Flex Path* and *Advanced Path*

Participating EUC Contractors must be certified and licensed according to all applicable federal, state and local laws. Participating Contractors shall meet, and provide sufficient evidence and supporting documentation for the following minimum requirements:

1. Contractor State Licensing Board (CSLB) license in the appropriate specialty;
2. Bonding and in good standing.

3. Insurance to IOU minimum insurance standard;
4. Execution of a contractor participation agreement;
5. Completion of all utility training course requirements, including Participation Workshop and a 3-Day Basic and/or Energy Upgrade Training, Workshop, if not BPI-certified Basic or Advanced Training, as appropriate;
6. BPI-certified Building Analyst (BA) to complete Combustion Safety and Carbon Monoxide Protection and all other minimum Health and Safety Requirements specified in the BPI Technical Standards for Building Analyst Professional;
7. Ensure HVAC permits will be pulled on all work that is appropriate per local jurisdiction requirements;
8. Participating Contractors who participate in *Advanced Path* projects, must employ at least one staff person who holds an active BPI Building Analyst certification. BPI accreditation is strongly encouraged and may be required of all participating contractors at some point during the program cycle;
9. Additional IOU requirements, as appropriate.

Participating Rater Requirements for All EUC Paths

Participating Energy Upgrade Raters must meet all requirements as a Participating Contractor and must be both HERS II certified and hold an active BPI Building Analyst certification or BPI MF Building Analyst certification as may be applicable. EUC *Enhanced Basic/ Modified Flex Path* and *Advanced Path* projects submitted by a Participating Rater must utilize a EUC Participating Contractor for installation of the measures specified by the Participating Rater.

Table 9: Contractor/Participant Eligibility Requirements (Joint Utility Table**)**
[Table 9 Refer to Attachment A3.3 to this PIP]

f) **Program Partners:**

a. **Manufacturer/Retailer/Distributor partners:**
Table 10: Manufacturer/Retailer/Distributor Partners
[Table 10 Refer to Attachment A3.3 to this PIP]

b. **Other key program partners**:
Table 15: Energy Division, California Energy Commission, local governments, BPI and other standards bodies, as well as other partners
[Table 15 Refer to Attachment A3.3 to this PIP]

g) **Measures and incentive levels**:

***Advanced Path* Incentives**

Incentives for the *Advanced Path* will be paid based upon modeled site savings energy utilizing any CEC approved simulation modeling software approved by IOUs. Incentives for *Advanced Path* are designed to encourage customers to reach for deep energy savings. *Advanced Path* incentives are for both gas and electric measures provided by the customers' participating utility program.[8] Currently, Energy Pro simulation modeling software is the only approved software for use with EUC. During the 2013-2014 transition cycle, the IOUs will work collaboratively with the CEC and other stakeholders to identify potential approaches to adequately broaden the allowable software under the EUC while containing costs required for needed Commission Staff reviews.

In order to encourage customers to more fully adhere to the loading order, customers may be eligible for additional bonus points for installing additional base measures. For customers who install 1 or 2 additional base measures beyond the required one measure, customers will receive additional points-based incentive for each additional base measure installed.

SoCalGas will explore the possibility of providing additional incentives to customers who embrace the whole house retrofit concept providing a higher range of incentives for those who exceed the programs current limits. This will encourage the customer to strive for deeper –retro-fit measures while planning their home upgrade projects.

Savings/ Participation Level: % Reduction	Incentive Amount
Basic Package: 10%	*$1,000*
10%	**$1,000**

[8] In various service territory where one of the customer's utility service provider (municipality), is not a program participant adjustments may be necessary to the incentive.

15%	**$1,500**
20%	**$2,000**
25%	**$2,500**
30%	**$3,000**
35%	**$3,500**
40%	**$4,000**
45%+	**$4,500**

Enhanced Basic/Modified Flex Path **Incentives**

The *Basic Path* customer incentive is up to $1,000. The customer will receive the entire rebate amount as a direct result of participating in *Basic Path.* Additionally, *Basic Path* incentives will be:

- Consistent statewide;
- Lower than the *Advanced Path* incentives;
- Compatible with municipal financing options; and
- Implemented so as to leverage external funding where appropriate.

The Enhanced Basic/Modified Flex Path incentives will be a tiered incentive, driven by the customer's desired SOW. Incentives will begin at $1,000 for 100 points which will be equivalent to 10% site energy savings. The incentive tier increase at each 50 point incremental improvement, to encourage deeper energy retrofits. Each 50 point increment will equate to an additional $500 incentive. The incentives align with Advanced Path incentives for similar saving percentages, but the Enhanced Basic/Modified Flex Path Path will max out at 250 points (a $2,500 incentive).

Participation Level: Points	**Incentive Amount**
100 Points	**$1,000**

150 Points	**$1,500**
200 Points	**$2,000**
250 Points	**$2,500**

To encourage customers to more fully adhere to the loading order, customers may be eligible for additional bonus points for installing additional base measures. For customers who install 1 or 2 additional base measures beyond the required one measure, customers will receive additional points-based incentive for each additional base measure installed.

Multifamily Path **Incentives**

Incentives for *Multifamily Path* will be paid based upon modeled site savings energy utilizing any CEC approved simulation software approved by IOUs. Incentives will be offered on a tiered structure, paid per building on a "per dwelling unit" basis according to the total building energy savings percentage. The tiered approach will reward participants for realizing deeper savings. While a "per unit" approach enables participants to experience economies of scale with larger multifamily buildings.

Ten Year Stepwise Incentive Structure

During the 2013-2014 transition period the IOUs will meet not fewer than two times with statewide stakeholders to develop a 10 year stepwise incentive structure which will be triggered at defined market transformation milestones. It is anticipated that the plan will include a defined timeline**,** for incentive update decisions and that incentive level changes will be updated at defined market trigger metrics associated with the number of participating homes towards the *Strategic Plan* goals. As the number of participants increases over time, incentive levels will be lowered accordingly to reset the incentive amounts.

The IOUs will invite statewide stakeholder inputs to lock in these targets prior to the start of 2015, using every 20,000 homes/dwelling units treated and decreasing incentive levels in $250 increments as a starting point for discussion. Once the statewide target is confirmed, the IOUs will notify contractors when the program has reached 75%, 90% and 95% of the goal so contractors can plan accordingly.

Table 11: Summary Table of Measures, Incentive Levels and Verification Rates
[Table 11 Refer to Overarching Program Table in this PIP]

Permitting Requirements
No incentives for equipment requiring a building permit shall be provided any contractor or customer without that contractor or customer certifying that s/he has complied with all permit requirements and utilized a licensed contractor.

Qualified Measures
During the transition cycle, the IOUs will work to better leverage EUC to achieve greater energy savings from plug loads, appliances and swimming pools through:

1. Greater cross marketing of PLA and EUC customers.
2. Work with EnergySoft to find solutions to pool pump modeling.
3. Incorporate lighting and appliance options as a more predominate feature in standard assessment reports to customers.

Enhanced Basic/Modified Flex Path **Measures Installed Per Measures Installation Standards:**

Base Measures

Whole House Air Sealing
Attic Insulation
Duct Test and Seal
Domestic Hot Water Pipe Insulation
Thermostatic Shut-Off Valve
Low-Flow Shower Head

Flex Measures – Envelope:

Floor Insulation
Wall Insulation
High Performance Windows
Attic Radiant Barrier

<u>Flex Measures – Domestic Hot Water (DHW)</u>
Gas Water Heater (including Tankless gas water heater)
Electric Water Heater

<u>Flex Measures – HVAC</u>
Gas Furnace

High Efficiency Air Conditioning
HVAC QI (pending QI work paper)
Insulated Ducts

Additional Stand Alone Measures
Variable Speed Pool Pump
Refrigerators
Dishwashers
Clothes washers
Whole House Fan
Refrigerator / Freezer Recycling

Ineligible Measures:

Screw-In Lighting Fixtures and Lamps
Solar Domestic Hot Water Heater System
Distributed Generation Systems - Solar PV, Fuel Cell, Wind, etc.

Advanced Path **Measures Installed Per Measures Installation Standards:**

- Attic Insulation
- Cool Roof Installation (CRRC-certified)
- Cooling System Upgrade
- Domestic Hot Water Heater Upgrade (non-solar-including Tankless water heater
- Domestic Hot Water Pipe Insulation
- Duct Insulation
- Duct Test and Seal
- Exterior Lighting Upgrade – Permanently Installed High-Efficacy
- Floor Insulation
- Heating System Upgrade
- Interior Lighting Upgrade – Permanently Installed High-Efficacy
- Low-Flow Shower Head
- Radiant Barrier Installation
- Thermostatic Shut-Off Valve
- Wall Insulation

- Whole House Fan Installation
- Whole House Air Sealing
- Window Upgrade
- Other Measures as may be modeled and allowed by IOUs per regional market needs

Required measures:

- Thermostatic Shut-Off Valve
  Required measure (no point value)

Ineligible Measures

- Screw-In Lighting Fixtures and Lamps
- Solar Domestic Hot Water Heater System
- Distributed Generation Systems - Solar PV, Fuel Cell, Wind, etc.

Multifamily Building Eligible Measures

- Attic insulation upgrade
- Wall Insulation upgrade
- Floor insulation upgrade
- Window replacements – 2008 T-24 standard or better
- Cool roof – CRRC rated product
- Radiant barrier
- Window shading – permanent, non-retractable
- Duct Sealing - with HERS test
- A/C equipment replacement – Must meet current T-20 standard
- Furnace replacement – Must meet current T-20 standard
- Premium efficiency motors (ECM included)
- VFD controls for CHW, HW, CW pumps
- VFD controls for cooling tower fans
- Pipe insulation – From ½ inch to 1-inch, or none to 1-inch
- Controls optimization (OA reset, zone reset)
- Boiler or DHW replacement – Must meet current T-20 standard
- Insulate hot water piping – From ½-inch to 1-inch, or none to 1-inch
- DHW tank insulation
- Add VFD to circulation pump
- Update central DHW pump to demand control – From no control to demand control
- Common area lighting fixtures – high efficacy hardwired fixtures
- Dwelling unit lighting fixtures – high efficacy hardwired fixtures
- Lighting controls – Occupancy sensor, photo sensor, or dimmer switch
- Outdoor lighting retrofits – high efficacy hardwired fixtures
- ENERGY STAR Refrigerator
- ENERGY STAR Dishwasher (if a dishwasher is installed in pre-retrofit condition)

h) **Additional Services:**
Table 12: Additional Service
[Table 12 Refer to Attachment A3.3 to this PIP]

i) **Sub-Program Specific Marketing and Outreach:**
IOUs will conduct integrated as well as program-specific marketing and outreach which will be coordinated with the statewide marketing and outreach program. The utilities may use a range of tactics such as; e-mails, flyers, on-Line

marketing, direct mail, bill messaging, social media, local events, ethnic media, and other channels that suit the target audience, the message, and the resources.

Marketing, Education and Outreach plans

1) **Objectives**
   - Generate greater awareness, understanding and for the whole house system concept;
   - Drive response amongst qualified customers to seek out whole house projects; and
   - Build demand in the marketplace for home retrofit services.

2) **Target Audiences**
   EUC marketing and outreach aims to include all stakeholders in the retrofit process, throughout the life of the program. This will help to ensure that all audiences receive consistent information and will enable a more informed dialogue about program specifics, in an effort to continuously engage stakeholders in the energy efficiency retrofit process. The initial target group is comprised of the following audiences listed below. Based on the results of the statewide market survey research.

   Target Group:
   - Single family residential customers in proposed targeted segments
   - Multifamily residential customers
   - Residential customers with a history of prior EE engagement including, but not limited to: rebates, online tool enrollment and energy audits
   - Local governments, community-based organizations and other stakeholders (i.e. the realtor community)
   - Efforts may target select public events and work with local earned media to publicize the program's benefits.

3) **Keys to Success**
   Execution of a successful campaign that introduces customers and contractors to the benefits of comprehensive home energy efficiency retrofits will largely be dependent on funding available to support outreach to all audiences. With that in mind, following is the proposed approach and specific tactical recommendations that the IOUs aim to pursue, funding permitting:

   - Continue to utilize a statewide brand and message; and a creative envelope for EUC marketing efforts to avoid market confusion;

- Co-brand where feasible;
- Coordinate with local governments;
- Engage contractors, stakeholders and local governments in generating customer demand; and
- Provide collateral pieces to participating contractors to assist in lead generation and education;
- Employ expanded community based marketing approach; and
- Use a variety of innovative marketing strategies such as time of sale assessment vouchers.

j) **Sub-Program Specific Training:**

Specific workforce development efforts supporting EUC include the following:

- CEC/EDD: California Clean Energy Workforce Training Program Community college programs;
- Third party programs; and
- IOU training offerings (IOU trainings will serve as backup if required. IOU courses do not duplicate modules available in the marketplace but will serve backup role in the event that a market need is identified and best served by the IOU Energy Training Centers).

EUC will be coordinated with the statewide IOU WE&T program, local government residential retrofit and contractor training programs that are tied directly to workforce education and training efforts on a state and federal level. In addition, IOU WE&T programs will continue to offer both building-block house as a system courses that educate students on the concepts that form the foundation of home retrofit programs when a needs assessment determines that these areas require attention. Those concepts include:

- Advanced house-as-a-system concepts and issues;
- Combustion and other safety training updates;
- Green building techniques applicable to the program;
- Blower Door Based Air Sealing;
- Codes and standards (Title-24) implications;
- Advanced lighting, HVAC technologies and problem solving; and
- Business training (including the enhancement of sales, marketing, training, and accounting skills).

Contractor training requirements will be based EUC requirements and will provide contractors necessary training without sacrificing any considerations for applicable safety requirements.

Contractor recruitment efforts will be conducted primarily by third party program implementers – a model that has proven successful in statewide IOU HVAC programs in the 2010-12 program cycle. Program implementers will continue to primarily recruit contractors through:

- The network of contractors already participating in IOU HVAC, insulation and weatherization programs;
- Direct outreach through trade groups with locally active memberships;
- Workforce development departments (to target unemployed general contractors)

Program implementers will verify and enroll Participating Contractors and Raters and provide required program participation related training. Once enrolled, the Participating Contractor and Rater lists will be posted in a centralized location for customers to view. IOUs will direct customers to appropriate websites for lists of eligible Participating Contractors and Raters.

Upon completion of 2012 Energy Upgrade California process evaluations, the IOUs will convene a workshop to review workforce training needs.

k) **Sub-Program Software and/or Additional Tools:**

a. List all eligible software or similar tools required for sub-program participation.
   - Energy Pro energy simulation modeling software

b. Indicate if pre and/or post implementation audits will be required for the sub-program.

Pre-implementation audit required _x__ Yes ___ No
Post-implementation audit required _x__ Yes ___ No

c. As applicable, indicate levels at which such audits shall be rebated or funded, and to whom such rebates/funding will be provided (i.e. to customer or contractor).

Table 13: Post-implementation Audits
[Table 13 Refer to Attachment A3.3 to this PIP]

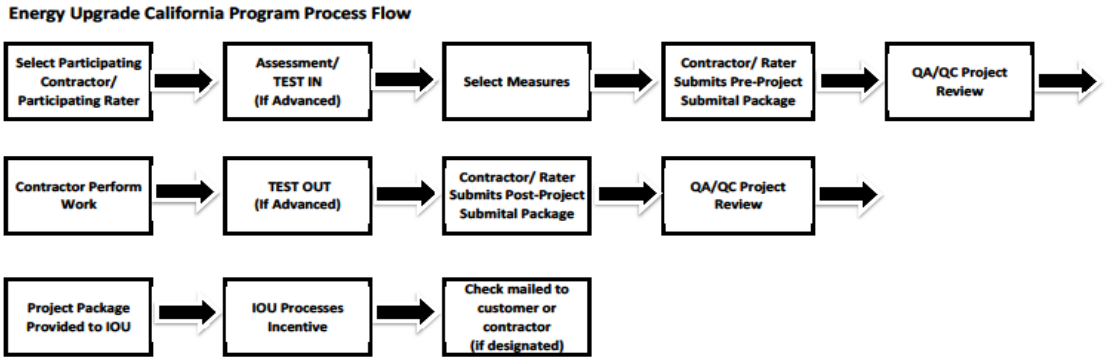
l) **Sub-Program Quality Assurance Provisions:**

Payment of customer incentives will be tied to the contractor's delivery of full job required program documentation. Program implementers will randomly select a minimum of 5 percent of each participating contractor's reported retrofits for onsite job verification and review 100 percent of the job data inputs from contractors. Verifications will include homeowner interviews, intensive visual checklist inspections, and selective retesting of key items. A subset of these energy savings estimates may later be validated against the first year's after-retrofit utility bills plus climate data and homeowner interviews as needed to identify changes in other factors affecting energy use. IOUs will collaborate to develop QA/QC plans and documents that reflect statewide uniformity to the greatest extent possible. QA/ QC documents and standards will be updated regularly with contractor input and will include:

1. QA/QC Process and Protocols
2. Minimum installation standards for all allowable measures
3. Emergency and Fast Track equipment replacement protocols.
    a. Exhibit A attached includes existing and continuing IOU Emergency and Fast Track protocols.
4. Permitting requirements
    a. EUC shall support Heating Ventilation and Air Conditioning (HVAC) permit acquisition as a matter of course.
    b. EUC jobs involving HVAC replacement must include submittal of the HVAC permit number and a contractor certification that appropriate permits have been obtained, for inclusion in program records.

Table 14: Quality Assurance Provisions
[Table 14 Refer to Attachment A3.3 to this PIP]

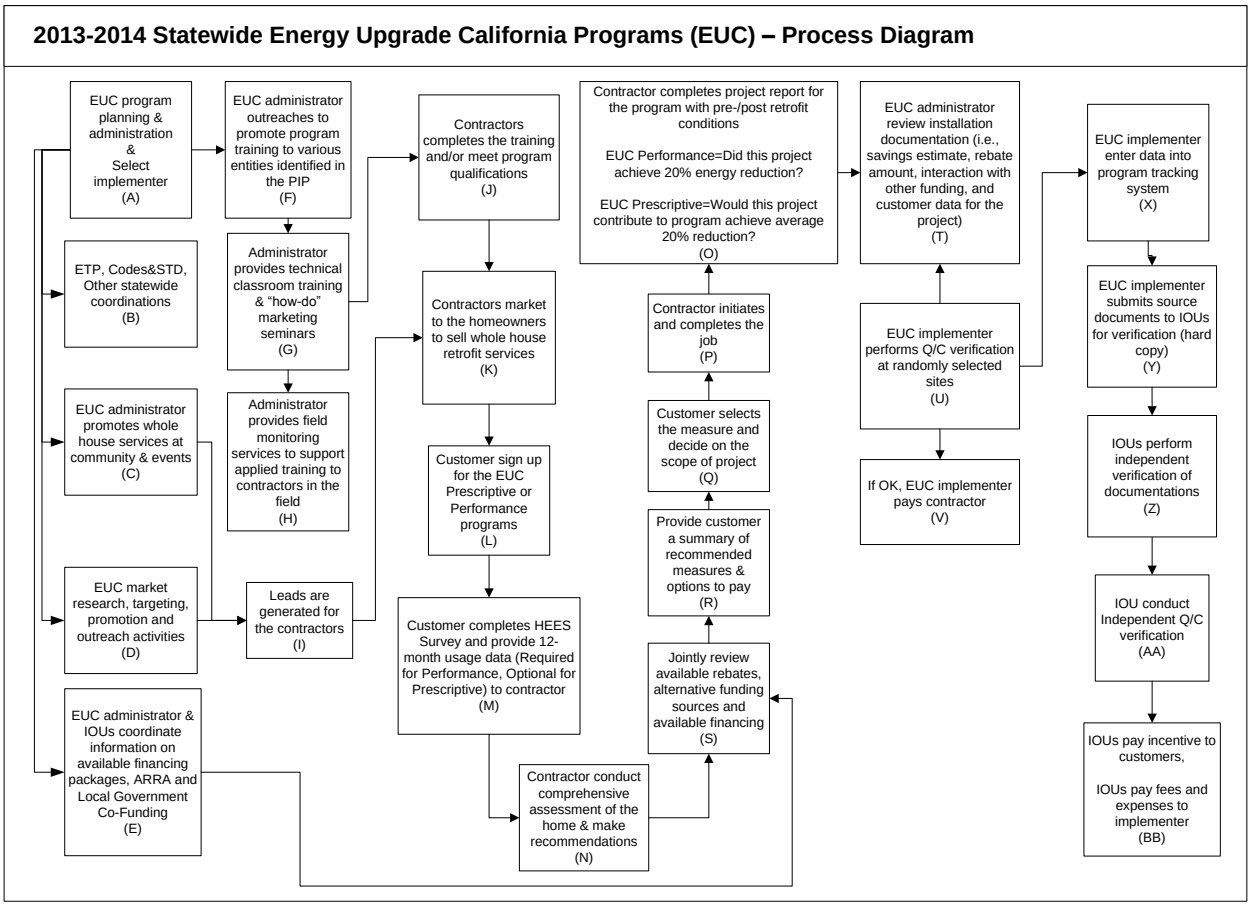
m) **Sub-program Process Flow Chart:**



m) **Cross-cutting Sub-program and Non-IOU Partner Coordination:**

Table 15: Cross-cutting Sub-program and Non-IOU Partner Coordination
[Table 15 Refer to Attachment A3.3 to this PIP]

n) **Logic Model:**



10) Additional Sub-Program Information

a) **Advancing Strategic Plan Goals and Objectives**:
The EUC is consistent with the requirements of the *Strategic Plan*. The program addresses the Whole House Strategy of the *Strategic Plan* by influencing contractors and customers to implement comprehensive home retrofit energy efficiency measures through either the *Enhanced Basic/Modified Flex Path* on-ramp, *Advanced Path* or *Multifamily Path*.

EUC responds to the need for much larger energy savings in existing homes and multifamily buildings than is possible with conventional checklist audits or single measure improvement (prescriptive) programs. EUC addresses the key "whole house" strategy of the *Strategic Plan* by influencing "decision triggers" to improving energy efficiency and understand advantages to expand participation to reach savings goals. This program is also a vehicle to increase penetration of shell upgrades and cost effective, high efficiency appliances, water heaters and

HVAC upgrades. The *Strategic Plan* further states that a similar approach must be developed for multifamily housing. The program will help to achieve the following goals identified in Section 2 of the *Strategic Plan*:

Table 6. Whole House Alignment with California Long Term Energy Efficiency *Strategic Plan*			
Residential and Low Income Goal 2: Existing Homes			
Goal Number	**Strategy**	**EUC Strategy**	**Integrated Programs & Activities**
2-1	Deploy full-scale Whole-House programs.	Monitor performance of selected lower energy homes. Design implement, monitor and continuously improve full-scale programs for whole-house energy efficiency and renewable energy retrofits.	Programs: EUC, Solar, Demand Response, MFEER, Plug Loads, ESAP Marketing: Customer segmentation and local coordination EM&V: Studies to provide early feedback and establish baselines
2-2	Promote effective decision-making to create widespread demand for energy efficiency measures.	Continue to offer Energy Advisor programs online, by mail, and over-the-phone to provide customers with information to promote effective decision-making, in combination with other segment specific marketing outreach and educational activities.	Programs: Energy Advisor EUC, MFEER Marketing: Customer and contractor education to promote building efficiency and appropriate EE behaviors in a segmented manner
2-3	Manage research into new/advanced cost-effective innovations to reduce energy use in existing homes.	Coordinate with Emerging Technologies and other programs to integrate market-ready technologies into the Whole House offering when appropriate. Promote commercialization of home energy management tools including AMI-based monitoring and display tools	Programs: Emerging Technologies, Demand Response, Solar, and others
2-4	Develop financial products and programs such as on-bill	Ensure that customers are aware of the most effective and attractive financing packages	Programs: EUC

	financing to encourage demand for energy efficiency building products, home systems, and appliances.	that are available to them.	Coordination: Local government partnerships and other state/federal financing entities
2-5	Increase Title 24 compliance through specific measures leading to aggressive statewide enforcement.	Partner with local governments to expedite the permitting process to decrease the barriers to entry in the home performance industry.	Coordination: Local government partnerships

b) Integration

i. **Integrated/coordinated Demand Side Management**: As applicable, describe how sub-program will promote customer education and sub-program participation across all DSM options. Provide budget information of non-EE sub-programs where applicable.

The IOUs have identified IDSM as an important priority. The IOUs plan to monitor the progress of other IDSM efforts and to work closely to identify comprehensive integration approaches that feed into the overall statewide strategy and to implement best practices as rapidly as practical.
The statewide EUC is a platform for integration of solutions to the residential customer and is intended to provide an easy entry point for customers and contractors that ultimately integrate other programs for whole house and customer solutions. As awareness of the cost-effective opportunities in whole house retrofits grows through training and education efforts, customers will be presented with the ability to integrate Demand Response and properly-sized onsite generation.

With the inherent synergy that exists between the energy efficiency awareness efforts of CSI and the Whole House programs, EUC information will be made available to IOU teams in call-centers with the intent of providing a EUC introduction to customers or contractors interested in CSI. Coordination with stakeholders who maintain approved solar contractor lists may also provide an

opportunity to deliver the whole house message to parties interested in installing solar systems.

The statewide Energy Advisor program will also provide a unique nexus between CSI and EUC. CSI customers are required to conduct an energy efficiency survey prior to installing solar, which presents a unique opportunity to educate customers on the benefits of improving the efficiency of their home prior to purchasing solar equipment. These efforts are expected to include, but will not be limited to:

- EUC links and information on IOU CSI sites;
- Links to EUC landing pages from Energy Advisor;
- Targeted messaging during and after each survey;
- Information about EUC incentives; and
- Educational information that encourages customers to "reduce then produce."

In addition, any contractors who work onsite with customers can provide delivery channels for DR programs' information or installation of DR technology.

EUC will also serve as a platform to integrate technology advancements in DR and Advanced Metering. IDSM efforts will be part of an ongoing conversation with customers to enhance program offerings and increase their participation in DSM efforts over time.

Table 16: Non-EE Sub-Program Information
[Table 16 Refer to Attachment A3.3 to this PIP]

ii. **Integration across resource types** (energy, water, air quality, etc): If sub-program aims to integrate across resources types, please provide rationale and general approach.

EUC is designed to deliver comprehensive solutions to customers while integrating across resource types to maximize customer benefits not only in terms of energy savings, but through improvements to occupant health, safety and comfort. Primarily, there are opportunities for water efficiency and indoor air quality improvements.

One of the major benefits of comprehensive home retrofits is improved indoor air quality. Residents will notice more consistent temperatures throughout their home and in many cases, improved indoor air quality.
The embodied energy in water distribution will become an increasingly important part of utility programs. The consumer education process in the house-as-a-system approach will provide an opportunity for local governments to present customers with information on non-energy savings inherent in comprehensive retrofits.

[This information can be found in Table 16 Non-EE Sub-Program Information. Refer to Attachment A3.3 to this PIP]

c) **Leveraging of Resources**:

Local Governments

i. SDG&E

Local Governments play a unique and important role in the promotion and advancement of Energy Upgrade California. Beginning in 2009, when the American Recovery and Reinvestment Act was passed and programs like the State Energy Program and the Energy Efficiency & Conservation Block Grant program, jurisdictions across the state were given the unique opportunity to make significant investments on energy programs. Because of the unique and collaborative relationship that exists among the local jurisdictions and SDG&E, and the existence of a non-resource local government partnership program, the San Diego region saw the development of a number of community focused residential retrofit programs including innovative marketing pilots, specialized workforce education & training programs, and a variety of rebate and loan programs that sought to incentivize residents to perform energy upgrades in their homes.

Over the course of the last few years, SDG&E has worked closely with each local government to ensure local programs are closely coordinated and achieve the highest level of collaboration and consistency across the region. Building off the lessons learned over the course of the last few years as well as the unique authorities afforded local governments, SDG&E and the local government program advisory group has developed the following list of key roles that local governments will play to advance Energy Upgrade California during the transition cycle.

1. Incorporate building retrofits & building occupant health and safety issues into Climate Action Plans, General Plans, and other relevant planning and long term strategy documents;

2. Leverage community relationships and resources to market Energy Upgrade California including targeted outreach and education to the community;

3. Provide targeted education on EUC and its benefits to key community stakeholders, business sectors and elected officials

4. Coordinate workforce education and training program activities;

5. Leverage building permit interactions to encourage EUC enrollment and work to develop streamlined permitting process as it relates to EUC;

6. Leverage unique authority to encourage/require building rating/audits to drive customers to EUC;

7. Pilot unique incentive programs such as point of sale audits, to encourage participation in EUC;

8. Work with the financing community to deploy innovative products and services to further enable residential and commercial energy upgrades throughout their jurisdictions.
9. Pilot incentives for Whole Home Energy Rating System II assessment as part of the EUC.

Please refer to the Local Government Partnership Program PIP for budget details associated with these activities.

EUC will coordinate IOU incentives and marketing outreach with local government efforts in neighborhood outreach and contractor recruitment. This effort allows for multiple levels of engagement that, through coordination with local entities, will reach to a neighborhood level that will drive awareness and market adoption.

ii. PG&E

During the development and implementation of the 2010-2012 Whole House Program PG&E partnered and coordinated closely with recipients of American Recovery Reinvestment Act (ARRA), State Energy Program (SEP), and Energy Efficiency & Conservation Block Grant (EECBG) statewide and within

the PG&E service territory. In the 2013-2014 Transition Period, PG&E plans to continue to work with and leverage these partners as described in further detail in the Local Government PIP.

iii. SoCalGas

SoCalGas has worked closely with local governments who received American Recovery Reinvestment Act (ARRA), State Energy Program (SEP), and Energy Efficiency & Conservation Block Grant (EECBG) in the last couple of years. This has allowed SoCalGas and local governments to achieve a high level of collaboration and consistency across the service territory. In conjunction with SCE, SoCalGas is in discussion with local governments who are interested in continuing collaboration post ARRA, SEP, and EECBG era. These discussions will determine key roles for local governments, based on lessons learned and their successful offerings from ARRA, SEP, and EECBG grants. Such activities may include:

1. Expanding existing outreach programs to the Real Estate Community
2. Leveraging existing low-interest financing
3. Drawing upon LA County's experience with FlexPath for modifications to meet the CPUC's goal for a more appealing approach.
4. Marketing and Workforce Development support for contractors

iv. SCE

SCE has worked closely with local governments who received American Recovery Reinvestment Act (ARRA), State Energy Program (SEP), and Energy Efficiency & Conservation Block Grant (EECBG) in the last couple of years. This has allowed SCE and local governments to achieve a high level of collaboration and consistency across the service territory. SCE is in discussion with local governments who are interested in continuing collaboration post ARRA, SEP, and EECBG era. These discussions will determine key roles for local governments, based on lessons learned and their successful offerings from ARRA, SEP, and EECBG grants. Such activities may include:

1. Expanding existing outreach programs to the Real Estate Community
2. Leveraging existing low-interest financing
3. Drawing upon LA County's experience with FlexPath for modifications to meet the CPUC's goal for a more appealing approach.
4. Marketing and Workforce Development support for contractors

d) **Trials/ Pilots:**

1) SCE/ SoCalGas Moderate Income Direct Install-MIDI

The Local MIDI Program will be offered by SCE and SoCalGas to eligible customers residing in single family and multifamily properties (multifamily common areas excluded) served by SCE and SoCalGas. The MIDI Program will coordinate with SCE and SoCalGas' Energy Savings Assistance program (ESAP) to deliver MIDI measures through select ESAP Contractors. ESA Program infrastructure will be used to administer the MIDI Program. When working in joint SCE/SoCalGas territory, shared contractors will offer both IOUs' Program measures. The MIDI Program will encourage residential owners/property managers of single family and multifamily properties to install comprehensive energy efficiency improvements.

The EUC Program traditionally requires significant financial contributions by customers who wish to participate. The MIDI Program closes the financial gap by installing no-cost measures thereby reducing the total amount of money a customer would need to invest in their property in order to participate in the SF or MF EUC Program.

SCE and SoCalGas propose:

- To implement a MIDI trial with a set goal of 2,000 units served per year
- Per the Commission's instruction to to double the number of projected participants for the MIDI program and associated budget increases, SoCalGas requires a budget of $2 million per year for a total of $4 million for the 2013-2014 cycle. Develop a scalable program design for larger rollout in future cycles.
- Evaluate delivery of MIDI Program utilizing existing ESA Program infrastructure.

1. <u>Customer/Living Unit Eligibility</u>

To participate, the following guidelines must be met:

a) participants must be income eligible (between 201% and 250% of FPG)

b) living unit must not have received ESAP services after January 1st, 2002

c) living unit must meet the current ESAP/MIDI minimum measure requirements

2. <u>Measures</u>

ESA Program approved measures excluding appliances

3. **Contractors**
   SCE and SoCalGas will coordinate with select experienced joint ESAP contractors to perform an assessment of the living unit, complete customer enrollment, and install measures as applicable in the MIDI Program trial.

2) **SDG&E Trial Incentives**
SDG&E may explore additional incentive trial offerings for customers who perform an HVAC QI installation as part of a scope of work. Additional trial integration offerings may include offering IHDs, PCTs, or other enabling technologies for advance path customers who achieve certain saving levels.

11) Market Transformation Information:

1) **Summary of the market transformation objectives of the program.**
The EUC Program is designed to fulfill the goals of the *Strategic Plan* by guiding and incenting home and building buyers, owners and renovators to implement a whole house approach in energy consumption undertaken in their purchase and use of existing and new homes and buildings, home and building equipment (e.g. HVAC systems), household appliances, lighting and "plug load" amenities. The target is all existing homes in an effort to realize the maximum energy efficiency potential via the delivery of a comprehensive package of cost-effective whole-house and whole-building energy efficiency retrofit measures. These programs will include building shell upgrades, high-efficiency HVAC systems – appropriately sized for the building structure, and emerging deep energy reductions in the lighting, appliance, plug-load and other residential oriented sectors. This initiative will be structured around a comprehensive audit, installation of the variety of retrofits required across the entire building structure, and access to attractive financing programs. The EUC effort will be achieved via the parallel and coordinated efforts of the utility programs, partners and other private market actors, and the State and local government policies and programs made available. As IOUs implement a system of automatic meters and wide-area network to enable data transport, the IOUs and customers will have the opportunity to integrate additional home automatic systems and integrated energy management features into the home (i.e., interim Intelligent Home Network, comprehensive Home Automatic Network and etc.) to support IDSM integration and deployment. The Plug Load and Appliance Program will have the potential to offer not only hardware based energy savings, but also comprehensive behavior savings opportunities.

2) Identification of the relevant market actors and the relationships among them.

The Whole Home Upgrade program is designed to serve residential homeowners, moderate income households and property owners and managers. For the 2013-2014, the program consists of the following paths:

- *Enhanced Basic/Modified Flex Path*
- *Advanced Path*
- *Multifamily Path*

Energy Upgrade California is a contractor led program in that it is the local contractor who interfaces with the customer, markets and sells the concept of Whole House Retrofits, and completes the actual work. The Statewide Process Evaluation (5/1/12) revealed that 32% of participants first heard about the EUC program from a contractor. A number of Local Governments, most initially supported by CEC/ARRA funding during the 2010-12 time frame, also support the program via local marketing and incentive offerings. Coordinated on a Statewide basis – the IOUs offer consistency in program scope (to the degree possible) and a consistent marketing message.

3) A market characterization and identification of key barriers and opportunities to advance demand-side management technologies and strategies

Market Characterization

The IOUs statewide Energy Upgrade California Program has initially focused on training a pool of qualified contractors available to perform these comprehensive retrofits. The number of individuals with active BPI certifications grew dramatically between January 1, 2010 and November 1, 2011. Total active certified individuals grew from 65 to 1,596. The number of certifications (individuals may have more than one type of BPI certification) grew from 88 to 2,349. The 2010-2012 PG&E and SCE Whole-House process evaluation study by SBW/ODC/ASW, produced a number of findings, including:

Overarching program participant profile

- The program participation is primary through the *Advanced Path* and there is little engagement in the *Enhanced Basic/Modified Flex Path* service.
- *Advanced Path* jobs report energy savings of 30% average in this first program phase.
- The average cost per job ranges from $13,000 to $16,000

- The utility incentives covered typically 23% to 27% of the project costs.
- Despite the large supply of program contractors, only a limited pool of larger contractors complete the majority of the projects
- Many – 44% of participants – used financing to pay for their projects.

Contractor recruiting/training/mentoring—from SCE's in-depth assessment

- There are widespread contractor performance gaps despite a certification requirement (i.e., BPI).
- The current contractors' participation training does not adequately prepare them for job processing expectations and the rigor of the QA/QC process,
- BPI certification does not guarantee a standardized job performance level
- Since the requirements for certification often vary (i.e., (1) on-line training versus in-person classes, (2) different region may place different emphasis, i.e., Vermont may focus more on heating, while California may focus more on HVAC).

For the targeted population—from PG&E's in-depth market effectiveness assessment

- 29% of the targeted population are aware of Energy Upgrade California (EUC),
- 13% of the targeted population reported seeing logo displayed,
- 3% of the targeted population have visited the website,
- 43% of the targeted population has been exposed to at least one marketing treatment from EUC.
- Among those "aware" in the targeted population, 27% first heard of the program from radio, (PG&E did not do radio ads but the local governments did), 18% from direct mail, 11% Newspaper, and 10% each for Word-of-Mouth, Internet and Television.
- Among workshop participants, word-of-mouth and events are the most effective communication channels.
- Program homeowner participants ranked "comfort", "reduced energy bill", "benefits of the incentive" and "home energy assessments" as important reasons for why they participated.
- Contractors report the most effective messaging in their opinion are the messages of: Comfort, Incentives, Lowering energy bills

Market Actors:

- Homeowners/renters & property owners/managers
- Contractors
- Real Estate Professionals
- Financial Institutions
- Property Appraisers
- Local governments

Relationship Among the Market Actors:

The contractor community is the key actor with the EUC. They are the program actor who outreaches personally to the owner of the building and home and communicates the concepts of approaching a building on an entire whole basis. And it is the contractor who proposes the appropriate work and completes the retrofit. The contractor provides the linkage between the EUC and the customer who receives the rebate.

Working together, the real estate professional, appraisal and financial communities are market actors that can help push energy efficiency in the home resale market. Realtors can be educated to differentiate the advantages of purchasing energy efficient existing residential structures to prospective home buyers. Working with the appraisal community to perceive installed energy efficient measure in a home as monetary assets to a structure thus increasing the property's value can be a significant push to the acceptance and importance of energy efficiency and financial institutions recognizing this effort to provide exceptional financing opportunities to prospective home buyers for their investment in an energy efficient home.

Many local governments were very active in the EUC sector in the prior 2010-12 cycle as supported by ARRA funding. Some of those local government programs will be continuing on into the 2013-14 program cycle. The IOUs will continue to provide EUC as a foundation offering to our customers, and local governments can continue to build upon these (with additional rebates) or support these with customized marketing programs. The IOUs will coordinate and partner with local governments in an effort to achieve the synergy possible between these aligned efforts.

Opportunities to advance demand side management technologies and strategies:

Building owners who have committed to a EUC retrofit solution will have taken the ultimate step in applying energy efficiency technology to minimize their energy usage. They have evidenced their willingness to pursue minimizing energy usage, and are therefore self-identified as highly likely to embrace the next step(s) of demand side technologies and strategies to further minimize energy usage. So the next phase of energy reduction for the EUC retrofit customers will be the variety of demand side reduction programs that the IOUs can make available.

Key Barriers & Opportunity for Intervention:

The barriers for this program for the homeowner sector are the:

(1) Relatively high cost of home assessments,
(2) Relatively high gross costs of comprehensive energy upgrades,
(3) Market not aware of additional non-economic values resulting from comprehensive energy upgrades,
(4) Fledgling contracting and supporting industry for existing home energy upgrades,
(5) Low consumer awareness of incentive subprograms and the concepts of comprehensive home energy assessments and upgrades,
(6) Lack of common home rating protocols and common vernacular for the market to assign value to homes which undergo comprehensive energy upgrades,
(7) The economic downturn and its impact on the residential housing sector.
(8) Contractor awareness and access to information,
(9) Access to financing,
(10) Lack of access to skilled labor.

Note: Potential participants who have attended a workshop (PG&E) also explain their lack of participation in that they haven't been able to contact/find a contractor yet.

For the owners and/or managers of multifamily buildings, there are another set of barriers, closely aligned to those for private single-family homes, but different in some very important dimensions:

(1) Lack of knowledge regarding energy efficiency as well as the comprehensive programs that are offered by the IOUs,
(2) Challenge of the "split incentive" where it is the building owner/manager who must pay for all building improvements, including those inside of the individual rental units. But it is the tenants of the unit that pay the energy bills and therefore receive the immediate benefits of the energy efficient investment (by the landlord),
(3) Multifamily buildings are managed as businesses, where capital for major improvements must be borrowed. But the extended ROI for most energy efficiency projects is longer than the few years that most business allow for recouping their investments,
(4) To implement a "whole building" retrofit, the apartment owner/manager must typically bring in several specialty contractors for multiple visits, which in tenant occupied units is a very challenging task,

(5) Tenants having to out of the rental units during retrofit work, as well as the management time required on behalf of the building owner/manager – is a costly investment of resources,
(6) Major retrofit often can only happen when the rental unit(s) is unoccupied – which is a significant loss of income for the owner/manager,
(7) Managed as a business – multifamily building owners/managers are not inclined to replace any major building component or energy system prior to its actual wear-out/break-down. Building retrofits usually take place toward the "end-of-life" of key components (HVAC – for example) – but not when they break-down. Building owners/managers cannot afford the impact on tenants of having key systems not functioning for any length of time.

4) A description of proposed intervention(s) and its/their intended results
EUC seeks to address these barriers for private single-family homes through:

1) Continued marketing of Energy Upgrade California and whole house concepts. (Barrier 3, 5, 8)
Intended Results: Increase awareness

2) Continued contractor recruitment, training and mentoring. (Barrier 4, 5, 8, 10)
Intended Results: Continue to maintain and improve the supply and quality of the contractors serving the program

3) Expanded customer uptake through EUC incentives. (Barrier 1, 2, 5)
Intended Results: Use incentives to reduce the barrier of entry into the comprehensive retrofit projects

4) Offering of Financing programs (by IOUs and/or other entities) (Barrier 1,2, 9)
Intended Results: Provide building owners the upfront cash they need to borrow to invest in a retrofit project, and amenable loan terms by which to repay that loan (note: this program component will be particularly important in the multifamily sector).

5) Continued stakeholder outreach to address barriers. (Barrier 1, 3, 4, 5, 6, 8, 10)
Intended Results: Leverage resources outside the IOUs to address market needs

6) Continued partnerships with local and state government to address barriers. (Barrier 1, 2, 3, 4, 5, 6, 8, 9, 10)

Intended Results: Leverage local government resources to engage communities and targeted population to participate in the program

The IOU's considered the following when determining the Program's low, medium and high scenarios for program year 2013-2014:

SoCalGas					
Scenarios	**2013**		**2014**		**Assumptions**
	SF Homes	**Budget**	**SF Homes**	**Budget**	
Low	**508**		**508**		· *ARRA sunset more challenging than expected* · *Competition from Local Government programs* · *Further challenges with the economy*
Medium	725		725		· *Expected program performance*
High	**870**		**870**		· *Efficiencies and improvement in program model* · *New financial options coming online* · *Increase local government involvement & support*
Note: These scenarios include SoCalGas only and shared IOU territories.					

In D.12-11-015 the CPUC directed that "The IOUs should meet or exceed all of the targets in the high-participation scenarios filed in their EUC program implementation plans." The 2013-2014 high scenario EUC participation goal for SoCalGas is 1,740 single family units for gas-only projects (i.e., for the non-SCE or PG&E overlap territories). SoCalGas notes that any changes in

the REN territory for offering EUC Enhanced Basic/Modified Flex Path during the 2013 – 2014 program cycle may impact the high scenario participation target.

Utility	Scenario: High
SoCalGas (2013-2014)	1,740

And for EUC *Multifamily* the barriers will be addressed by these actions:

1) To improve a property owner or manager's energy efficiency knowledge, the *Multifamily Path* would seek to leverage comprehensive investment grade building assessments to identify potential energy efficiency opportunities. (Barrier 1)
2) To address split incentives and cost of upgrades, the *Multifamily Path* would integrate with the existing Energy Savings Assistance Program ("ESAP") and the Multifamily Energy Efficiency Rebate ("MFEER") Program. This would provide comprehensive services to the building, including "low cost" or "no cost" tenant measures in conjunction with the EUC *Multifamily Path* whole building incentives in order to maximize energy savings for the up-front investment. (Barrier 2)
3) Incentives would assist property owners or managers with overcoming a wide array of market and financial barriers which may otherwise prevent energy efficiency upgrades (Barrier 1, 5)
4) Create a single point of contact that would assist the property owner or manager navigate through the incentive and retrofitting process. This approach would provide support in understanding the various program rules and assistance in determining eligibility. The property owner or manager would be guided through an easy and streamlined preliminary assessment to establish feasibility and estimate project cost for the *Multifamily Path*, with an eye toward leveraging all eligible programs. (Barrier 4)
5) Target buildings planning on or undergoing renovation projects to limit customer time burden and lost rental income. (Barrier 4, 5)
6) Multifamily sector is comprised of a wide diversity of properties which can be segmented by: 1.) rental rate (low – medium – or high; and/or 2.) size of the building and also size of the company that owns or manages the building. Defining the unique concerns and needs of building owners and managers by these variables of tenant socio-economic status and ownership/management structure will allow much more effective messaging and marketing communications. (Barrier 1, 2, 3, 4, 7)

7) On Bill Financing or Repayment program which could be focused on the tenant or the common property energy agendas. This program will provide access to capital to fund investments in energy efficiency upgrades for buildings at an attractive interest rate. (Barrier 2, 3, 7)

5) A coherent program or "market" logic model

The EUC is designed to use a market transformation framework to pull in new measures and push out the mature measures. The diagram below describes this iterative process.

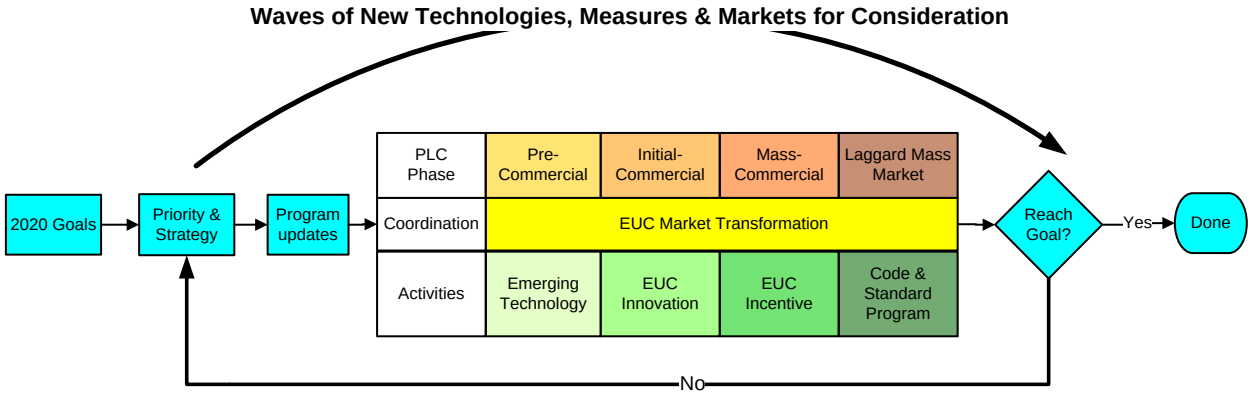
EUC will be serving both homeowners and property owners/managers, with the intent to coordinate its program activities with the low-income program to meet special needs. Like the other market transformation programs, the EUC Program, will work with Emerging Technology (I), Plug Load & Appliance, Residential HVAC Programs and other residential programs to leverage new and innovative technologies and applications, while pruning more mature technologies and applications from program offerings. These program interactions are described in the Whole House Program Key Support Activity Process Diagram below. These interaction and coordination decisions will be facilitated by IOUs' Decision Panel (A) as indicated in the logic model.

To reduce market barriers, the program's activities are designed to "get the word" out about the benefits of comprehensive retrofits through both mass marketing (D) as well as ground-up individual outreach for neighborhoods and communities (C), by working with local governments and entities. To help property owners understand their energy consumption profile (E), the participants will be encouraged to use a Energy Advisor survey (E) to gauge the overall consumption profile prior to making retrofit decisions, thus respecting the load order of implementation cost effectiveness, and to engage and motivate additional behavior-oriented energy efficiency and conservation actions. To ease the financial burden of the project cost and investment, the program will make financing packages and information available to prospective participants (G).

The program recognizes the importance of having a pool of qualified and competent contractors available to meet the market needs (J & O). The program offers BPI certification training as well as participating contractor ongoing training and mentoring to meet the needs of the workforce and program quality control requirements. This increase in the quality and the quantity of the labor pool, will contribute to contractors' performing projects, outside of the program, to meet deep energy retrofit needs, leading to non-participant spillover effects (R, S & V).

The expected outcome of this program includes increased and improved awareness, knowledge and attitude (AKA) of homeowners and apartment owners towards understanding the benefits of deep energy retrofits (P). After realizing these benefits from program participation, the participant further enjoys other non-energy benefits such as improved comfort of the house and increased value of their properties. The increased value in the property will become more pronounced as the state finalizes its home rating system, so the home purchasers will be aware of the inherent value of properties complete with deep energy reduction retrofits (U). All of these benefits will help the program participants to continue property improvements outside of the program and outside of the program offerings, leading to spillover effects (T). These participant and non-participant spillover effects will eventually change the overall composition of the housing stock at the market level, making housing and building code ratcheting possible for society (X & Y). These codes and standards changes will lead to further reduction of energy consumption at the market level leading to fulfilling the objectives of the California Long-Term energy and environmental policies (AA).

For the benefit of readers, the associated Program Performance Metrics (PPMs) and appropriate Market Transformation Indicators (MTIs) are identified in this logic model. Additional key program support activities are diagramed as a process diagram for further illustration. The EUC Program will have the option to conduct additional pilots/trials to test technologies, applications or other programmatic design and marketing possibilities. The learning from those activities is expected to contribute to the program innovation and further learning.



Within this context, a decision making body, the IOUs Decision Panel, is formed to manage and guide this process. (Please refer to logic model & activities below)

6) Appropriate evaluation plans, corresponding Market Transformation Indicators and Program Performance Metrics based on the program logic model

Due to the need to comply with the Decision's timeline for filing the 2013-2014 PIP, and our desire to comply with earlier Decisions that call for gathering stakeholder input in informing market transformation efforts, we suggest that a full market effects evaluation plan be developed during the formulation of the Joint EM&V Plan as described in section "18.1. Evaluation Budget" in Decision R.09-11-014. Until then, we suggest the following approach:

Summative evaluation: Market Effects. The market transformation program's theory and logic model will be used to guide the evaluation efforts. The scope of the market effects study should be defined by the MT program's scope. The timeline for specific market effects that are to be evaluated should be defined by the MT program theory. Among other indicators, the program theory may specify changes in market characteristics that can be evaluated, such as 1) Spillover, 2) attitudes, awareness and knowledge, 3) reductions in specific market barrier, 4) current pricing and product availability, and 5) other market milestones. We will make the following distinction between program "spillover" and market effects: spillover is energy savings not directly tracked by the program, whereas market effects are broader and would include spillover as well as meaningful changes in the structure or functioning of the market.

Formative evaluation: The formative evaluation of a market transformation program is typically performed at the intervention (i.e. program) level. The methods are the same as would be used in a program process evaluation, and would include interviews with program staff, participants and non-participants as well as an assessment of the program's direct outputs.

Program Performance Metrics:

The IOUs have evaluated 2010-2012 PPMs in Resolution E-4385 for applicability to the 2013-2014 program cycle and propose to work collaboratively with Energy Division to develop revised program targets and PPMs as appropriate for the 2013-2014 program cycle. The IOUs' will propose revisions in an advice letter, per additional guidance from Energy Division.

Table 3.1: Short-Term PPMs

On December 2, 2010, the Commission issued Resolution E-4385, approving Program Performance Metrics (PPMs) for Pacific Gas and Electric Company, Southern California Edison Company, Southern California Gas Company and San Diego Gas and Electric Company for 2010-2012 statewide energy efficiency programs and subprograms. The Commission gave each PPM a metric type which indicated the reporting frequency: Metric type 2a indicates that the IOUs should report on the metric on an annual basis (unless indicated otherwise). Metric type 2b indicates the IOUs should report on the metric at the end of the program cycle.

Table 3.2 Long Term PPMs

SoCalGas includes long term PPMs[9] per Energy Division guidance received in December 2012. As stated in the Joint Utilities' comments to the Commission in R. 09-11-014 dated November 21, 2011, and discussed between IOUs and ED on January 9, 2013, IOUs plan to finalize long term PPMs in further discussions with involved stakeholders and propose updates to Energy Division at a later date.

This information can be found in Tables 3.1 and 3.2 in Attachment A3.3 to this PIP.

Market Transformation Indicators:
DeepRetrofit-2 The number of households that elect to perform comprehensive energy upgrades.

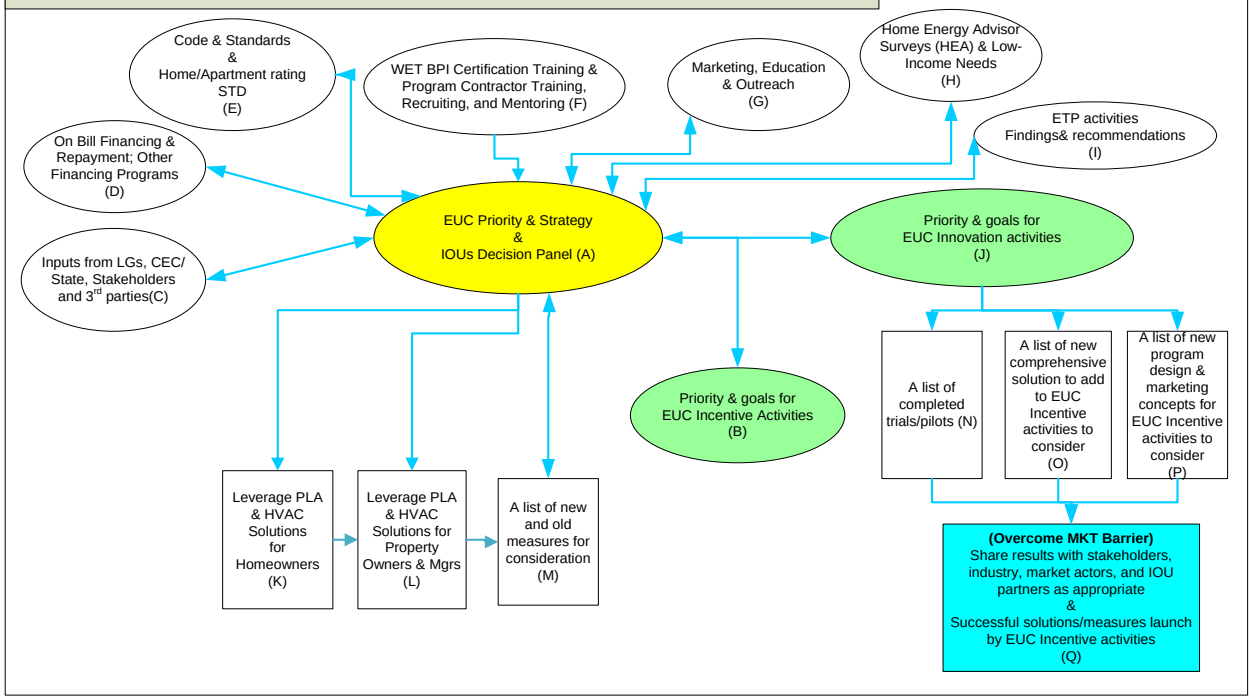
Market transformation indicator results shall be reported, as available, by Energy Division or the IOUs, depending upon who conducts the necessary market studies. (Res. 4385, 12/2/10)

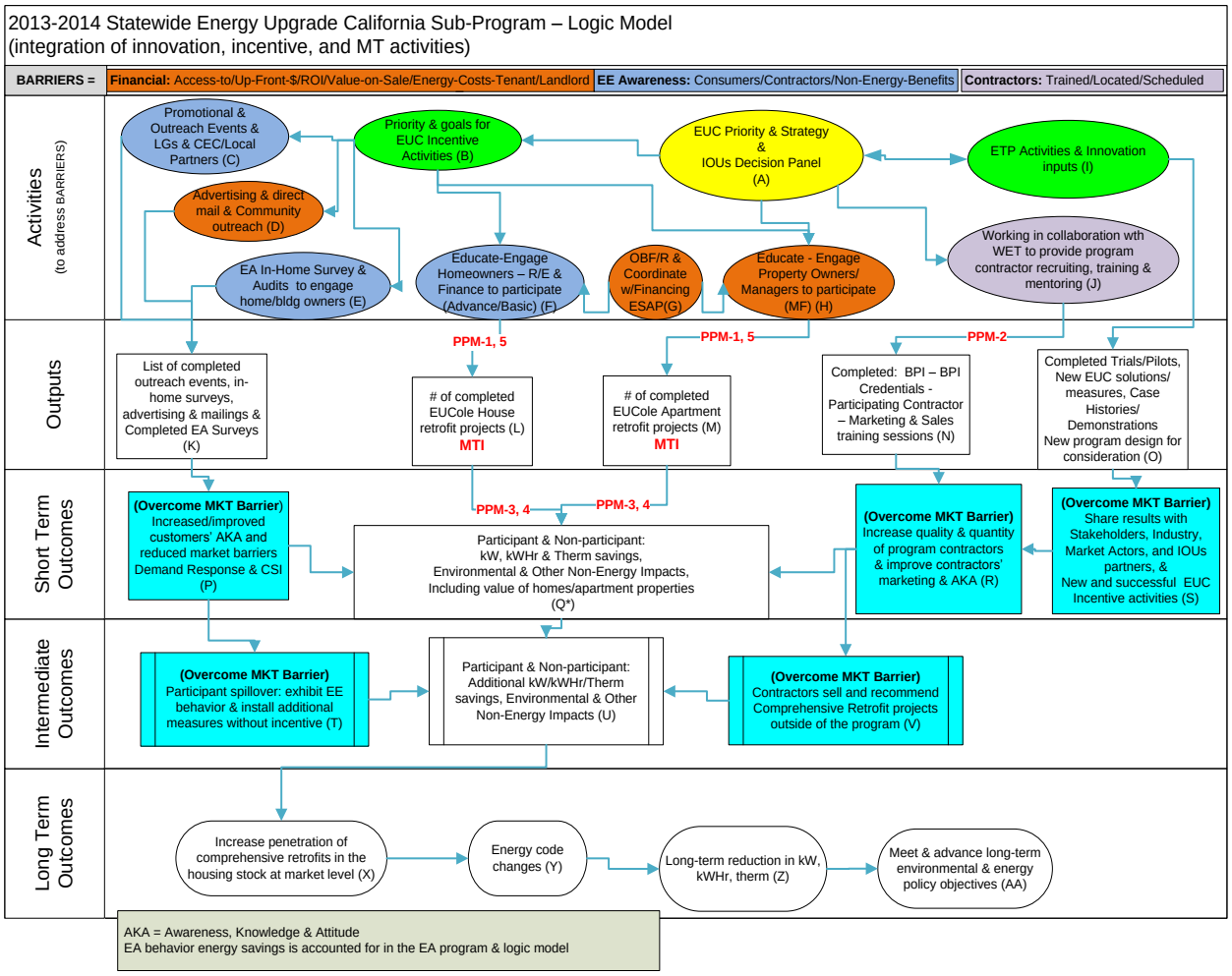
Resolution E-4385 identifies a preliminary list of objectives and market transformation indicators (MTIs) for statewide energy efficiency programs and subprograms. These MTIs will be presented at a public workshop to allow for public comments and discussion before being finalized. The Resolution further 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. Per guidance from Energy Division received in December 2012, the approved Market

Transformation Indicators for 2013-2014 are filed as a Joint IOU matrix, included as Appendix F.

Attribution. Outside of California, most guidelines for evaluating market transformation acknowledge that it is very difficult to attribute market effects to any single program, and nearly impossible to partition out the respective contributions of several coordinated programs on market effects and market transformation. In California, the Framework (Sebold et al., 2001) emphasized that attribution of market effects to programs bears further research. Others (Rosenberg & Hoefgen, 2009; Keating & Prahl (MT Workshop, Nov 2011) suggest that declaring the program's strategic intent through the market transformation initiative's theory and logic model is key to establishing future claim on transformation effects. The methods proposed by Rosenberg &Hoefgen (2009) for attributing market effects to individual programs include a number of approaches, all of them qualitative: self-report of spillover and free ridership; cross-sectional comparisons with other geographic regions; structured expert judging; and case studies. But attribution using a "preponderance of evidence" approach would likely be expensive and still yield arguable results. Attribution by nature focuses on individual program efforts, and we believe the market transformation evaluation discourse should be focused on the overlapping synergy among all programs and influences in the market. We realize we all have a "Shared Mission" of meeting the CPUC's very aggressive Strategic Plan goals. We do not wish to not invest resources in teasing apart which program entity contributed how much, but instead will plan to focus on whether all the market forces across the State of California have succeeded in transforming the market.

2013-2014 Energy Upgrade California Sub-Program Key Support Activities – Process Diagram





12) Additional information as required by Commission decision or ruling or as needed:
Include here additional information as required by Commission decision or ruling (As applicable. Indicate decision or ruling and page numbers):

IOU Streamlined Emergency Replacement Protocol and Streamlined High Performing Contractor Protocol

1. SDG&E

a. Streamlined Emergency Replacement Protocol

Per section 7 of SDG&E's QA/QC Quality Assurance and Quality Control Plan:

7.0 Emergency Replacement of Major Systems

7.1 *It is recognized that there may be instances whereas immediate replacement of major systems is required due to health, safety and quality of life circumstances. In the event the customer has immediate need for equipment replacement, the QA/QC process will not interfere with a customer's ability to participate in the EUC.*

7.1.1 Major systems that qualify under this provision are identified as:
- a. HVAC Systems or components
- b. Hot water heater replacements

7.1.2 In the event that a contractor wishes to install a major system identified herein under the provisions of an emergency replacement, the contractor shall contact and notify the QA/QC vendor immediately of the customer's emergency situation and to request accommodation under this provision. The QA/QC provider will determine if the circumstances warrant this provision.
- a. The contractor will provide the QA/QC the customer contact information, make/model/serial numbers of existing equipment and date the replacement will be installed.
- b. The QA/QC vendor may field-verify the equipment to be replaced.
- c. The contractor can proceed with emergency work.
- d. To include the emergency work as part of any EUC project scope, contractors must follow all other procedures for participation in the EUC Program.
- e. Any and all changes to the home prior to submitting a Pre-Retrofit Project Submittal Package shall be only for the immediate emergency need pre-approved by the QA/QC vendor and must be documented in the Pre-Retrofit Project Submittal Package.
- f. All other project scope work outside of the approved emergency work must go through the standard QA/QC process as defined in this plan.

b. Streamlined High Performing Contractor Protocol

Per SDG&E's Quality Assurance and Quality Control Plan, SDG&E QA Review turnaround times are guaranteed to be 3 working days or less for both pre and post QA Review (desktop). This time period is consistent with state contracting laws concerning consumer's 72 hr. right to rescind.

Tier 3 contractors, meaning those contractors who have successfully completed a minimum of 30 projects are eligible for random QC Inspection sampling rate of 10% pre and 5% of post project submittals.

In essence this means that high performing contractors with at least 30 projects will have 90% of their pre project submittals and 95% of post project submittals reviewed within 3 working days.

2. PG&E

a. Streamlined Emergency Replacement Protocol

The following process that is already in place in 2012 serves the purpose of both an emergency replacement protocol, as well as a Fast Track process for all participating contractors in good standing.

The general policy for all equipment replacements performed within the PG&E program is that participating contractors and their subcontractors should wait for a Notice to Proceed to be issued before commencing work on a job for the program. However, in order to proceed with emergency replacements or expedited upgrades due to customer specific needs, contractors may proceed within the guidelines of this Fast Track Process. In order to be eligible for this Process, participating contractors must be active and in good standing under the PG&E program.

Upgrades may be started before the Notice to Proceed is issued if the participating contractor is confident that the job qualifies for the Program. Prior to adjusting or installing measures, the contractor must perform a comprehensive test-in, including combustion safety testing, to document the pre-existing conditions. The contractors should take pictures to document uncommon or unique situations.

Participating contractors that choose to perform work without the Notice to Proceed accept full liability that the rebate funds have not been reserved and that their customers may not be eligible.

In order to make the Fast Track Process work for participating contractors and their customers, the PG&E program recommends that the contractors do the following:

- Ask for a copy of recent PG&E bill to validate that the customer has an active account and have a clear understand the Program eligibility requirements.
- Make sure to understand how to use and model homes in EnergyPro proficiently to reduce the chance of error in rebate calculation or delayed application processing.
- If providing a rebate estimate, make it clear in the proposal that it is based on the un-validated energy model savings and may change after the quality control review process.
- Participate in the Process after completing at least 10 upgrades without desktop or field QA issues.
- Submit the application as soon as possible to ensure timely payment to the customer.

3. SCE

a. Streamlined Emergency Replacement Protocol
Southern California Edison & Southern California Gas Emergency Equipment Replacement Policy for HVAC/DHW System

Due to the climate of Southern California, during the first few months of summer and winter there is a rise in the volume of HVAC emergency replacements driven by homeowners re-engaging their HVAC systems after periods of non-use. Participating Contractors will be involved in these replacements and they have the opportunity to inform homeowners of the additional benefits of the EUC Program. The Emergency Equipment Replacement Policy for HVAC/DHW Systems allows homeowners to take credit for energy savings from emergency equipment replacement provided **all of the following conditions are met**.

Eligibility

1. The homeowner meets all mandatory *Advanced Path* program requirements as described in the Advanced Package Minimum Specifications and this Emergency Equipment Replacement Policy for HVAC/DHW Systems.
2. The space heating and/or domestic hot water system must have been 'red tagged' or deemed unsafe by the utility, service technician or building inspector; or the system has failed, cannot be repaired and must be replaced.
3. The contractor submits the completed Record of Emergency Equipment Replacement Form within the timelines indicated in the Notification/Authorization Requirements section.

> **Note**: In the event the customer/contractor fail to meet the timelines indicated the project runs the risk of not being able to include the energy savings from the installation of the new equipment in the energy simulation (Energy Pro) model.

Notification/Authorization Requirements

To submit notification and receive authorization to proceed for an eligible emergency equipment replacement, the following steps must be followed:

Step 1: Submit for Pre-Replacement Approval

1. The contractor is required to submit a Record of Emergency Equipment Replacement Form.
2. The contractor is required to complete Sections 1 – 4 of the Record of Emergency Equipment Replacement Form, sign and date the customer/contractor signature section, provide detailed photographic evidence of the existing equipement installed in the residence (clearly showing the area around the existing unit) to include

nameplate information (make, model, serial number, etc) and then provide a scanned copy in .PDF format to EUCA_Processing@icfi.com.

3. Upon receipt of the completed form, ICF will provide written notification of Authorization to proceed via e-mail to the contractor within one business day (8-10 business hours).

Step 2: Receive Authorization to Proceed
Upon Authorization to proceed the contractor may commence installation of the new HVAC and/or DHW equipment.

Step 3: Complete Emergency Replacement and Submit Final Paperwork

1. Upon completion of the installation of the new equipment the contractor shall complete Section 5 of the Record of Emergency Equipment Replacement Form, sign and date the customer/contractor signature section, detailed installation invoice, and then provide a scanned copy in .PDF format to ICF (EUCA_Processing@icfi.com) within five (5) business days of the new equipment installation. If measures installed exceed the scope of written authorization given, credit will not be given for those additional measures. If the paperwork is not received within those 5 business days, the final decision to allow the credit for the installed equipment will be at the sole discretion of Program Management and will not be able to be appealed.

2. The Incentive Reservation Form must be turned into the Program within 30 calendar days of Emergency Equipment Replacement Approval. Failure to do so will result in not receiving credit for installed equipment.

While age, size and efficiency of the existing system are a factor, it shall not be the sole determining factor for selection of equipment replacement. Best practices dictate that any replacement of central heating or cooling systems require submittal of a Manual J load calculation and must take into account all existing and/or proposed energy efficiency measures that will significantly impact load and allow for correct equipment sizing.

If HVAC re-ducting is required in this emergency, the pre-retrofit building simulation model will automatically use the default vintage default tables for total duct leakage. This percentage is not able to be contested, should an appeal situation arise.

Mandatory Documentation for Emergency Space Heating Equipment Replacement
The contractor shall provide information about the existing equipment being removed utilizing the Record of Emergency Equipment Replacement Form. At a minimum, the

information collected regarding the existing space heating equipment shall include the following:

- Contractor's business name, address and phone number
- Date of removal
- Reason for replacement (operational failure; health and safety)
- Manufacturer's name and model number of space heating equipment
- Rated efficiency, output, input from the nameplate
- Fuel type (natural gas, electric)
- Type of system (forced air, hydronic/radiant or combo)
- Type of venting (e.g. chimney, side vent, barometric damper)

The existing space heating equipment must be replaced with equipment meeting the Advanced Package Minimum Specifications. New gas-fired furnaces must have an Annual Fuel Utilization Efficiency (AFUE) of 92% or greater to qualify under the Emergency Replacement Policy for HVAC Equipment.

The contractor shall provide a copy of the invoice for the new space heating equipment and the Record of Emergency Equipment Replacement Form to their dedicated account manager within 5 business days of written authorization to proceed with the new equipment installation. At a minimum, the invoice for the new space heating equipment shall include the following:

- Contractor's business name, address and phone number
- Date of installation
- Manufacturer's name, model and serial number of new space heating equipment
- Rated efficiency, output, input from the nameplate
- Fuel type (natural gas, electric)
- Type of system (forced air, hydronic/radiant or combo)
- Type of venting (e.g. chimney, side vent, barometric damper)

While replacing the space heating equipment, this may be an opportunity to also replace the central air conditioner with a higher efficiency model. The existing equipment must be replaced with equipment meeting the requirements listed in the Advanced Package Minimum Specifications. Contractor will need to supply the following information about both the new and existing air conditioning unit:

- Contractor's business name, address and phone number
- Date of installation
- Reason for replacement (operational failure; health and safety; Other, please explain)

- Manufacturer's name and model number of cooling equipment
- Type of system (central air, heat pump)
- Rated efficiency (SEER, HSPF),unit size, and cooling output from the nameplate

Mandatory Documentation for Domestic Hot Water Equipment Replacement
The existing domestic hot water system must be replaced with equipment meeting Advanced Package Minimum Specifications. In addition, new domestic hot water heaters must have an Energy Factor (EF) of 0.62 or greater, and new domestic tankless hot water heaters must have an Energy Factor (EF) of 0.82 or greater to qualify under the Emergency Equipment Replacement Policy.

The contractor shall provide a copy of the invoice for the new domestic hot water equipment and the Record of Emergency Equipment Replacement Form to their dedicated account manager within 5 business days of written authorization to proceed with the new equipment installation. At a minimum, the invoice for the new domestic hot water equipment shall include the following:

- Manufacturer's name and model number of domestic hot water equipment
- Type of system (gas, electric)
- Rated efficiency (energy factor)
- Unit size (gallons)
- Input from the nameplate (Btu’s)

Mandatory Requirements for Emergency Equipment Replacement Approval
Once administrative approval and written authorization to proceed is granted, the contractor may immediately install the individual measures if the following conditions are met:

1. Provide photographic evidence of the existing system installed in the residence clearly showing the area around the existing unit and detailed pictures of the existing equipment to include nameplate information (make, model, serial number, etc.).
2. The contractor shall provide a copy of the Invoice for the new space heating and/or cooling equipment and the completed Record of Emergency Equipment Replacement Form to their dedicated account manager within 5 business days of the installation of the new equipment (if applicable).
3. The contractor shall provide a copy of the Invoice for the new domestic hot water equipment and the Record of Emergency Equipment Replacement Form to their dedicated account manager within 5 business days of the installation of the new equipment (if applicable).

In the event the customer/contractor fail to meet the timelines indicated the project runs the risk of not being able to include the energy savings from the installation of the new equipment in the energy simulation (Energy Pro) model.

b. Streamlined High Performing Contractor Protocol

Contractors who have completed 10 Basic or 10 Advanced projects and have completed all of their field mentoring and online learning center modules with a passing score can be eligible for their projects to be sampled instead of being selected for 100% pre and post on-site inspection.

4. SoCalGas

a. Streamlined Emergency Replacement Protocol

Southern California Gas Emergency Equipment Replacement Policy for HVAC/DHW System

Due to the climate of Southern California, during the first few months of summer and winter there is a rise in the volume of HVAC emergency replacements driven by homeowners re-engaging their HVAC systems after periods of non-use. Participating Contractors will be involved in these replacements and they have the opportunity to inform homeowners of the additional benefits of the Program. The Emergency Equipment Replacement Policy for HVAC/DHW Systems allows homeowners to take credit for energy savings from emergency equipment replacement provided **all of the following conditions are met**.

Eligibility

1. The homeowner meets all mandatory *Advanced Path* program requirements as described in the Advanced Package Minimum Specifications and this Emergency Equipment Replacement Policy for HVAC/DHW Systems.
2. The space heating and/or domestic hot water system must have been 'red tagged' or deemed unsafe by the utility, service technician or building inspector; or the system has failed, cannot be repaired and must be replaced.
3. The contractor submits the completed Record of Emergency Equipment Replacement Form within the timelines indicated in the Notification/Authorization Requirements section.

Note: In the event the customer/contractor fail to meet the timelines indicated the project runs the risk of not being able to include the energy savings from the installation of the new equipment in the energy simulation (Energy Pro) model.

Notification/Authorization Requirements

To submit notification and receive authorization to proceed for an eligible emergency equipment replacement, the following steps must be followed:

Step 1: Complete Emergency Replacement and Submit Paperwork
Upon completion of the installation of the new equipment the contractor shall complete the Record of Emergency Equipment Replacement Form (this form is available at **socalenergyupgradecontractors.com** under the View Resources tab), sign and date the customer/contractor signature section, and then provide ascanned copy in PDF format uploaded into the Vision DSM System within ten (10) business days of the new equipment installation.

Step 2: Receive Emergency Equipment Approval
Should documentation above be provided within the ten (10) calendar days of new equipment installation, Emergency Equipment Approval notification will be sent to the contractor and customer.

Step 3: Submit Pre-Retrofit Project Information
In the case of emergency replacement of major mechanical systems (space heating equipment or domestichot water equipment) as a result of actual or imminent system failure, the Contractor shall utilize this process to notify the program and submit pre-retrofit project information which must take place within 60 calendar days.

While age, size and efficiency of the existing system are a factor, it shall not be the sole determining factor for selection of equipment replacement. Best practices dictate that any replacement of central heating or cooling systems require submittal of a Manual J load calculation and must take into account all existing and/or proposed energy efficiency measures that will significantly impact load and allow for correct equipment sizing.

If HVAC re-ducting is required in this emergency, the pre-retrofit building simulation model will automatically use the default vintage default tables for total duct leakage. This percentage is not able to be contested, should an appeal situation arise.

Mandatory Documentation for Emergency Space Heating Equipment Replacement
The contractor shall provide information about the existing equipment being removed utilizing the Record of Emergency Equipment Replacement Form. At a minimum, the information collected regarding the existing space heating equipment shall include the following:

- Contractor’s business name, address and phone number
- Date of removal
- Reason for replacement (operational failure; health and safety)

- Manufacturer's name and model number of space heating equipment
- Rated efficiency, output, input from the nameplate
- Fuel type (natural gas, electric)
- Type of system (forced air, hydronic/radiant or combo)
- Type of venting (e.g. chimney, side vent, barometric damper)

The existing space heating equipment must be replaced with equipment meeting the Advanced Package Minimum Specifications. New gas-fired furnaces must have an Annual Fuel Utilization Efficiency (AFUE) of 92% or greater to qualify under the Emergency Replacement Policy for HVAC Equipment.

The contractor shall provide a copy of the invoice for the new space heating equipment and the Record of Emergency Equipment Replacement Form within ten (ten) business days of written authorization to proceed with the new equipment installation. At a minimum, the invoice for the new space heating equipment shall include the following:

- Contractor’s business name, address and phone number
- Date of installation
- Manufacturer's name, model and serial number of new space heating equipment
- Rated efficiency, output, input from the nameplate
- Fuel type (natural gas, electric)
- Type of system (forced air, hydronic/radiant or combo)
- Type of venting (e.g. chimney, side vent, barometric damper)

While replacing the space heating equipment, this may be an opportunity to also replace the central air conditioner with a higher efficiency model. The existing equipment must be replaced with equipment meeting the requirements listed in the Advanced Package Minimum Specifications. Contractor will need to supply the following information about both the new and existing air conditioning unit:

- Contractor’s business name, address and phone number
- Date of installation
- Reason for replacement (operational failure; health and safety; Other, please explain)
- Manufacturer's name and model number of cooling equipment
- Type of system (central air, heat pump)
- Rated efficiency (SEER, HSPF),unit size, and cooling output from the nameplate

Mandatory Documentation for Domestic Hot Water Equipment Replacement

The existing domestic hot water system must be replaced with equipment meeting Advanced Package Minimum Specifications. In addition, new domestic hot water heaters must have an Energy Factor (EF) of 0.62 or greater, and new domestic tankless hot water heaters must have an Energy Factor (EF) of 0.82 or greater to qualify under the Emergency Equipment Replacement Policy.

The contractor shall provide a copy of the invoice for the new domestic hot water equipment and the Record of Emergency Equipment Replacement Form within ten (10) business days of the new equipment installation. At a minimum, the invoice for the new domestic hot water equipment shall include the following:

- Manufacturer's name and model number of domestic hot water equipment
- Type of system (gas, electric)
- Rated efficiency (energy factor)
- Unit size (gallons)
- Input from the nameplate (Btu's)

Mandatory Requirements for Emergency Equipment Replacement Approval
The contractor may immediately install the individual measures if the following conditions are met:

1. Provide photographic evidence of the existing system installed in the residence clearly showing the area around the existing unit and detailed pictures of the existing equipment to include nameplate information (make, model, serial number, etc.).
2. The contractor shall provide a copy of the Invoice for the new space heating and/or cooling equipment and the completed Record of Emergency Equipment Replacement Form to their dedicated account manager within ten (10) business days of the installation of the new equipment (if applicable).
3. The contractor shall provide a copy of the Invoice for the new domestic hot water equipment and the Record of Emergency Equipment Replacement Form to their dedicated account manager within ten(10) business days of the installation of the new equipment (if applicable).
4. The contractor has a total of sixty (60) calendar days from the Emergency Equipment Replacement approval date to submit the pre-retrofit project information into the Vision DSM.

In the event the customer/contractor fail to meet the timelines indicated the project runs the risk of not being able to include the energy savings from the installation of the new equipment in the energy simulation (Energy Pro) model.

b. Streamlined High Performing Contractor Protocol

SoCalGas follows the Home Performance with ENERGY STAR® guidelines for QA/QC protocols. Since the implementation of the SoCalGas EUC Program, SoCalGas has established an adjustable onsite inspection rate for contractors based on job experience and performance.

SoCalGas conducts onsite inspections, at set inspection rates, of the work of all participating contractors. This inspection rate is reduced as the contractor gains experience in the program and as onsite inspections show the contractor is performing at a satisfactory level per program requirements. See chart below

a. Tier 1 Contractor- 60% onsite inspection of first five project
b. Tier 2 Contractor- 27% onsite inspection of next 15 projects
c. Tier 3 Contractor- 5% onsite inspection after 20th project

Below are some of the improvements that have been made to streamline the process for contractors:

- Provide QA/QC inspection handbook to participating contractor to inform contractors of the inspection process resulting in cleaner submittals.
- Implement Emergency Equipment Replacement policy
- Provide EnergyPro handbook to participating contractors to provide them with information on how to model projects in EnergyPro.
- Implement the ability for customers to switch from one participating contractor to another participating contractor during the project phase.
- Allowing contractors to use default values for blower door and duct test.
- Provide participating contractors with the ability to have witness quality control for test out.

Program Non-Energy Objectives

Table 3 provides targets per approved PPM's for single family homes. Additional PPM's for multifamily may be developed as program develops.

Table 3. Quantitative Program Targets (PPMs)
[Table 3 Refer to Attachment A3.3 to this PIP]

13) SCE/SCG Multifamily Energy Upgrade California Pilot

1. Projected Program Budget Table

Table 1 –

IOU	Total Administrative Cost	Total Marketing and Outreach	Total Direct Implementation Non-Incentive	Total Incentives	Total Program Budget by IOU*
SCE	$200,000	$100,000	$238,000	$1,462,000	$2,000,000
SCG	$100,000	$50,000	$112,000	$738,000	$1,000,000
Total	$300,000	$150,000	$350,000	$2,200,000	$3,000,000

*Does not include funding being leveraged into the treated buildings for services provided through other core EE programs and the ESA program.

2. Projected Program Gross Impacts Table – by calendar year

Table 2 –

	# of MF properties	# of MF units	kWh Savings	kW Savings	Therm Savings
SCE/SCG	20	1,700	1,416,100	1,360	116,025

3. Program Objectives

In accordance with the Strategic Plan, the MF EUC Program Pilot will coordinate with the Energy Savings Assistance Program (ESAP) and core EE Programs, such as MFEER. This integrated approach combines market-rate and income-qualified energy efficiency measures.

This integration effort provides the opportunity to educate building owners on the benefits of energy efficiency and conservation efforts spanning the range of needs for the multifamily market.

MF EUC Pilot will field test a single-point-of-contact approach to guide property owners

through the various programs in retrofitting their multifamily property. This approach will provide support in understanding the various program rules and assistance in determining eligibility. The customer will be guided through a "clipboard audit" to establish feasibility and estimate project cost for MF EUC, with an eye toward leveraging all eligible programs.

The primary purpose of this pilot program is to test performance based approaches to the multifamily property owner market. Other considerations to meet all income strata and address split incentives for property owners and tenants may include a direct install strategy, as well as prescriptive rebates through the existing MFEER Program.

While programs will be coordinated and integrated, their respective policies and procedures will be followed in the delivery of services. For example, the ESA program measures will be installed at no cost to income-qualified customers within the ESA program guidelines established at 200% or below Federal Poverty Guidelines (FPG), while MF EUC and MFEER will address incomes above 200%. Operational efficiencies will be employed to streamline eligibility, income verification, and installation of measures.

Program Pilot objectives:

1. Achieve deep energy savings reduction for all participating properties, targeting 20% or greater savings,
2. Implement comprehensive measures that go beyond lighting,
3. Help participants better understand energy efficiency and its many opportunities, and maintain program savings by leveraging the Integrated Energy Audit Tool (scheduled for launch in early 2012).

SCE/SCG intends to offer the Investment Grade Assessment at no cost to participants during the Pilot. SCE/SCG will utilize a professional energy consulting/auditing firm that has experience working with multifamily properties. It is expected that the selected firm will have consultants with qualifications such as Engineering degrees, Building Performance Institute (BPI) certifications, Home Energy Rating System (HERS) certifications, Leadership in Energy and Environmental Design (LEED) Accredited Professionals, and GreenPoint Rated Professionals.

4. Program Strategy

The program strategy is to offer attractive incentives to multifamily property owners/managers to overcome a wide array of regulatory, market, and financial barriers

which may otherwise prevent the rehabilitation of existing multifamily properties. These incentives will partially offset the cost to achieve energy use reductions.

Energy savings for each project will be calculated using industry accepted energy assessment protocols. Additionally, energy savings will be verified by a certified energy rater or qualified professional before payments of incentives are issued to a property owner.

The MF EUC Pilot will offer incentives to property owners and managers with scheduled project rehabilitations who are willing to invest in a performance-based, whole-building approach. The incentives are designed to influence the implementation of comprehensive measures as part of the scope of previously planned rehabilitations.

5. Program Implementation

The program will provide financial incentives to owners/managers of multifamily buildings who undertake a comprehensive approach to energy efficiency retrofits and are able to achieve a minimum energy savings target. The program will establish standards and verification procedures to provide quality assurance, and validate energy savings.

The program aims to leverage the long-established relationships between property managers and their preferred subcontractors. This approach provides property owners with the flexibility to select the trade allies of their choice.

There are several economic, financial or regulatory events that prompt a property owner to upgrade a facility. However, there are a few discrete points in a building's lifecycle when it is typically more convenient for energy efficiency improvements. To leverage these critical and infrequent opportunities, whole-building, performance-based incentives must be large enough to motivate owners to incorporate energy efficiency improvements.

6. Incentives

Incentives will partially offset costs to retrofit measures needed to achieve targeted energy-use reductions. Incentives will be offered on a tiered structure, paid on a "per dwelling unit" basis according to the total building energy savings percentage. The tiered approach will reward participants for realizing deeper savings. While a "per unit" approach enables participants to experience economies of scale with larger multifamily buildings.

SCE/SCG

Energy Savings Achieved	Incentive per Dwelling Unit
10%	$ 700
15%	$ 800
20%	$ 1,000
25%	$ 1,200
30%	$ 1,400
> 35%	$ 1,600

7. Project Pre-Qualification

Property owners will be required to provide basic information to determine the scope of the project, existing conditions, and available funds. The information provided on the pre-qualification form will help to determine if the project can reach the preset minimum energy savings achieved percentage.

The pre-qualification process will be supported by the Integrated Energy Audit Tool when it becomes available.

Basic Energy Assessment (Basic Site Assessment)

The Basic Energy Assessment will provide an opportunity to meet with property owners to conduct a high level energy assessment, validate the data provided, and assess the potential for property savings. The Basic Energy Assessment will help gauge customer commitment and determine if the projects have the potential to achieve minimum energy savings expectations. If the projects do not meet these savings targets, they will be referred to other applicable EE Programs.

Advanced Energy Assessment and Modeling (Test in, Investment Grade Assessment)

Investment Grade Assessments will be required to establish a baseline of the existing energy consumption for each property. The assessment will be conducted by an energy auditing professional using approved multifamily audit tools and procedures.

The audit tools evaluate potential measures based on least-cost, maximum benefit customized to each property's needs. The tool provides property owners with information to help them select a mix of measures that will achieve their energy savings goals.

Once a property owner has selected the desired savings target, the owner's own contractors implement the energy saving measures of the owner's choice.

The MF Pilot was designed to pilot a variety of approaches to modeling savings. At this late date, however, the program will solicit consulting engineering services with expertise using eQuest, or other proprietary system-based engineering approaches, such as those used in Retro-Commissioning. Given the short time frame and limited budget, a comparative analysis of TREAT, EnergyPro, and other tools will have to wait for a post-occupancy EM&V study.

Perform Post Project Verification and Quality Assurance (Test Out, Savings Verification)

At completion, the owner submits the required documentation for verification by an independent energy auditor. The energy auditor will verify the installation of measures, compliance with product specifications, and determine the savings target achievement. The auditor will use multifamily audit and modeling tools to determine savings.

The energy auditor will then submit a project report for IOU review and application processing.

8. Customer Description

The program will target multifamily owners and managers of properties located in SCG and SCE service Territory.

- Multifamily properties must contain a minimum of three dwelling units.
- Properties must be designated as multifamily residential by the Title 24 Building Energy Efficiency Standards, Part 6, which is defined as three or more attached dwelling units in a building.
- Properties cannot exceed four stories.
- Both affordable and market-rate properties qualify.

Non-Qualifying Properties

- Single-family homes - A single-family residential building is defined by the California Building Code as a single detached unit. Single-family homes may qualify for incentives through the EUC Single Family Program.
- Single-room occupancy (SRO) facilities, such as dormitories and assisted living facilities do not qualify.
- Non-residential buildings
- Hotels and Motels

9. SCE/SCG's Cost Effectiveness (E3 Calculator):

Figure 1. E3 Calculator showing cost-effectiveness for Multifamily Energy Upgrade California.

[Refer to Appendix A]

10. Energy Savings and Demand Reduction Level Data:

Program Impacts (Gross)					
	Annual Gross kWh	Lifecycle Gross kWh	Annual Gross Therms	Lifecycle Gross Therms	User Entered kW
2010-2012	1,666,000	29,988,000	136,500	2,457,000	1,600

11. Program M&E Plan for SCE and SCG

Energy Upgrade California: Multifamily Energy Upgrade California Pilot is proposed for implementation in two stages:

- Stage-1: Initial pilot phase to test program logistics and implementation requirements with a few raters and a few contractors.
- Stage-2: Scale the program for full deployment in 2012 and beyond.

11.1. The M&E plan for Stage-1 will focus on Rapid Feedback Analyses. Here are a few of the items to be considered:

- Is the program implemented as designed? If yes, are the results of the program activities acceptable from an end-to-end perspective?
- Can this program be evaluated given the program output and tracking data? If not, how can output and data be improved?

- Is the program design and implementation effective?
    - Is the program qualification acceptable?
    - Is the program processing acceptable?
    - Is the program QA/QC process acceptable?
    - What are the key issues and concerns for participating property owners/managers, renters, contractors and program contractors and HERS Raters? How can the program be improved?
    - Is the overall program cycle time acceptable?
    - Is the program energy savings accurate? If not, how can it be improved?
    - Is the program interaction with other programs, local government entities and stakeholders acceptable? If not, what is missing and how can it be improved?
- Is this program meeting its stated objectives given the output and outcomes of this early implementation?
- Verification of the program implementation barriers and identify ways to overcome the observed barriers.

11.2. The M&E plan for stage-2 will focus on the following items:

- Establish baseline condition for SCE multifamily energy usage profile as of 2008 and 2011 prior to program intervention.
- Has the program acted upon the rapid feedback? If yes, what are the changes?
- Is the program generating deep energy savings as expected?
- Is the program consistent with its program theory, logic model and attribution claims?

Repeat the evaluation items identified above, in the context of a scaled program.

SCE and SCG will work closely with ED's M&E team to develop an approved M&E study plan. Currently, we have identified the need for this study in the 2010-2012 M&E study plan.

14) Enhanced Basic/Modified Flex Path Option for SDG&E, SCE, SoCalREN and SoCalGas

In the 2010-2012 program cycle, the Energy Upgrade California (EUC) Basic Path represented only 4% of the statewide volume among the four Investor Owned Utilities (IOUs): Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), San Diego Gas and Electric Company

(SDG&E), and Southern California Gas Company (SoCalGas). The Basic Path had been targeted to make up the volume of the program; however, due to low program uptake during the 2010-2012 program cycle, there was a clear need for program redesign.

Customers will be required to install at least 1 of 3 base measures, supplemented to attain the 3-measure and point thresholds built into the programs, with additional motivation for installing additional base measures. This simple, menu-driven, flexible design is expected to greatly increase the volume of projects over the original Basic Path. Contractors will be trained and encouraged to develop work scopes that include more building envelope measures and go beyond core systems. The 2013-2014 Energy Efficiency Transition Period gives the IOUs and RENs the opportunity to test a program design targeted at achieving a higher volume of retrofits, meeting the Commission's program criteria, and demonstrably supporting the loading order.

Combustion Appliance Safety/Zone Testing (CAS/CAZ):

The Enhanced Basic/Modified Flex Path will require the same CAS/CAZ as is currently required for the 2010 - 2012 Basic and Advanced Path safety protocols, and as directed by the March 18, 2013 Guidance Letter, consistent with the Building Performance Institute (BPI) standards. The program requires that all contractors perform Combustion Appliance Safety (CAS) testing both prior to work commencing and at work completion. This is done to identify any combustion safety issues prior to the job scope and bid being finalized.

CAS Testing Providers

The current CAS protocols, as implemented by the IOUs in the 2010-2012 programs, require the tests to be performed by a BPI Building Analyst (BPI BA). Other certifications, including the North American Technician Excellence (NATE) certification and the Home Energy Rating System (HERS) as implemented by Residential Energy Services Network (RESNET) have been proposed as supplemental, commensurate providers for CAS training and certification.

The IOUs and RENs are committed to creating a process to open the market to additional qualified providers. Evaluating more CAS protocols that may increase the number and types of providers is consistent with a desire to transform the market for deep energy reductions, and may reduce any appearance of unfairly privileging one provider over others. Doing so may also positively influence the number of jobs and providers able to perform the work in California.

To this end, the IOUs and RENs will work together in a stakeholder process to establish provider-neutral criteria for allowable CAS protocol providers. The IOUs and RENs commit to a speedy, effective process for evaluating other providers' CAS protocols, training, and certification programs, to determine if they meet those standards. Until that process is completed, the EUC Enhanced Basic/Modified Flex Path will continue to utilize the existing policy of using BPI BA and BPI protocols for both test-in and test-out CAS/CAZ testing.

Diagnostic Testing

When appropriate, diagnostic testing will be required to ensure the installation of measures meet the program specifications. For instance, a duct blaster test will be required when duct sealing and a blower door test will be required for air sealing.

Program Eligibility Requirements

Customer Requirements:

- Owns or rents a single –family detached home
- Receives gas or electric service from an IOU
- Home meets pre-upgrade standards, which vary by measure
- Uses a participating contractor(s) to perform the upgrade
- Ensures applicable permits are obtained and abides by all local, state and federal requirements (HVAC permit numbers will be required)

Participating Contractor/ Participating Raters:

Participating contractors or participating raters shall be the primary point of contact for customers and are responsible for submission of all required program documentation. Participating raters can assess a home, generate a scope of work, and in some instances, perform combustion appliance safety testing. Participating contractors install all measures in accordance with EUC QA/QC and Measures Installation Standards as stipulated in applicable program standards, and in accordance with applicable contractor participation agreements.

Participating Contractor Requirement

Only EUC participating contractors may install the measures in the Enhanced Basic/Modified Flex Path. Participating contractors must be certified and licensed according to all applicable federal, state and local laws. Participating contractors shall meet, and provide sufficient evidence and supporting documentation for the following minimum requirements:

- Contractor State Licensing Board (CSLB) license in the appropriate specialty;
- Bonding and in good standing;
- Insurance to EUC Program minimum standards;
- Execution of a contractor participation agreement;
- Completion of all utility training course requirements as applicable, including Participation Workshop, and if not BPI-certified, must attend equivalent training per program requirements;

- Ensure a BPI-certified Building Analyst (BA) conducts Combustion Safety and Carbon Monoxide Protection and all other minimum Health and Safety Requirements specified in the BPI Technical Standards for Building Analyst Professional until other CAS test certifications are approved. This work may be subcontracted to a third party;
- Ensure HVAC and all other permits will be pulled on all work that is appropriate per local, state, and federal jurisdiction requirements; and
- Additional IOU requirements, as appropriate.

Measures

Measures may vary somewhat regionally and across IOU and REN service territories, but the following measures demonstrate strong consistency across all programs, to the extent that differences in existing workpapers currently under review by CPUC allow:

Base Measures:

Required Base Measure	Measure	Post-Upgrade Condition
REN: Base Measures		
1A	**Attic Insulation & Attic Air Sealing**	≥ R-44; Sealed Attic Top Plate
1B	**Duct Insulation & Sealing OR Duct Replacement**	Leakage ≤ 6 %; Insulation ≥ R-8
1C	**Whole House Air Sealing**	ASHRAE 62.2 ≤ ACHn ≤ 130% ASHRAE 62.2

Measure	Post-Upgrade Condition
IOU: Base Measures	
Attic Insulation & Attic Air Sealing	Insulation to R-30 or greater (R-38 in climate zones 1 and 11-16); Sealed attic plane
Duct Sealing OR Duct Replacement	Seal to ≤ 10% for existing systems and ≤ 6% for duct replacement
Whole Building Air Sealing	≥ 30% or ≥ 15% leakage reduction from vintage table defaults

Flex Measures:

Required Base Measure	Measure	Post-Upgrade Condition
REN: Flex Measures – Envelope		
1C	**Floor Insulation**	≥ R-19
1C	**Wall Insulation**	≥ R-13
1C	**High Performance Windows**	EnergyStar or equivalent; U-factor ≤ 0.40; SHGC ≤ 0.25
1A	**Attic Radiant Barrier**	Continuous Rolled or Prelaminated Radiant Barrier

Measure	Post-Upgrade Condition
IOU: Flex Measures – Envelope	
Floor Insulation	≥ R-19
Wall Insulation	≥ R-13
High Performance Windows	TBD, Phase 2
Attic Radiant Barrier	N/A

Required Base Measure	Measure	Post-Upgrade Condition
REN: Flex Measures – DHW		
N/A	**Gas Water Heater**	Gas Storage Heater; ≥ 0.67 EF
		Gas On-Demand Tankless Heater; ≥ 0.88 EF

Measure	Post-Upgrade Condition
IOU: Flex Measures – DHW	
Gas Water Heater	Gas Storage Heater EF ≥ 0.62; 0.67 for PG&E and SDG&E
	Gas On-Demand Tankless Heater; EF ≥ 0.82

N/A	**Electric Water Heater**	Electric Storage Water Heater; ≥ 0.93 EF	**Electric Water Heater**	Electric Storage Water Heater; EF ≥ 0.93
		Electric Heat Pump Water Heater; ≥ 2.0 EF		Electric Heat Pump Water Heater; ≥ 2.0 EF PG&E and SCE, not SDG&E

Required Base Measure	**Measure**	**Post-Upgrade Condition**	**Measure**	**Post-Upgrade Condition**
REN: Flex Measures – HVAC*			***IOU: Flex Measures – HVAC****	
1B	**Gas Furnace**	Gas Furnace; ≥ 0.95 AFUE	**Gas Furnace**	Gas Furnace; ≥ 0.92 AFUE; 0.95 for PG&E in future
1B	**High Efficiency AC**	Central AC; ≥ 15 SEER; ≥ 11 EER	**High Efficiency AC**	Central AC; ≥ 14 SEER; ≥ 12 EER
N/A	**Right-Size HVAC Kicker**	AC Unit	**Right-Size HVAC Kicker**	N/A until QI work paper approval
		Heat Pump		N/A until QI work paper approval
1B	**Buried Ducts Kicker**	Fully Buried Ducts	**Duct Insulation****	Insulation ≥ R-8

* If selecting to install any HVAC measures, customer must select duct replacement/duct sealing plus one qualifying envelope measure

** The IOUs will not offer a buried ducts kicker.

Additional Stand-Alone Measures:

Required Base Measure	Measure	Post-Upgrade Condition
REN: Additional Flex Measures		
N/A	**Variable Speed Pool Pump**	Title 20 Compliant Variable Speed Pump & Controller (Existing condition can be single or dual speed)
N/A	**EnergyStar Lighting**	N/A (Upstream Incentive Program)

Measure	Post-Upgrade Condition
IOU: Stand Alone Measures*	
Variable Speed Pool Pump	Variable-Speed Pool Pump and Motor (Plug Load and Appliances Program (PLA)
EnergyStar Lighting	N/A (Upstream Incentive Program)
Refrigerators	PLA catalog
Dishwashers	PLA catalog; not offered by PG&E
Clotheswashers	PLA catalog
Whole House Fan	PLA catalog; not offered by PG&E
Refrigerator/ Freezer Recycling	Appliance Recycling Program

*Note: For the IOU Additional Stand-Alone Measures, the list provided is an example set of measures that can be added-on to the whole house retrofit package. The fully inclusive list, provided uniquely by each IOU, is drawn from the Deemed offerings to residential customers.

or lower
Incentives:

The Enhanced Basic/Modified Flex Path incentives will be tiered, driven by the customer's desired SOW. Incentives will begin at $1,000 for 100 points which will be equivalent to 10% site energy savings. The incentive tier increase at each 50 point incremental improvement, to encourage deeper energy retrofits. Each 50 point increment will equate to an additional $500 incentive. The incentives align with Advanced Path incentives for similar saving percentages, but the Enhanced Basic/Modified Flex Path will max out at 250 points (a $2,500 incentive).

To encourage customers to more fully adhere to the loading order, customers are eligible for additional bonus points for installing additional base measures. When installing 1 or 2 additional base measures beyond the required one measure, customers will receive bonus points for each additional base measure installed.

Participation Level: Points	Incentive Amount
100 Points	$1,000
150 Points	$1,500
200 Points	$2,000
250 Points	$2,500

QA/QC Requirements:

QA/QC will be performed by the IOUs or the RENs per program QA/QC process and protocols. To ensure quality, participating contractors will be trained on installation specification requirements and will validate measures installed with diagnostic testing, where appropriate. The Enhanced Basic/Modified Flex Path will not require a pre-project submittal. All test-in data can be submitted with post project package submittal as long as pre-retrofit conditions are clearly documented for verification purposes. There will be 100% application desktop review for completed upgrades and there will be tiered or sample-based in-field quality assurance.

Energy savings calculation will be conducted by the IOUs engineering team working collaboratively with Energy Division (ED) engineering to develop a hybrid-deemed work paper. The work paper analysis eliminates custom modeling for each project, but allows, via a combination of deemed values, a custom SOW for each project. This lowers the contractors' cost, and reduces the burden on the Utility for Quality Control. Participating contractors will be spend more time selling and installing jobs, and less time creating custom simulations.

Participation Process

1. Select a participating contractor or participating rater.
2. Participating contractor or participating rater performs a combustion appliance safety CAS testing (pre-and post- installation).
3. Determine a scope of work:
    a. Select a minimum of one of three base measures.
    b. Select additional base or other flex measures for a minimum of three total measures.
    c. If selecting to install any HVAC measures, in addition to duct replacement/duct sealing, customer must select one qualifying envelope measure.
    d. Select any stand-alone measure(s) if desired (stand-alone measures do not count towards three measure minimum or marginal savings).
4. Participating contractor or participating rater performs a combustion appliance safety CAS testing (pre-and post- installation) and install measures.
5. Participating contractor or participating rater to submit project information for Quality Assurance/Quality Control (QA/QC) as applicable to measures installed.
6. Incentive paid to customer, or if designated by customer, to participating contractor.

Attachment A3.2
Southern California Gas Company

2013-2014 Energy Efficiency Programs
California Statewide Program for Residential Energy Efficiency
Program Implementation Plan

Attachment A3.3: SoCalGas EUC Enhanced Basic/Modified Flex Path Tables

Table 1. Projected Sub-Program Budget, by Calendar Year

	Program Year		
SoCalGas EUC	**2013**	**2014**	**Total**
Admin ($)	442,259	442,259	$ 884,518
Incentives ($)	2,502,400	2,502,400	$ 5,004,800
Implementation Non-Incentives ($)	3,073,312	3,073,312	$ 6,146,624
Marketing ($)	654,342	654,342	$ 1,308,684
Total Budget	**6,017,971**	**6,017,971**	**$ 13,344,626**

Table 2. Projected Sub-Program Net Energy and Demand Impacts, by Calendar Year

	Program Years		
SoCalGas EUC	**2013**	**2014**	**Total**
GWh			
Peak MW			
Therms (millions)	286,937	286,937	**573,874**

Table 3.1 Quantitative Program Targets (PPMs)

		2013	2014	2013-2014
PPM ID	**Target**	**SoCalGas**	**SoCalGas**	**TOTAL**
RES-16.1	Number of homes treated in the sub-program for 2013-2014. (Enhanced Basic/ Modified Flex Path)	211	211	**422**
RES-16.2	Number of homes treated in the sub-program for 2013-2014. (Advanced Path)	659	659	**1,318**
RES-17	Number of enrolled contracting firms participating in the sub-program	included with SCE	included with SCE	included with SCE
RES-18.1	Average Ex-ante savings per home as reported (average kWh, therms, kW) for **Advanced** path by climate zone	N/A	N/A	N/A
RES-18.2	Average Ex-ante savings per home as reported (average kWh, therms, kW) for **Enhanced Basic/ Modified Flex Path** by climate zone	N/A	N/A	N/A
RES-19	Average and range of evaluated energy savings per home (Enhanced Basic/ Modified Flex Path and Advanced Paths)	N/A	N/A	N/A
RES-20.1	Number of homes not passing Quality Assurance/Quality Control review, by IOU	N/A	N/A	N/A
RES-20.2	Percentage of homes not passing Quality Assurance/Quality Control review, by IOU	N/A	N/A	N/A

PPM's for Multifamily path will need to be developed as this path progresses towards full program implementation.

Table 3.2: Long Term Program Performance Metrics

2013-2014 Statewide Program - Subprogram PIP	MTI Index #	RE-CATEGORIZED Metric (LTPPM - or SPI) [E-4385 Appendix B original text except for noted edits]	Unresolved Issues
Residential - Energy Upgrade California	DeepRetrofit-3	MT Indicator 3: ~~The number and percent of audits performed compared to the number of customers signed up for an audit (NRDC, p.7)~~. Number of IOU customer households that undergo a deep retrofit (Advanced and/or IDSM) audit through IOU programs.	

Table 4 – Work paper Status

#	Workpaper Number/Measure Name	Approved	Pending Approval	Submitted but Awaiting Review
1	SCG SF Prescriptive Deemed Savings		x	

Table 5:. Sub-Program Milestones and Timeline

Milestone	Date
Launch Multifamily Path trials	1st half 2013
Complete Multifamily Path trials	12/31/2014
Launch MIDI Program	1st Qtr. 2013
IOU/ ED Monthly Progress Meetings	1/31/2013-12/31/2014

Table 6 Geographic Regions

Geographic Region	SoCalGas
CEC Climate Zone 1	
CEC Climate Zone 2	
CEC Climate Zone 3	
CEC Climate Zone 4	x
CEC Climate Zone 5	x
CEC Climate Zone 6	x
CEC Climate Zone 7	x
CEC Climate Zone 8	x
CEC Climate Zone 9	x
CEC Climate Zone 10	x
CEC Climate Zone 11	
CEC Climate Zone 12	
CEC Climate Zone 13	x
CEC Climate Zone 14	x
CEC Climate Zone 15	x
CEC Climate Zone 16	x

Table 7: Program Administration of Program Components

Program Name	Program Component	Implemented by IOU Staff? (X = Yes)	Implemented by contractors to be selected by competitive bid process (if Yes then enter type of contractor/other market actor possibly used)	Implemented by contractors NOT selected by competitive bid process (list prime contractor and sub-contractor names)	Implemented by local government or other entity (X = Yes)
EUC	SCG Marketing	X			
EUC	SCG Program Administration	X			
EUC	SCG Contractor/ Rater Training			ICF , Sub Contractor CBPCA	
EUC	SCG QA/QC			ICF , Sub Contractor QC-RHA and QA	
EUC	SCG MIDI Contractor/ Rater Training			Selected ESAP Contractors	
EUC	SCG MIDI QA/QC			Selected ESAP Contractors	
EUC	SCG MF Contractor/ Rater Training		Pending SCE RFP		
EUC	SCG MF QA/QC		Pending SCE RFP		

Table 8: Customer Eligibility Requirements (Joint Utility Table)

Customer Eligibility Requirement (list of requirements)	**SCG**
Tenant or Owner of SF Bldg with active IOU account(s)	x
Must utilize participating EUC Contractor or Rater (SF)	x
One to four unit building	x
Owner or property mgt. company of MF Bldg with active IOU account(s)	x
More than 4 units , 3 stories or less (MF)	x
Income requirements must be between 200 and 250% of FPG (MIDI)	x

The utilities must work together and submit this table jointly in their respective applications.

Table 9: Contractor Eligibility Requirements (Joint Utility Table)

Contractor Eligibility Requirement (list of requirements)	**SCG**
Contractor State Licensing Board (CSLB) in appropriate specialty	x
CSLB "B" General Contractor License (Advance Path Only)	
Bonding and in good standing	x
Insurance to IOU minimum standards	x
Execution of Contractor/ or Rater Participation Agreement	x
BPI Building Analyst Certified OR 3-day Basic Training (Basic Path Only)	x
BPI Building Analyst Certified on Staff (Advanced Path)	x
BPI MF Building Analyst Certified or similar (MF Participating Rater Path)	x
HERSII Certified or similar (MF Participating Rater Path)	x
HERSII and BPI BA Certified (SF Participating Rater Path)	x
2 Years of Relevant Work Experience	
B, C-2 or C-20 license for Basic Only	

List any contractor (and/or developer, manufacturer, retailer or other "participant") eligibility requirements (e.g. specific IOU required trainings; specific contractor accreditations; and/or, specific technician certifications required).
The utilities must work together and submit this table jointly in their respective applications

Table 10: Manufacturer/Retailer/Distributor Partners

Manufacturer/Retailer/Distributor Partner Information	SCG
Manufacturers enrolled in program	none
Manufacturers targeted for enrollment in program	none
Retailers enrolled in program	none
Retailers targeted for enrollment in program	none
Distributors enrolled in program	none
Distributors targeted for enrollment in program	none

Table 11: Summary Table of Measures, Incentive Levels and Verification Rates

Measure Group	Market Actor Receiving Incentive or Rebate	SCG	
		Incentive Level	Installation Sampling Rate
		Incentive level will be paid dependent on SCG shared utility service territory. The incentive will vary 32% to 50 %of total incentive shown	
10% Performance SF	Customers	$ 1,000	Tiered 100%-5%
15% Performance SF	Customers	$ 1,500	Tiered 100%-5%
20% Performance SF	Customers	$ 2,000	Tiered 100%-5%
25% Performance SF	Customers	$ 2,500	Tiered 100%-5%
30% Performance SF	Customers	$ 3,000	Tiered 100%-5%
35% Performance SF	Customers	$ 3,500	Tiered 100%-5%
40% Performance SF	Customers	$ 4,000	Tiered 100%-5%
45%+ Performance SF	Customers	$ 4,500	Tiered 100%-5%
Enhanced Basic/Modified Flex Path	Customers	$ 1,000	Tiered 100%-5%
		SCG M/F = 32% of incentive shown.	
10% Performance MF	Customers	$ 700	100% *
15% Performance MF	Customers	$ 800	100% *
20% Performance MF	Customers	$ 1,000	100% *
25% Performance MF	Customers	$ 1,200	100% *
30% Performance MF	Customers	$ 1,400	100% *
>35% Performance MF	Customers	$ 1,600	100% *
***100% or as needed.**			

a. Use a single excel spreadsheet to indicate the eligible measures for the program across all IOUs. Indicate the expected incentive level by measure or measure grouping for each IOU, making clear where these vary.

b. For each incented or rebated measure, indicate the market actor to whom this will be provided.

c. SCG will work closely with Customer through single point of contact.

Table 12: Additional Services

Additional Services that the Sub-Program Will Provide	To Which Market Actors	SCG
		[indicate the level at which the service will be incented or funded]
N/A	N/A	N/A

a. For each service provided, indicate any expected charges to market actors of the services, and/or the level at which any such services will be incented or funded.

Table 13: Program Related Audits

Levels at Which Program Related Audits Are Rebated or Funded	Who Receives the Rebate/Funding (Customer or Contractor)
M/F EUC Initial and Investment Grade Audits 100%	Contractor
MIDI Assessmentsc100%	Contractor
S/F EUC	N/A

NOTE: If software tools are required sub-program participation, and if there is a program related audit for the sub-program, this table shows the levels at which the audit is rebated or funded and to whom such rebates/funding will be provided (i.e., customer or contractor)

Table 14: Quality Assurance Provisions

QA Requirements	QA Sampling Rate (Indicate Pre/Post Sample)	QA Personnel Certification Requirements
SCG QA requirements #1	100% Pre Project QA (desktop)	N/A
SCG QA requirements #2	100% Post Project QA (desktop)	N/A
SCG QC requirements #1	60% first 5 projects (Pre)	BPI BA
SCG QC requirements #2	27% of next 15 projects (Pre)	BPI BA
SCG QC requirements #3	5% after 20th project (Pre)	BPI BA
SCG QC requirements #4	60% first 5 projects (Post)	BPI BA
SCG QC requirements #5	27% of next 15 projects (Post)	BPI BA
SCG QC requirements #6	5% after 20th project (Post)	BPI BA

*SCE sampling rate is subject to modification to meet program needs.

NOTE: Please list quality assurance, quality control, including accreditations/certification or other credentials required.

Table 15: Cross-cutting Sub-program and Non-IOU Partner Coordination

Sub-Program Name		
Other IOU Sub-program Name	**Coordination Mechanism**	**Expected Frequency**
PLA (HEER)	Meetings	Monthly/As-Needed
MFEER	Meetings	Monthly/As-Needed
HEES	Meetings	Monthly/As-Needed
QI/ QM	Meetings	Monthly/As-Needed
CSI	Meetings	Monthly/As-Needed
ESAP	Meetings	As-Needed
Coordination Partners Outside CPUC		
Los Angeles County	Meetings	Monthly
Santa Barbara County	Call	As-Needed
City of San Bernardino	Call	As-Needed
County of Santa Barbara	Meetings	Monthly
Burbank Water and Power	Meetings	Quarterly
Los Angeles Department of Water and Power	Meetings	Monthly

Note: "Mechanisms" refers to communication methods (i.e. quarterly meetings; internal list serves; monthly calls, etc.) and/or any cross-program review methods (i.e., feedback on program plans; sign off on policies, etc.). or harmonization techniques (i.e. consistent certification requirements across programs, program participant required cross trainings, etc.).

Table 16: Non-EE Sub-Program Information

Sub-Program Name		
Non-EE Sub-Program	**Budget**	**Rationale and General Approach for Integrating Across Resource Types**
N/A	N/A	N/A

NOTE: Column C --> Integrated/coordinated Demand Side Management: As applicable, describe how sub-program will promote customer education and sub-program participation across all DSM options. Provide budget information of non-EE sub-programs where applicable. Column D --> Integration across resource types (energy, water, air quality, etc.): If sub-program aims to integrate across resources types, please provide rationale and general approach

Attachment A4.1: PG&E EUC Enhanced Basic/Modified Flex Path PIP (Redline)

PACIFIC GAS AND ELECTRIC COMPANY

2013-2014 ENERGY EFFICIENCY PORTFOLIO

STATEWIDE PROGRAM IMPLEMENTATION PLAN

RESIDENTIAL PROGRAM

PGE2100

RESIDENTIAL PROGRAM OVERVIEW AND

ENERGY UPGRADE CALIFORNIA SUBPROGRAM

EXCERPTS ONLY – FOR APRIL 2, 2013 ADVICE LETTER

~~JANUARY 14, 2013~~

~~(REVISED FEBRUARY 14, 2013)~~

(REVISED APRIL 2, 2013)

TABLE OF CONTENTS

1. Residential[1] Program, PGE2100, Core

2. Projected Program Budget Table

Table 1[2]

New EEGA	New Sub Program	Total Administrative Cost	Total Marketing & Outreach	Total Direct Implementation (Customer Services)	Direct Implementation (Incentives & Rebates)	Total Compliance Budget
PGE21001	Residential Energy Advisor	$ 519,092	$2,406,431	$ 1,654,143	$19,976,000	$ 24,555,666
PGE21002	Plug Load and Appliances	$3,632,912	$3,476,278	$15,006,802	$15,780,168	$ 37,896,160
PGE21003	Multifamily Energy Efficiency Rebates Program	$ 698,109	$ 37,912	$ 631,268	$1,004,063	$ 2,371,351
PGE21004	Energy Upgrade California Program*	$ 965,126	$ 946,438	$10,358,493	$13,437,814	$ 25,707,870
PGE21005	Residential New Construction	$ 349,809	$ 387,285	$ 2,999,695	$1,248,127	$ 4,984,917
PGE21006	Residential HVAC	$1,078,337	$ 789,010	$ 6,367,684	$7,900,000	$ 16,135,031
		$7,243,385	**$8,043,354**	**$37,018,085**	**$59,346,172**	**$111,650,995**

* PG&E will be filing a Supplemental Compliance Filing Advice Letter on 4/23 and making program budget and savings revisions at that time.

3. Projected Program Gross Impacts Table – by calendar year

The IOU's funding request for the proposed 2013-2014 Residential Program as detailed in Table 1 above. The IOUs believe this amount is reasonable, results in a cost-effective

[1] D.09-09-047, p. 7, refers to the statewide residential energy efficiency subprograms as the California Statewide Subprograms for Residential Energy Efficiency ("CalSPREE")

[2] Definition of Table 1 Column Headings: Total Budget is the sum of all other columns presented here; Total Administrative Cost includes all Managerial and Clerical Labor, Human Resource Support and Development, Travel and Conference Fees, and General and Administrative Overhead (labor and materials); Total Direct Implementation – includes all financial incentives used to promote participation in a subprogram and the cost of all direct labor, installation and service labor, hardware and materials, and rebate processing and inspection used to promote participation in a subprogram; Total Marketing & Outreach includes all media buy costs and labor associated with marketing production; Integrated Budget Allocated to Other Subprograms includes budget utilized to coordinate with other EE, DR, or DG subprograms; Total Budget is the sum of all other columns presented here; Definition of Subprogram: A "subprogram" of a subprogram has a specific title; targets; budget; uses a unique delivery or marketing approach not used across the entire subprogram; and for resource subprograms, has specific estimated savings and demand impacts

portfolio that meets the Commission's energy savings targets for 2013-2014, and supports market transformation and the Strategic Plan.

Table 2

New EEGA	New Sub Program	GROSS KW	GROSS KWH	GROSS Therms
PGE21001	Residential Energy Advisor		149,983,025	5,675,440
PGE21002	Plug Load and Appliances	15,624	78,765,515	(240,374)
PGE21003	Multifamily Energy Efficiency Rebates Program	528	512,239	369,766
PGE21004	Energy Upgrade California Program*	14,378	11,520,361	1,181,341
PGE21005	Residential New Construction	6,034	4,583,902	754,318
PGE21006	Residential HVAC	6,610	7,021,254	(28,831)

* PG&E will be filing a Supplemental Compliance Filing Advice Letter on 4/23 and making program budget and savings revisions at that time.

4. Program Description

The 2013-2014 Residential Sector program is designated as the California Statewide Program for Residential Energy Efficiency (CalSPREE).

CalSPREE will offer and promote both specific and comprehensive energy solutions for residential customers. By encouraging adoption of economically viable energy efficiency technologies, practices, and services, CalSPREE will employ strategies and tactics to overcome market barriers while delivering services that support the CPUC's Long Term Energy Efficiency Strategic Plan.

The ultimate focus of CalSPREE is to:

- Facilitate, sustain, and transform the long-term delivery and adoption of energy-efficient products and services for single and multi-family dwellings;
- Cultivate, promote and sustain lasting energy-efficient behaviors by residential customers through a collaborative statewide education and outreach mechanism; and
- Meet customers' energy efficiency adoption preferences through a range of offerings including single-measure incentives and more comprehensive approaches.

To date, the California IOUs have employed a number of different residential energy efficiency subprograms that are in various stages of maturity and availability across the state. For 2013-2014 and beyond, the IOUs will integrate all of these subprograms to coordinate efforts and increase comprehensiveness of measure delivery.

CalSPREE will conduct a combination of integrated DSM and program specific marketing and outreach to drive ongoing customer participation and behavior change. Both integrated and program-specific marketing activities will work in coordination with the SW ME&O and will serve to complement those efforts.

Integrated marketing and outreach will gather, create, and deliver information to customers in a way that (1) bundles programs, products, and information and (2) customizes delivery for individual or groups of targeted customers based on market intelligence, segmentation analyses, self-selection activities, and event-based knowledge of customer's actions. To drive increased participation and ongoing customer engagement, marketing and outreach will target customers with the right message, through the right channel, at the right time. Integrated marketing will cross-sell relevant DSM programs and services that emphasize the benefits of participation in multiple programs.

Additionally, program specific marketing and outreach will be conducted in order to increase participation and reach specific program goals. Program specific marketing and outreach will target customers with a high potential to participate in a specific programs or service. For example, through the Plug Load and Appliances program, customers identified as having a pool may receive a targeted direct mailer prior to summer encouraging them to take advantage of the pool pump and motor rebate. By motivating customers to take an initial action, it will enable the IOUs to engage customers in an ongoing conversation about the next steps they can take towards becoming better energy managers. Additionally, program specific marketing and outreach enables the utilities to conduct activities necessary to support the measure, such as developing Point of Sale rebate stickers that are placed on select appliances to drive program participation. These efforts drive enrollments that enable the utilities to meet specific program goals.

A mix of communication channels and languages will be used to reach a diverse audience. Communication channels may include: web, call center, bill messaging, email, social media, direct mail, retail partnerships, community- and faith-based partnerships, outreach, events, local government partnerships, general and ethnic media.

CalSPREE is comprised of the Energy Advisor, Plug Load and Appliances (PLA), Multi-Family Energy Efficiency Rebates (MFEER), Energy Upgrade California (EUC), Residential Heating, Ventilation, and Air Conditioning (HVAC), and Residential New Construction (RNC) subprograms. These subprograms are described in more detail below.

Short Description of Each Sub-program

The 2013-2014 CalSPREE includes the following six subprograms:

a) **Energy Advisor (EA)**. The Energy Advisor subprogram will utilize interactive tools designed to engage customers and encourage participation in innovative initiatives. These initiatives are designed to help customers understand - and empower them to manage - their energy use, and will guide them, where appropriate, towards advancing whole-house energy solutions. Although the IOUs share similar Energy Advisor

subprogram theory, design, and goals, they may implement subprogram logistics differently because of their different service territories.

b) **Plug Load and Appliances (PLA)**. The Plug Load and Appliances subprogram merges the previous Home Energy Efficiency Rebate (HEER), Business Consumer Electronics (BCE) and Appliance Recycling subprograms. This subprogram will develop and build upon existing retailer relationships and will include recycling strategies and whole house solutions, plug load efficiency, performance standards, and opportunities for integration with local government, water agencies, Publically Owned Utilities (POUs), and the Demand Side Management (DSM) subprogram.

c) **Multi-Family Energy Efficiency Rebates (MFEER)**. The MFEER subprogram is a continuing subprogram. This subprogram will promote energy efficiency by providing equipment rebates to owners and tenants of multifamily properties, including residential apartment buildings, condominium complexes, and mobile home parks. It will be coordinated with the Energy Savings Assistance (ESA) and the EUC Programs.

d) **Energy Upgrade California (EUC)**. For 2013-2014, the EUC will consolidate the previously separate Prescriptive Whole House Retrofit (PWHRP) and Local Whole House Retrofit (WHRP) and the introduction of a Multi-family component. The EUC sub-program is designed to build customer and contractor awareness of the house-as-a-system approach to residential retrofits and the many benefits of improving the comfort, safety, and energy savings potential of the house. The EUC approach promotes both ~~Basic~~Enhanced Basic/Modified Flex Path and Advanced Paths to retrofitting; these complementary paths will be presented to customers as one comprehensive offering.

e) **Residential Heating, Ventilation, and Air Conditioning (HVAC)**. The Residential HVAC subprogram is a continuing program with the primary objective of driving high quality levels in California's HVAC market for technology, equipment, installation, and maintenance. An additional objective is to increase customer awareness of the value of HVAC installation and maintenance practices toward driving energy efficiency and peak load reduction. The Residential HVAC subprogram will incorporate revised measures and incentives, policies and procedures, quality assurance, marketing materials, website, and contractor training in performing HVAC installation services for residential customers.

f) **Residential New Construction (RNC)**. The RNC subprogram is a continuing statewide program that consists of the California Advanced Homes Program (CAHP) and, in Southern California, the Energy Star Manufactured Homes (ESMH) Program. The Program is designed to help guide builders to produce the most efficient homes in the most cost-effective manner, and will examine methodologies for supporting the Strategic Plan target of zero net energy (ZNE) by 2020.

1. Sub-Program Name: Energy Upgrade California (EUC)

2. Sub-Program ID number: PGE21004

3. Type of Sub-Program: ✓ Core __Third Party __Partnership

4. Market sector or segment that this sub-program is designed to serve:

a. ☑ Residential
   i. Including Low Income? __Yes ☑ No
   ii. Including Moderate Income? ☑ Yes __ No
   iii. Including or specifically Multifamily buildings ☑ Yes __ No
   iv. Including or specifically Rental units? __Yes ☑ No
b. __ Commercial (List applicable NAIC codes: _____)
c. __ Industrial (List applicable NAIC codes: _____)
d. __ Agricultural (List applicable NAIC codes: _____)

5. Is this sub-program primarily a:

a. Non-resource program __ Yes ☑ No
b. Resource acquisition program __ Yes ☑ No
c. Market Transformation Program ☑ Yes __ No

6. Indicate the primary intervention strategies:

a. Upstream __ Yes ☑ No
b. Midstream __ Yes ☑ No
c. Downstream ☑ Yes __ No
d. Direct Install __ Yes ☑ No
e. Non Resource __ Yes ☑ No

7. Projected Sub-program Total Resource Cost (TRC) and Program Administrator Cost (PAC)

TRC 0.40 PAC 1.56

8. Projected Sub-Program Budget

Table 1. Projected Sub-Program Budget, by Calendar Year

Per D.12.05.015, p. 71, PG&E provides a high customer participation scenario for 2013-2014, a summary of the assumptions, and an associated budget. This EUC participation scenario takes into account possible CAEATFA and other residential energy efficiency financing that may support program growth in the 2013–2014 period, as well as additional activities. ~~PG&E had planned to provide this update in its April 1, 2013 Energy Upgrade California Advice Letter and will be making additional PIP changes, c~~Consistent with the direction in D.12.05.~~015~~ 015, PG&E is updating this PIP to reflect 2013-2014 revised

program design for the Enhanced Basic/Modified Flex Path[35] ~~enhanced basic path, now known as TBD. by April 1, 2013.~~ See Table 17 for PG&E's high scenario targets for customer participation, budget as well as the summary of assumptions associated with this target.[36] *[Table-17 to be provided as an Excel Attachment to this PIP]*

9. Sub-Program Description, Objectives and Theory

a) Sub-Program Description and Theory:

According to a report released by the Office of the Vice President, "homes in the United States generate more than 20 percent of our nation's carbon dioxide emissions, making them a significant contributor to global climate change."[37] The challenge of addressing residential emissions has been a significant topic for California stakeholders and was addressed when D.09-09-047 acknowledged, "Improving the energy efficiency of all households is necessary to achieve the target outcome for the 2020 existing residential *Strategic Plan* goals."[38]

The Office of the Vice President report also identifies three market barriers to comprehensive residential retrofits:

1) Lack of customer and contractor awareness and access to information;
2) Lack of access to financing; and
3) Lack of access to skilled workers.

A shift in market perception, both for contractors and customers, towards a whole house approach must take place to drive customer action. EUC is designed to offer a one-stop approach to whole-house energy efficient improvements that recognize the need for customers to participate over varied timelines. To assist in the effort to overcome these problems and market barriers, EUC for single family residences will:

1) Offer a statewide entry level ~~pre-set measures based~~ approach~~ed~~ (~~*Basic*~~*Enhanced Basic/Modified Flex Path*) and a comprehensive and flexible performance based approach (*Advanced Path*) whole house incentives to help build the home

[35] "Enhanced Basic/Modified Flex" Path is a placeholder until the new program name is selected.
[36] Assumptions include:
* Full PG&E Service Territory participation
* Active participating contractor effectiveness (increase)
* Net impact of financing product offerings (i.e. MIST, CAEATFA) (increase)
* Impact of operational efficiencies gained from program optimization (increase)
* Net impact from local government marketing (increase)
* Impact from real estate industry engagement (increase)
* Absence of ARRA funded incentives (decrease)
* Impact of potential economic up/downturn (increase)
[37] Middle Class Task Force. Council on Environmental Quality. "*Recovery Through Retrofit.*" October, 2009. Page 1.
[38] D. 09-09-047. Page 110.

performance contracting industry and offer customers and building owners and managers an easy entry point on the path to home performance (barrier 1);

2) Educate customers on the house-as-a-system concept and to encourage behavior changes that increase residential energy efficiency (barrier 1);

3) Educate contractors on the benefits of learning how to properly sell and install whole house measures as part of coordinated WE&T efforts (barrier 1& 3);

4) Offer incentives that influence customers to undertake comprehensive residential retrofits (barrier 1); and

5) Coordinate with relevant utility financing programs and external funding and financing mechanisms at the county, state and federal levels. (barrier 2).

In addition, energy efficiency efforts for the multifamily (MF) segment must overcome a number of barriers, primarily:

1) Lack of knowledge regarding energy efficiency, as well as the comprehensive energy efficiency EE programs offered by IOUs;

2) The economics of "split-incentives" where the building owner invests capital but the savings primarily benefit the tenants;

3) Access to investment capital and insufficient return on investment (ROI). Up-front out-of-pocket costs and extended payback periods required pose a significant participation barrier for property owners and managers;

4) Hassle of dealing with multiple contractors and visits required;

5) Time burden for tenants and owners;

6) Impact on rental income; and

7) Business policy/ profit incentive from replacing equipment on burn-out and unwillingness to negate remaining life in building components requiring capital outlay.

The Multifamily Path is envisioned to include a number of tactics to overcome these barriers, primarily:

1) To improve a property owner or manager's energy efficiency knowledge, the *Multifamily Path* would seek to leverage comprehensive investment grade building assessments to identify potential energy efficiency opportunities. (Barrier 1).

2) To address split incentives and cost of upgrades, the *Multifamily Path* would integrate with the existing Energy Savings Assistance Program ("ESAP") and the Multifamily Energy Efficiency Rebate ("MFEER") Program. This would provide comprehensive services to the building, including "low cost" or "no cost" tenant measures in conjunction with the EUC *Multifamily Path* whole building incentives in order to maximize energy savings for the up-front investment.

(Barrier 2).

3) Incentives would assist property owners or managers with overcoming a wide array of market and financial barriers which may otherwise prevent energy efficiency upgrades (Barrier 1 and 5).

4) Create a single point of contact that would assist the property owner or manager navigate through the incentive and retrofitting process. This approach would provide support in understanding the various program rules and assistance in determining eligibility. The property owner or manager would be guided through an easy and streamlined preliminary assessment to establish feasibility and estimate project cost for the *Multifamily Path*, with an eye toward leveraging all eligible programs. (Barrier 4).

5) Target buildings planning on or undergoing renovation projects to limit customer time burden and lost rental income. (Barrier 4 and 5).

6) Multifamily sector is comprised of a wide diversity of properties which can be segmented by: 1.) rental rate (low – medium – or high; and/or 2.) size of the building and also size of the company that owns or manages the building. Defining the unique concerns and needs of building owners and managers by these variables of tenant socio-economic status and ownership/management structure will allow much more effective messaging and marketing communications. (Barrier 1, 2, 3, 4, 7)

7) Statewide EE energy efficiency financing (SW Fin) which could be focused on the tenant or the common property energy agendas. This program will provide access to capital to fund investments in energy efficiency upgrades for buildings at an attractive interest rate. (barrier 2, 3, 7).

Other considerations to meet all income strata and address split incentives for property owners and tenants may include a direct install strategy, as well as prescriptive rebates through the existing MFEER Program. While programs will be coordinated and integrated, their respective policies, and procedures will be followed in the delivery of services. Efforts at operational efficiencies would be made to streamline eligibility, income verification, and installation of measures.

Despite the noted barriers, the multifamily sector presents a significant opportunity for whole building energy efficiency programs with a deep energy reduction approach. A whole building offering has the potential to achieve deep energy savings because:

1) Building owners can leverage incentives to address common areas and systems as well as individual unit upgrades to make more cost effective improvements.

2) Major rehabilitation projects are common in the multifamily sector. It is theoretically more cost effective to include energy efficiency upgrades at the time

of these renovation projects. These projects typically have well-financed construction budgets and broad scopes that could include energy efficiency measures.

3) Multifamily properties tend to be operated and maintained by professional building staff. Providing resources to building staff would theoretically would increases the odds that the building will be operated efficiently after energy upgrades are installed, perpetuating savings benefits.

4) Within the tenant units, the energy efficiency upgrades will often be duplicated – allowing for efficiency in bulk purchases of supplies and equipment, as well as hiring of specialized workers with less non-productive set-up/break-down and travel time.

Energy Upgrade California (EUC) is a continuing Market Transformation-orientated program which began in the 2010-2012 residential energy efficiency portfolio of the four California Investor Owned Utilities (IOUs) – Pacific Gas & Electric Company (PG&E), Southern California Edison (SCE), San Diego Gas & Electric Company (SDG&E) and Southern California Gas Company (SoCalGas).

As a recognized market transformation program only halfway through its second full year of statewide rollout, the EUC is expected to be a major contributor to achieving the goals of the California Long Term Energy Efficiency Strategic Plan (*Strategic Plan*) as it relates to existing residential homes; EUC faces significant hurdles in customer and contractor awareness, industry and workforce development, and traditional cost effective metrics towards measuring effectiveness and success.

This PIP is for the statewide EUC program that will be offered consistently across the IOU service territories. The PIP is intended to align with the goals established in the *Strategic Plan* and is a culmination of ongoing statewide efforts to design EUC.

EUC is designed to build customer and contractor[39] awareness of the house-as-a-system approach to residential retrofits and the many corresponding benefits of improving the energy savings potential and comfort of their dwelling. It promotes the idea that energy efficiency measures are most effective when taking into account the interactive effects of measures.

EUC moves customers from a prescriptive, widget or single-measure based approach to energy efficiency to one of deeper, comprehensive energy retrofits that respect the energy

[39] A successful program recognizes the need to develop the pool of qualified home retrofit contractors (with the help of third party implementers) to engage in – and have the opportunity to profit from – performing quality work. Through comprehensive training curricula (currently available in the marketplace) broken into the key elements of a home: Building Envelope and Lighting, and Heating, Cooling and Hot Water delivery (major systems); skilled tradespersons will have the opportunity to enter the home retrofit market and grow their businesses.

efficiency loading order[40], and which takes the approach that a house is a series of interdependent systems that must be considered holistically.

In addition, this approach optimizes building shell (thermal boundary) provides increased comfort and indoor air quality while enabling smaller and more affordable space conditioning equipment and reduced energy use associated with space heating and cooling. The thermal boundary consists of two layers or components – air barrier and insulation – which should both be continuous as well as contiguous (in contact with each other) for optimum performance. Because of the interaction between the thermal boundary and space conditioning loads, heating or cooling system upgrades are ideally not to be performed until the building shell is optimized. Building shell and duct air sealing will be addressed in conjunction with combustion appliance safety and indoor air quality tests. Base load reduction measures involving major electrical appliances, lighting, plug loads, and demand response can be performed at any time without compromising the loading order.

Customer outreach and education efforts for the EUC will be coordinated with Energy Advisor, Plug Load and Appliance (PLA), Comprehensive HVAC, SmartAC and other Residential Demand Response programs, Energy Savings Assistance Program, and California Solar Initiative (CSI) to leverage multiple customer touch points.

For single family residences, the whole house approach of EUC promotes two paths, a prescriptive-based ~~Basic~~Enhanced Basic/Modified Flex Path and a comprehensive, measured Advanced Path. These complimentary paths will be presented to customers[41] as one comprehensive offering.

For multifamily buildings, building owners and managers will be able to participate in the EUC Multifamily Path. EUC will offer a consistent program model that can be contractor or rater driven and/or adopted by local governments for roll-out in their communities.

In sum, these paths will provide an ideal platform to utilize the concept of continuous energy improvement for residential customers; tracking and encouraging a logical sequence of energy improvements made by customers over time, creating an ongoing, actionable dialogue with each customer regarding their energy use.

EUC *Advanced Path*

EUC *Advanced Path* offers customers a customized path to comprehensive whole house energy efficiency that drives the customer to deep retrofits. *Advanced Path* solutions will require Participating Contractors to obtain higher levels of expertise than those who

[40] The loading order specifies improvements in the following sequence: (1) air sealing to obtain a tight building envelope; (2) insulation to complete the thermal boundary; (3) proper sizing, design, installation and commissioning of space heating and cooling systems; (4) proper sizing, design, installation, commissioning and insulation of the hot water system, including distribution; (5) efficient lighting and appliances, and demand response measures; and (6) renewables.
[41] Residential customers including homeowners, renters, and multifamily properties when these services are available to them.

perform the ~~*Basic*~~*Enhanced Basic/Modified Flex Path* installations. Customers can also participate in *Advanced Path* by using a Participating Rater. The *Advanced Path* requires diagnostic "test-in" and "test-out" whole house assessments. The "test-in" assessments will generate a comprehensive work scope and the "test-out" assessments will be used to document that specified improvements have been properly sized and installed. The *Advanced Path* will build off of the ~~pre-set~~ measures of the ~~*Basic*~~*Enhanced Basic/Modified Flex Path.*

- Offer a holistic path towards home performance by aggregating key elements of a dwelling into its core elements: building envelope and fixed lighting; heating, cooling and hot water, and appliances;
- Require higher levels of contractor training and qualifications;
- Coordinate with the extensive network of heating ventilation and air conditioning (HVAC) contractors already participating in IOU programs;
- Utilize a commercially available and approved building simulation software and methodology to model performance sites and estimate energy savings for the project;
- Establish a project baseline by a "test-in" and "test-out" method;
- Encourage prospective participants to participate in the IOUs' statewide Energy Advisor Program to gain insights about ways to change their energy use behavior and to identify opportunities to make efficiency improvements within their homes. Additionally, the tool will serve as a lead generator.[42]
- Provide rigorous Quality Assurance and Quality Control;
- Funnel participation from core Energy Efficiency (EE), Demand Response (DR), distributed generation (e.g. California Solar Initiative) portfolios, and increase awareness through statewide coordinated marketing campaigns, and contribute to education and outreach activities with local government partners;
- Coordinate with local financing opportunities, as appropriate;
- Be compatible with Home Energy Rating System (HERS) requirements;[43]

[42] The IDSM and Energy Advisor teams are currently working to expand the capabilities of Energy Advisor to better complement EUC. The Energy Advisor program will be used as an entry point to provide consistent messaging to customers and to generate leads to increase participation in EUC. Per D. 09-09-047, the surveys are not intended to be full energy audits.
[43] EUC will not require a HERS rating or a performance-level audit upon completion of work. Participating contractors are encouraged to coordinate with HERS raters to provide customers with ratings upon completion of work as a method of educating the marketplace and leveraging an opportunity to draw customers to EUC.

- Provide incentives to reflect modeled levels of energy savings.

The *Advanced Path* delivers comprehensive energy efficiency improvement packages tailored for both the home resale and home remodeling markets. The *Advanced Path* solicits, screens, and trains qualified residential repair and renovation contractors and HERS II Raters, to assemble capable contracting teams and perform whole-house diagnostics, propose a comprehensive energy efficiency improvement package, and install the improvements. The program also includes marketing activities to help educate customers on program services, and in some cases may provide additional customer leads to trained and experienced contractors. Incentives and resources for available financing options will be provided to help offset the initial homeowners cost for the energy efficiency improvements.

~~**EUC *Basic***~~***Enhanced Basic/Modified Flex*** ~~**–**~~ ~~***TBD***~~ ***Path***

~~During the 2013-2014 transition cycle, the IOUs will convene interested stakeholders at the state and/or regional level to propose one or more statewide and/or regional pilot programs to explore potential changes to the *Basic**Enhanced Basic/Modified Flex* *Path* in order to make it more appealing to customers, particularly moderate income households.~~

~~EUC~~ The ~~*Basic*~~*Enhanced Basic/Modified Flex* ~~*TBD*~~ *Path* will offer customers and contractors an easy entry point on the path to home performance with a defined package of measures. Incentives will be available for customers to offset a portion of the cost of specific comprehensive retrofits. The ~~*Basic*~~*Enhanced Basic/Modified Flex* *Path* will allow customers to reduce their energy usage while increasing the energy performance of their existing homes and minimizing lost opportunities for future comprehensive retrofit options.

The ~~*Basic*~~*Enhanced Basic/Modified Flex* *Path* will also educate contractors and customers on the benefits of implementing comprehensive whole house retrofits on existing buildings that will provide systematic reductions in energy use. The ~~*Basic*~~*Enhanced Basic/Modified Flex* *Path* will help to:

- Utilize no-cost (to customer) surveys (Energy Advisor) as an entry point to identify opportunities for efficiency improvements[44];
- Offer targeted marketing campaigns to engage participants that receive stand-alone EE rebates for completing qualified home improvement measures;
- Promote completion of retrofits based on preferred building science loading order;

[44] The Energy Advisor provides residential customers with entry-level energy surveys online, over the phone, or by mail. The surveys are not intended to serve as an audit but are meant to provide consistent messaging and an easy on-ramp to EUC. The Energy Advisor surveys are also an ideal link between the California Solar Initiative (CSI) and EUC. This synergy will be discussed later in the document.

- Offer incentives to encourage progression along a preferred approach towards comprehensive retrofits;

- Continuously engage customers over time as they progress toward a home performance approach;

- Leverage available opportunities to move customers to the *Advanced Path* by informing them about available local or third-party financing options and other complementary revitalization efforts that may be available within a particular jurisdiction;

- Offer a holistic path towards home performance by aggregating key elements of a dwelling into its core elements: building envelope ~~and fixed lighting~~; heating, cooling and hot water, and appliances;

- Coordinate with communities, local governments, workforce education & training, industry organizations and allied third-parties for outreach on local retrofit and contractor training opportunities available.

The ~~EUC *Basic*~~*Enhanced Basic/Modified Flex* *Path* offers a comprehensive approach to delivering prescriptive ~~pre-set~~ retrofit solutions to Californians by recognizing the essential interplay and relationships between groups necessary in the delivery of a successful program.

The IOUs and RENs will offer, within their respective territories, a statewide design of the Enhanced Basic/Modified Flex Path as a replacement to the existing Basic Path and marketed with the EUC Advanced Path. The IOUs and RENs have developed a pick list, or menu of eligible measures for the Enhanced Basic/Modified Flex Path that demonstrate strong consistency across all programs, to the extent that differences in existing work papers currently under review by CPUC allow. To market the Enhanced Basic/Modified Flex Path to customers, both IOU and REN measures will be awarded points based upon existing and post-upgrade conditions and diagnostic testing (if required for any specific measure). Customers will be required to install at least 1 of 3 base measures, a minimum of 3 measures total and achieve a minimum point threshold of 100 points that equates to 10% energy savings. This simple, menu-driven, flexible design is expected to greatly increase the volume of projects over the original Basic Path. Both the IOU and REN program designs associate the project points with tiered incentive dollar values. To encourage customers to more fully adhere to the loading order, customers are eligible for additional bonus points for installing additional base measures, i.e. when installing 1 or 2 additional base measures beyond the required one measure, customers will receive bonus points for each additional base measure installed.

EUC *Multifamily Path*

The vision of a EUC *Multifamily Path* is to deliver comprehensive energy efficiency upgrades tailored to the needs of existing multifamily dwellings and their owners, tenants and management companies.

The *Multifamily Path* is envisioned to specifically target the multifamily housing (MF) retrofit market and would promote long-term energy benefits through comprehensive whole building energy efficiency retrofit measures —including building shell upgrades, high-efficiency HVAC units, central heating and cooling systems, central domestic hot water heating and other deep energy reduction opportunities. These energy efficiency measures would be identified through an investment grade assessment.

This performance-based approach would assist property owners and managers with making informed decisions, identify measures for energy savings, and to maximize energy reductions for each property owner, manager, and tenant, as applicable. The *Multifamily Path* is envisioned as a logical next step to the prescriptive based MFEER and would be coordinated with Energy Savings Assistance Program and MFEER to present a singular and streamlined approach for multifamily tenants, property owners and property managers, in accordance with the Strategic Plan. A key feature of the *Multifamily Path* would be a single point of contact to assist multifamily raters and customers and to streamline their experience. The single point of contact will recruit and assist multifamily owners and property managers to evaluate specific property and advise the program that best suits the needs of particular buildings.

This integrated approach combines market-rate and income-qualified energy efficiency measures and educates building owners on the benefits of energy efficiency and conservation efforts spanning the range of needs for the multifamily market. The *Multifamily Path* will leverage and integrate the MF MFEER resource components and ESA Program offerings in a singular customer facing program that presents a simplified view from the customer perspective.

The *Multifamily Path* would guide multifamily customers towards deeper, comprehensive energy efficiency measures, including: whole house solutions, plug load efficiency, visual monitoring and displays, performance standards, local government opportunities, and IDSM integration. The *Multifamily Path* will support the strategies, where possible, in the Low Income Proposed Decision. Since the *Multifamily Path* is the newest offering under EUC, each utility will test a variety of approaches and offer paths of different size, scale and scope. The lessons learned from these tests will inform future program design.

The IOUs will organize and convene a workshop on lessons learned and best practices in their multifamily pilot programs in late 2013 or early 2014 and notice the workshop to the service list and RENs for this proceeding.

a) Sub-Program Energy and Demand Objectives-

Table 2. Projected Sub-Program Net Energy and Demand Impacts, by Calendar Year
[Table-2 to be provided as an Excel Attachment to this PIP]

b) Program Non-Energy Objectives:
Table-16: Non-Energy Objective
[Table-16 to be provided as an Excel Attachment to this PIP]

c) Cost Effectiveness/Market Need:
The California IOUs look forward to continue playing a leading role, in collaboration with local governments, in moving the existing residential homes market towards larger reductions in energy usage and towards the *Strategic Plan* goal of achieving 40% purchased energy reductions in all existing homes by 2020. At this time, current market conditions and barriers are:

1. Relatively high cost of home assessments.
2. Relatively high gross costs of comprehensive energy upgrades.
3. Market unawareness of non-economic value to comprehensive energy upgrades.
4. Fledgling contracting and supporting industry for existing home energy upgrades.
5. Low consumer awareness of incentive programs and the concepts of comprehensive home energy assessments and upgrades.
6. Lack of common home rating protocols and common vernacular for the market to assign value to homes which undergo comprehensive energy upgrades.

EUC seeks to address these barriers through:

1. Continued marketing of Energy Upgrade California and whole house concepts. (Barrier 3, 5).
2. Continued contractor recruitment (at a pace aligned with demand), training and mentoring. (Barrier 4, 5).
3. Continued customer uptake through EUC incentives. (Barrier 1, 2, 5).
4. Continued stakeholder outreach to address barriers. (Barrier 1, 3, 4, 5, 6).
5. Continued partnerships with local and state government to address barriers. (Barrier 1, 2, 3, 4, 5, 6).

It will be critical to establish market transformation (MT) metrics and milestones that are in alignment with cost effective metrics that can more accurately assign

cost effectiveness of resources expended towards MT goals. As the Value Proposition figure below represents, there currently is significant non-economic value being assigned by the marketplace towards whole house projects but which are not accounted for in cost effectiveness metrics currently used.

Non-economic value can be assigned as:
Gross Cost – (annual savings x EUL) – (assigned increased market value of home)

By this definition, and information regarding gross costs and savings to date, it would appear that the market currently is assigning significant non-economic value to EUC projects. However, current cost effective metrics assign all value towards economic value related to energy savings only. Failure to align MT goals and cost effective metrics will result in inaccurate measurement of resource impacts on MT goals.

VALUE PROPOSITION
(Greater the Value Proposition = Faster Market Transformation and Consumer Uptake)

	Consumer Value	Consumer Costs
Economic Value	• Monthly utility bill savings (kWh, kW, therm) • Recognized Market Value of EE home	• Gross Project Costs

Non-Economic Value	• Health & Comfort
	• Altruistic
	  • Environment
	  • National Security
	  • Being part of Green Movement
		• *Offsets:*
		IOU Incentives
		Financing

	Driving Up Value	**Driving Down Costs**
	• Standard Ratings where the Market can assign value • Higher monthly utility bills	• More Qualified Providers • Higher Demand • Streamlined Processes • Innovative Marketplace

d) Measure Savings/ Work Papers:

~~a.~~ EUC ~~*Basic*~~*Enhanced Basic/Modified Flex Path* utilizes deemed savings values by climate zone for building ~~vintages pre-1979 and by climate zone post- 1979~~ pre-1978, 1978-1992, or 1993-2001 vintages, as represented by the DEER 2011 Single Family Home prototypes available from the MASControl tool, v2.00.10 [A].

EUC *Advanced Path* utilizes CEC approved software (i.e. Energy Pro Res Module at the time of this PIP) for calculated project savings.

EUC *Multifamily Path* envisions measured savings for all low-rise multi-family buildings utilizing the Energy Pro, Residential Performance Module (for Site savings calculations). For all high-rise buildings, would utilize the Non Res Module.

~~b.~~a. Indicate work paper status for program measures:

Table 4 – Work paper Status
[Table 4 Work paper Status to be provided as an Excel Attachment to this PIP]

10) Program Implementation Details

In addition to traditional marketing efforts, the IOUs will work through service providers and vendors to engage qualified tradespersons in the crafts that they have chosen and will continue to invite input from stakeholders to further develop additional ways to meet program objectives.

One of the avenues that the IOUs plan to pursue to advance the program's efforts to achieve deeper energy savings retrofits in homes is to build closer partnerships with California's real estate industry, including via such activities such as voluntary training and outreach partnerships. Based on input already gathered from relevant stakeholder groups, experts, and Commission Staff, the IOUs plan to implement the following main areas of activities for this initiative to leverage partnerships with the real estate industry:

1) Training for all relevant aspects of the real estate industry and point of sale chain (real estate agents, lenders, inspectors, green/efficiency specialists, appraisers, rater's public agencies and contractors). An emphasis will be placed on training the cross-functional teams that already work together in the market, since all pieces of the process needs to be covered to be effective, especially on the financing side. The use of successful case studies will also be explored.

2) Driving customer demand for energy efficient homes via collaborative consumer education and outreach, using easy to understand messaging and including efforts such as the promotion of home energy improvements and "green" labeling around the time of purchase and sale of a home. This is a critical timing in the market that can be leveraged. The Joint Center for Housing Studies estimates that home buyers spend more than $6,000 per year on home improvements in the first two years after buying homes. In subsequent years, the annual average outlay drops to $2,500.[45]

A key to success for this initiative is properly aligning design with the personal and business interests of the stakeholders involved particularly the Realtors, home buyers, and sellers. While promotion of energy efficiency and green building practices is the paramount objective, the initiative would remain consistent with stakeholders' interests. By remaining stakeholder focused, the initiative aligns short-term private interests with long-term public interests.

Further details and continuous improvement of this plan will be developed by inviting additional input from an ongoing set of stakeholder collaboration discussions. Identification of appropriate regional differences and their implications to implementation will be incorporated into the plan. And short- and long-term success criteria and a periodic assessment timeline for evaluation of this initiative will be developed.

[45] Joint Center for Housing Studies of Harvard University (2011), *The State of the Nation's Housing: 2011*, http://www.jchs.harvard.edu/research/state_nations_housing

Also, during the transition cycle the IOUs will explore potential of offering pilot tests of expanding building science certifications and home evaluation and performance improvement processes beyond BPI to potentially include equivalent certifications, and home evaluation and performance improvement processes such as those through ACCA. To increase the number of qualified participating contractors and contribute to the creation of a sustainable workforce, third party program implementers will solicit and screen qualified contractors. The program will also include marketing activities to help educate customers on program services and other activities to provide additional customer leads to trained contractors.

The program will employ a number of integrated delivery strategies:

1) Educate contractors and residential customers on the concept of home performance;
2) Coordinate with existing residential program offerings (e.g. ESAP, HVAC, PLA, Energy Advisor and MFEER) within the utility portfolios;
3) Provide robust quality assurance and quality control protocols that encourage quality installation and drive contractors to obtain additional training and qualifications;
4) Provide robust EM&V feedback loops to inform program enhancements;
5) Integrate with marketing efforts of the broadened statewide "Energy Upgrade California" brand, when launched, and deliver complementary marketing messaging to drive customer demand and contractor participation;
6) Coordinate contractor training, marketing and outreach efforts with local governments, as appropriate; and
7) Develop an incentive structure that drives customers to undertake comprehensive residential retrofits.

Additionally, PG&E will direct at least 25% more of their marketing and outreach budgets for the Energy Upgrade California program to Climate Zones 9-16 in 2013 and 2014, in accordance with Ordering Paragraph 25 of the November 8, 2012 CPUC Decision 12-11-015 approving IOU energy efficiency programs and budgets.

EUC Working Group

Given the ambitious market transformation goals of EUC, its relatively new entrance into the IOU EE portfolio, and its challenges during the first two years of rollout, the IOUs are committed during the 2013-2014 transition cycle to providing the leadership and working with CPUC, CEC, local government staff, as well as relevant stakeholders to convene a statewide EUC Working Group to address relevant and significant issues for adoption in the 2015 IOU program cycle. The IOUs seek a cooperative design and implementation approach that involves all parties with an interest in EUC.

The Working Group will be co-chaired by one IOU, determined by IOU consensus (Sam Diego Gas & ~~Electirc~~Electric), and one non-utility co-chair selected by the Working Group (California Center for Sustainable Energy). The Working Group co-chairs will solicit views and direction from Commission staff on the Working Group operations. The Working group may choose to form subgroups and/or hold stakeholder outreach meetings as necessary.

The Working Group will be composed of all former EUC Steering Committee members, the RENs, EUC Contractors, and other interested stakeholders and implementers, including the EUC implementers, Commission, and CEC staff, and CCSE as the statewide marketing and outreach coordinator.

Where feasible, necessary and relevant, the IOUs will retain the services of qualified consultants or other entities with experience in the whole house retrofit industry to assist in these efforts in the areas of research, facilitation, or other assistance as may be required. IOUs will also engage utilities, non-profits and other stakeholders who may have experience in other parts of the country in deploying whole house programs.

In this regard, the IOUs will hire a market transformation consultant to assist with improvements to the long-term EUC design and to support a constructive IOU engagement in the AB758 process. The Working Group IOU co-chair will be the lead IOU for this contract. Members of the EUC Working Group will be offered the opportunity to substantively shape the work scope and priorities of the market transformation consultant. Timelines and general framework for the market transformation consultant will begin at the first meeting of the EUC Working Group in January 2013.

The EUC Working Group will as necessary to focus on the following issues on a statewide level for consideration in the 2015 program cycle:

1. Role of local governments
2. Software standards
3. Data collection standards
4. Home Assessment standards
5. Home Assessment reporting standards
6. HERS II Ratings and alignment with EUC EE Programs
7. Contractor certification standards
8. QA/QC standards
9. Streamlined project reporting and programmatic best practices
10. Integration of HVAC programs
11. Engagement of California Real Estate Market
12. ~~Future of~~ Development and refinement of ~~Basic~~ Enhanced Basic/Modified Flex Path
13. Identification of Market Transformation Milestones and Metrics
14. Cost effectiveness metrics aligned with Market Transformation goals.

15. Long term incentive structure
16. Applicable AB758 issues

In addition, the EUC Working Group ~~will~~ has, and will continue to provide substantive contributions to program design and implementation plans on the following items: ~~to be included in an updated PIP to be filed by a Tier 2 Advice Letter not later than April 1, 2013:~~

1. Final statewide aligned and streamlined protocols regarding heating, ventilation and air-conditioning (HVAC) emergency replacements and high performing contractors.
2. ~~Final program design and implementation of~~ Enhanced Basic/Modified ~~-~~ Flex-Path

a) Timelines:
Table 5: Sub-Program Milestones
[Table-5 to be provided as an Excel Attachment to this PIP]

b) Geographic Scope:
Table 6: Geographic Regions Where the Program Will Operate
[Table 6 Geographic Regions to be provided as an Excel Attachment to this PIP]

c) Program Administration
Table 7: Program Administration of Program Components
[Table 7 to be provided as an Excel Attachment to this PIP]

d) Program Eligibility Requirements:

i. Customers:
Single family or multi-family building customers with an active IOU account OR owners or property management firms who own or operate single family or multifamily buildings that are served by an active IOU account, may participate in EUC provided they utilize a Participating Contractor or a Participating Rater per program guidelines.

Participating Contractors or Participating Raters shall be the single point of contact for customers and are responsible for submission of all program requirements. Participating Contractors and Participating Raters will install or ensure installation of all measures in accordance with IOU QA/QC and Measures Installation Standards guidelines in accordance with applicable contractor/ rater participation agreements.

Per program requirements, process, and protocol, for all EUC projects, customers must install a minimum of three energy efficiency measures which support the energy efficiency loading order and must perform appropriate combustion safety testing.

Table 8: Customer Eligibility Requirements (Joint Utility Table)
[Table 8 to be provided as an Excel Attachment to this PIP]

ii. Contractors/Participants:

Participating Contractor Requirements for ~~Basic~~*Enhanced Basic/Modified Flex* Path and *Advanced Path*
Participating ~~EUC~~ Contractors must be certified and licensed according to all applicable federal, state and local laws. Participating Contractors shall meet, and provide sufficient evidence and supporting documentation for the following minimum requirements:

1. Contractor State Licensing Board (CSLB) license in the appropriate specialty;
2. Bonding and in good standing.
3. Insurance to IOU minimum insurance standard;
4. Execution of a contractor participation agreement;
5. Completion of all utility training course requirements, including Participation Workshop and a 3-Day ~~Basic~~Enhanced Basic/Modified Flex and/or Energy Upgrade Training, Workshop (for the existing ~~Basic~~Enhanced Basic/Modified Flex Path), if not BPI-certified ~~Basic~~Enhanced Basic/Modified Flex or Advanced Training, as appropriate;
6. BPI-certified Building Analyst (BA) to complete Combustion Safety and Carbon Monoxide Protection and all other minimum Health and Safety Requirements specified in the BPI Technical Standards for Building Analyst Professional;
7. Ensure HVAC permits will be pulled on all work that is appropriate per local jurisdiction requirements;
8. Participating Contractors who participate in *Advanced Path* projects must employ at least one staff person who holds an active BPI Building Analyst certification. BPI accreditation is strongly encouraged and may be required of all participating contractors at some point during the program cycle;
9. Additional IOU requirements, as appropriate.

Participating Rater Requirements for All EUC Paths
Participating Energy Upgrade Raters must meet all requirements as a Participating Contractor and must be both HERS II certified and hold an active BPI Building Analyst certification or BPI MF Building Analyst certification as may be applicable. EUC ~~*Basic*~~*Enhanced Basic/Modified Flex Path* and *Advanced Path* projects submitted by a Participating Rater must utilize a EUC Participating Contractor for installation of the measures specified by the Participating Rater.

Table 9: Contractor/Participant Eligibility Requirements (Joint Utility Table)
[Table 9 to be provided as an Excel Attachment to this PIP]

e) Program Partners:

a. Manufacturer/Retailer/Distributor partners:
Table 10: Manufacturer/Retailer/Distributor Partners
[Table 10 to be provided as an Excel Attachment to this PIP]

b. Other key program partners:
Table 15: Energy Division, California Energy Commission, local governments, BPI and other standards bodies, as well as other partners
[Table 15 to be provided as an Excel Attachment to this PIP]

f) Measures and incentive levels:

Advanced Path Incentives
Incentives for the *Advanced Path* will be paid based upon modeled site savings energy utilizing any CEC approved simulation modeling software approved by IOUs. Incentives for *Advanced Path* are designed to encourage customers to reach for deep energy savings. *Advanced Path* incentives are for both gas and electric measures provided by the customers' participating utility program.[46] Currently, Energy Pro simulation modeling software is the only approved software for use with EUC. During the 2013-2014 transition cycle, the IOUs will work collaboratively with the CEC and other stakeholders to identify potential approaches to adequately broaden the allowable software under the EUC while containing costs required for needed Commission Staff reviews.

Savings/ Participation Level: % Reduction	Incentive Amount
~~*Basic Package: 10%*~~	~~*$1,000*~~
10%	$1,000
15%	$1,500
20%	$2,000
25%	$2,500

[46] In various service territory where one of the customer's utility service provider (municipality), is not a program participant adjustments may be necessary to the incentive.

30%	$3,000
35%	$3,500
40%	$4,000
45%+	$4,500

~~*Basic*~~*Enhanced Basic/Modified Flex Path* Incentives

The ~~*Basic*~~*Enhanced Basic/Modified Flex Path* customer incentive is up to $~~1,000~~ 2,500. ~~The customer will receive the entire rebate amount as a direct result of participating in *Basic Path*.~~ The IOUs and RENS are currently collaborating on points for the eligible measures simultaneous to the work paper review ~~process. Additionally, The~~process. The *Enhanced* ~~*Basic*~~*Enhanced Basic/Modified Flex Path* incentives are shown in the table below and will be:

Consistent statewide;

- Lower than the *Advanced Path* incentives;
- Compatible with municipal financing options; and
- Implemented so as to leverage external funding where appropriate.

Participation Level: Points	**Incentive Amount**
100 Points	**$1,000**
150 Points	**$1,500**
200 Points	**$2,000**
250 Points	**$2,500**

Multifamily Path Incentives

Incentives for *Multifamily Path* will be paid based upon modeled site savings energy utilizing any CEC approved simulation software approved by IOUs. Incentives will be offered on a tiered structure, paid per building on a "per dwelling unit" basis according to the total building energy savings percentage. The tiered approach will reward participants for realizing deeper savings. While a "per unit" approach enables participants to experience economies of scale with larger multifamily buildings.

Ten Year Stepwise Incentive Structure

During the 2013-2014 transition period, the IOUs will meet at least twice with statewide stakeholders to develop a 10 year stepwise incentive structure which will be triggered at defined market transformation milestones. It is anticipated

that the plan will include a defined timeline, for incentive update decisions and that incentive level changes will be updated at defined market trigger metrics associated with the number of participating homes (i.e. number of jobs or homes treated) towards the *Strategic Plan* goals. As the number of participants increases over time, incentive levels will be lowered accordingly to reset the incentive amounts.

The IOUs will invite statewide stakeholder inputs to lock in these targets prior to the start of 2015, using every 20,000 homes/dwelling units treated and decreasing incentive levels in $250 increments as a starting point for discussion. Once the statewide target is confirmed, the IOUs will notify contractors when the program has reached 75%, 90% and 95% of the goal so contractors can plan accordingly.

Table 11: Summary Table of Measures, Incentive Levels and Verification Rates
[Table 11 to be provided as an Excel Attachment to this PIP]

Permitting Requirements
No incentives for equipment requiring a building permit shall be provided any contractor or customer without that contractor or customer certifying that s/he has complied with all permit requirements and utilized a licensed contractor.

Qualified Measures
During the transition cycle, the IOUs will work to better leverage EUC to achieve greater energy savings from plug loads, appliances and swimming pools through:

1. Greater cross marketing of PLA and EUC customers.
2. Work with EnergySoft to find solutions to pool pump modeling.
3. Incorporate lighting and appliance options as a more predominate feature in standard assessment reports to customers.

~~Required *Basic*~~*Enhanced Basic/Modified Flex Path* Measures Installed Per Measures Installation Standards:
~~Air Sealing~~
~~Attic Insulation~~
~~Duct Sealing~~
~~Hot Water Pipe Insulation~~
~~Thermostatic Shut-Off Valve~~
~~Carbon-monoxide Monitor~~
~~Combustion Safety Testing~~
~~Low-Flow Showerhead (recommended)~~

Base Measures:
Attic Insulation & Attic Air Sealing
Duct Sealing OR Duct Replacement
Whole Building Air Sealing

Flex Measures:

Floor Insulation
Wall Insulation
Duct Insulation
Attic Radiant Barrier
Gas Water Heater
Electric Water Heater
Gas Furnace
High Efficiency AC
Right-Size HVAC Kicker (N/A until QI work paper approval)
High Performance Windows (Phase II)

Stand-Alone Measures:
Variable Speed Pool Pump
Refrigerators
Clotheswashers
Refrigerator/ Freezer Recycling

Advanced Path Measures Installed Per Measures Installation Standards:

Attic Insulation
Cool Roof Installation (CRRC-certified)
Cooling System Upgrade
Domestic Hot Water Heater Upgrade (non-solar)
Domestic Hot Water Pipe Insulation
Duct Insulation
Duct Test and Seal
Exterior Lighting Upgrade – Permanently Installed High-Efficacy
Floor Insulation
Heating System Upgrade
Interior Lighting Upgrade – Permanently Installed High-Efficacy
Low-Flow Shower Head
Radiant Barrier Installation
Thermostatic Shut-Off Valve
Wall Insulation
Whole House Fan Installation
Whole House Air Sealing
Window Upgrade

Other Measures as may be modeled and allowed by IOUs per regional market needs

Ineligible Measures
Screw-In Lighting Fixtures and Lamps
Solar Domestic Hot Water Heater System
Distributed Generation Systems - Solar PV, Fuel Cell, Wind, etc.
Pool Pump Upgrade
Clothes Washer Upgrade
Clothes Dryer Upgrade
Dishwasher Upgrade

Multifamily Building Eligible Measures
Attic insulation upgrade
Wall Insulation upgrade
Floor insulation upgrade
Window replacements – 2008 T-24 standard or better
Cool roof – CRRC rated product
Radiant barrier
Window shading – permanent, non-retractable
Duct Sealing - with HERS test
A/C equipment replacement – Must meet current T-20 standard
Furnace replacement – Must meet current T-20 standard
Premium efficiency motors (ECM included)
VFD controls for CHW, HW, CW pumps
VFD controls for cooling tower fans
Pipe insulation – From ½ inch to 1-inch, or none to 1-inch
Controls optimization (OA reset, zone reset)
Boiler or DHW replacement – Must meet current T-20 standard
Insulate hot water piping – From ½-inch to 1-inch, or none to 1-inch
DHW tank insulation
Add VFD to circulation pump
Update central DHW pump to demand control – From no control to demand control
Common area lighting fixtures – high efficacy hardwired fixtures
Dwelling unit lighting fixtures – high efficacy hardwired fixtures
Lighting controls – Occupancy sensor, photo sensor, or dimmer switch
Outdoor lighting retrofits – high efficacy hardwired fixtures
ENERGY STAR® Refrigerator
ENERGY STAR® Dishwasher (if a dishwasher is installed in pre-retrofit condition)

g) Additional Services:

Table 12: Additional Service
[Table 12 to be provided as an Excel Attachment to this PIP]

h) Sub-Program Specific Marketing and Outreach:
IOUs will conduct integrated as well as program-specific marketing and outreach which will be coordinated with the statewide marketing and outreach program. The utilities may use a range of tactics such as; e-mails, flyers, on-Line marketing, direct mail, bill messaging, social media, local events, ethnic media, and other channels that suit the target audience, the message, and the resources.

Marketing, Education and Outreach plans

1) Objectives
   - Generate greater awareness, understanding and for the whole house system concept;
   - Drive response amongst qualified customers to seek out whole house projects; and
   - Build demand in the marketplace for home retrofit services.

2) Target Audiences
   EUC marketing and outreach aims to include all stakeholders in the retrofit process, throughout the life of the program. This will help to ensure that all audiences receive consistent information and will enable a more informed dialogue about program specifics, in an effort to continuously engage stakeholders in the energy efficiency retrofit process. The initial target group is comprised of the following audiences listed below based on the results of the statewide market survey research.

   Target Group:
   - Single family residential customers in proposed targeted segments
   - Multifamily residential customers
   - Residential customers with a history of prior EE engagement including, but not limited to: rebates, online tool enrollment and energy audits
   - Local governments, community-based organizations and other stakeholders (i.e. the realtor community)
   - Efforts may target select public events and work with local earned media to publicize the program's benefits.

3) Keys to Success
   Execution of a successful campaign that introduces customers and contractors to the benefits of comprehensive home energy efficiency retrofits will largely be dependent on funding available to support outreach to all audiences. With that in mind, following is the proposed approach and specific tactical recommendations that the IOUs aim to pursue, funding permitting:

- Continue to utilize a statewide brand and message; and a creative envelope for EUC marketing efforts to avoid market confusion;
- Co-brand where feasible;
- Coordinate with local governments;
- Engage contractors, stakeholders and local governments in generating customer demand; and
- Provide collateral pieces to participating contractors to assist in lead generation and education;
- Employ expanded community based marketing approach; and
- Use a variety of innovative marketing strategies such as time of sale assessment vouchers.

i) Sub-Program Specific Training:
Specific workforce development efforts supporting EUC include the following:

- CEC/EDD: California Clean Energy Workforce Training Program Community college programs;
- Third party programs; and
- IOU training offerings (IOU trainings will serve as backup if required. IOU courses do not duplicate modules available in the marketplace but will serve backup role in the event that a market need is identified and best served by the IOU Energy Training Centers).

EUC will be coordinated with the statewide IOU WE&T program, local government residential retrofit and contractor training programs that are tied directly to workforce education and training efforts on a state and federal level. In addition, IOU WE&T programs will continue to offer both building-block house as a system courses that educate students on the concepts that form the foundation of home retrofit programs when a needs assessment determines that these areas require attention. Those concepts include:

- Advanced house-as-a-system concepts and issues;
- Combustion and other safety training updates;
- Green building techniques applicable to the program;
- Blower Door Based Air Sealing;
- Codes and standards (Title-24) implications;
- Advanced lighting, HVAC technologies and problem solving; and
- Business training (including the enhancement of sales, marketing, training, and accounting skills).

Contractor training requirements will be based EUC requirements and will provide contractors necessary training without sacrificing any considerations for applicable safety requirements.

Contractor recruitment efforts will be conducted primarily by third party program implementers – a model that has proven successful in the EUC and statewide

HVAC programs in the 2010-12 program cycle. Program implementers will continue to primarily recruit contractors through:

- The network of contractors already participating in IOU HVAC, insulation and weatherization programs;
- Direct outreach through trade groups with locally active memberships;
- Workforce development departments (to target unemployed general contractors); and

Program implementers will verify and enroll Participating Contractors and Raters and provide required program participation related training. Once enrolled, the Participating Contractor and Rater lists will be posted in a centralized location for customers to view. IOUs will direct customers to appropriate websites for lists of eligible Participating Contractors and Raters.

Upon completion of 2012 Energy Upgrade California process evaluations, the IOUs will convene a workshop to review workforce training needs.

j) Sub-Program Software and/or Additional Tools:

a. List all eligible software or similar tools required for sub-program participation.
   - Energy Pro energy simulation modeling software

b. Indicate if pre and/or post implementation audits will be required for the sub-program.

Pre-implementation audit required _x__ Yes ___ No
Post-implementation audit required _x__ Yes ___ No

c. As applicable, indicate levels at which such audits shall be rebated or funded, and to whom such rebates/funding will be provided (i.e. to customer or contractor).

Table 13: Post-implementation Audits
[Table 13 Program to be provided as an Excel Attachment to this PIP]

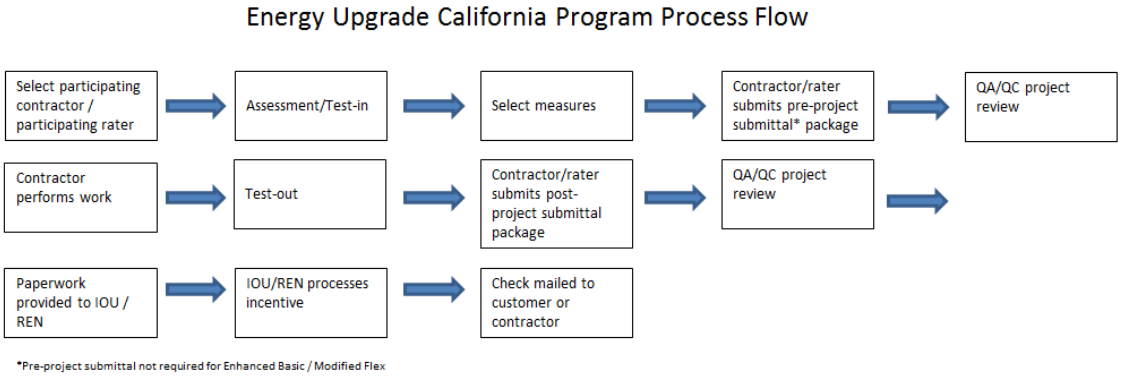
k) Sub-Program Quality Assurance Provisions:
Payment of customer incentives will be tied to the contractor's delivery of full job required program documentation. Program implementers will randomly select a minimum of 5 percent of each participating contractor's reported retrofits for onsite job verification and review 100 percent of the job data inputs from contractors. Verifications will include homeowner interviews, intensive visual checklist inspections, and selective retesting of key items. A subset of these energy savings estimates may later be validated against the first year's after-retrofit utility bills plus climate data and homeowner interviews as needed to identify changes in other factors affecting energy use. IOUs will collaborate to develop QA/QC plans and documents that reflect statewide uniformity to the

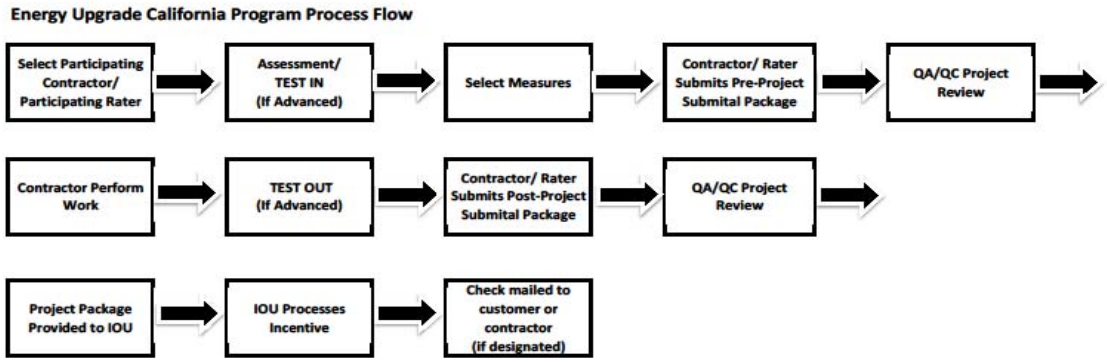
greatest extent possible. QA/ QC documents and standards will be updated regularly with contractor input and will include:

1. QA/QC Process and Protocols
2. Minimum installation standards for all allowable measures
3. Emergency and Fast Track equipment replacement protocols.
   a. Exhibit A attached includes existing and continuing IOU Emergency and Fast Track protocols.
4. Permitting requirements
   a. EUC shall support Heating Ventilation and Air Conditioning permit acquisition as a matter of course.
   b. EUC jobs involving HVAC replacement must include submittal of the HVAC permit number and a contractor certification that appropriate permits have been obtained, for inclusion in program records.

Table 14: Quality Assurance Provisions
[Table 14 to be provided as an Excel Attachment to this PIP]

l) Sub-program Process Flow Chart:

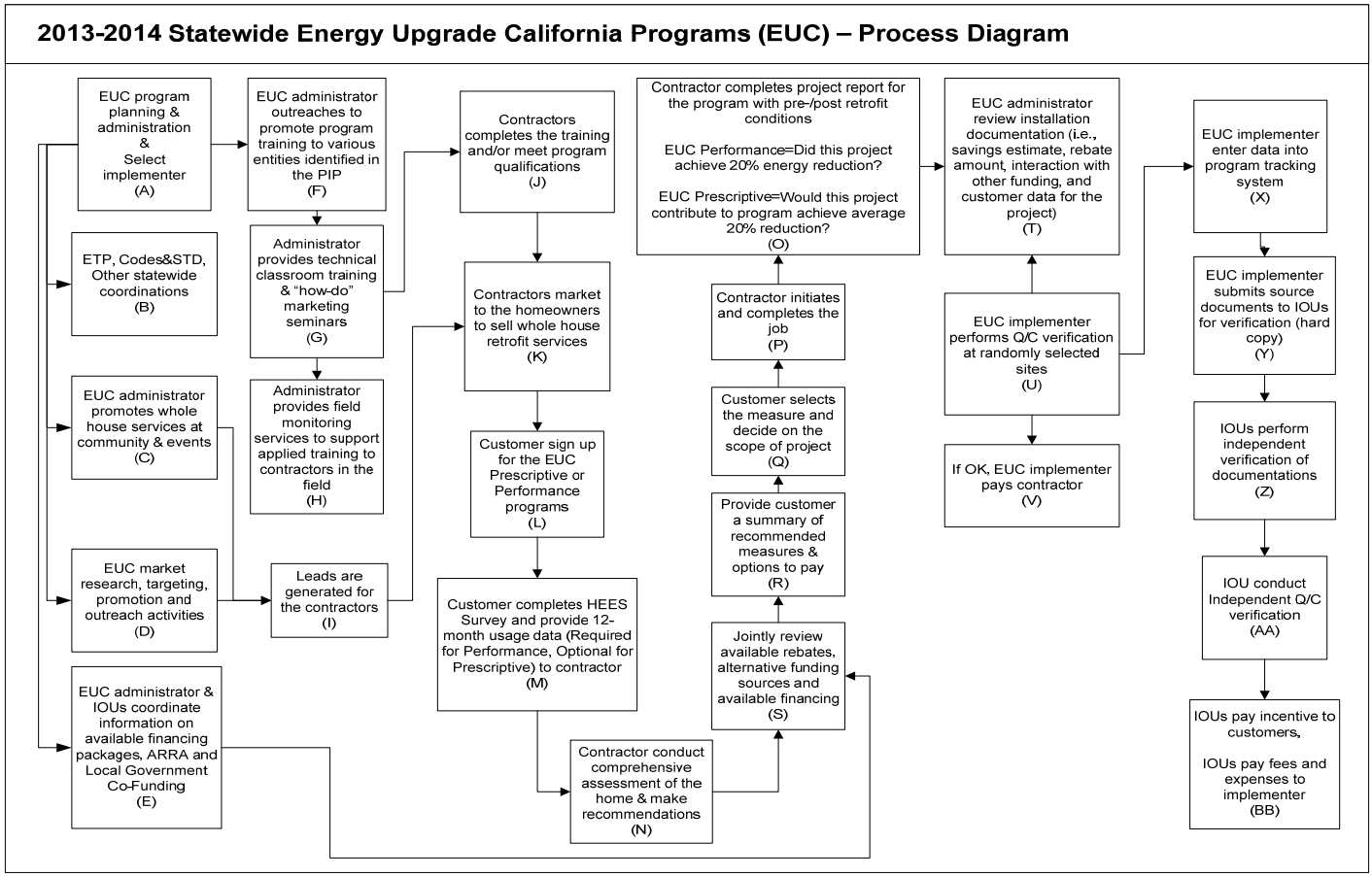




m) Cross-cutting Sub-program and Non-IOU Partner Coordination:

Table 15: Cross-cutting Sub-program and Non-IOU Partner Coordination
[Table 15 to be provided as an Excel Attachment to this PIP]

n) Logic Model:



11) Additional Sub-Program Information

a) Advancing Strategic Plan Goals and Objectives:

The EUC is consistent with the requirements of the *Strategic Plan*. It addresses the Whole-House Strategy of the *Strategic Plan* by influencing contractors and customers to implement comprehensive home retrofit energy efficiency measures through either the ~~*Basic*~~*Enhanced Basic/Modified Flex Path* ~~on-ramp~~, *Advanced Path* or *Multifamily Path.*

EUC responds to the need for much larger energy savings in existing homes and multifamily buildings than is possible with conventional checklist audits or single measure improvement (prescriptive) programs. It addresses the key "whole house" strategy of the *Strategic Plan* by influencing "decision triggers" to improving energy efficiency and understand advantages to expand participation to reach savings goals. This program is also a vehicle to increase penetration of shell upgrades and cost effective, high efficiency appliances, water heaters and HVAC upgrades. The *Strategic Plan* further states that a similar approach must be developed for multifamily housing. The program will help to achieve the following goals identified in Section 2 of the *Strategic Plan*:

Table 6. EUC Alignment with California Long Term Energy Efficiency *Strategic Plan*			
Residential and Low Income Goal 2: Existing Homes			
Goal Number	Strategy	**EUC** Strategy	Integrated Programs & Activities
2-1	Deploy full-scale Whole-House programs.	Monitor performance of selected lower energy homes. Design implement, monitor and continuously improve full-scale programs for whole-house energy efficiency and renewable energy retrofits.	Programs: EUC , Solar, Demand Response, MFEER, Plug Loads, ESAP Marketing: Customer segmentation and local coordination EM&V: Studies to provide early feedback and establish baselines
2-2	Promote effective decision-making to create widespread demand for energy efficiency measures.	Continue to offer Energy Advisor programs online, by mail, and over-the-phone to provide customers with information to promote effective decision-making, in combination with other segment specific marketing outreach and educational activities.	Programs: Energy Advisor EUC , MFEER Marketing: Customer and contractor education to promote building efficiency and appropriate EE behaviors in a segmented manner
2-3	Manage research into new/advanced cost-effective innovations to reduce energy use in existing homes.	Coordinate with Emerging Technologies and other programs to integrate market-ready technologies into the Whole House offering when appropriate. Promote commercialization of home energy management tools including AMI-based monitoring and display tools	Programs: Emerging Technologies, Demand Response, Solar, and others
2-4	Develop financial products and programs such as on-bill financing to encourage demand for energy efficiency building products, home systems, and appliances.	Ensure that customers are aware of the most effective and attractive financing packages that are available to them.	Programs: EUC Coordination: Local government partnerships and other state/federal financing entities

2-5	Increase Title 24 compliance through specific measures leading to aggressive statewide enforcement.	Partner with local governments to expedite the permitting process to decrease the barriers to entry in the home performance industry.	Coordination: Local government partnerships

b) Integration

1) Integrated/coordinated Demand Side Management: As applicable, describe how sub-program will promote customer education and sub-program participation across all DSM options. Provide budget information of non-EE sub-programs where applicable.

The IOUs have identified IDSM as an important priority. The IOUs plan to monitor the progress of other IDSM efforts and to work closely to identify comprehensive integration approaches that feed into the overall statewide strategy and to implement best practices as rapidly as practical.
The statewide EUC is a platform for integration of solutions to the residential customer and is intended to provide an easy entry point for customers and contractors that ultimately integrate other programs for whole house and customer solutions. As awareness of the cost-effective opportunities in whole house retrofits grows through training and education efforts, customers will be presented with the ability to integrate Demand Response and properly-sized onsite generation.

With the inherent synergy that exists between the energy efficiency awareness efforts of CSI and the Whole House programs, EUC information will be made available to IOU teams in call-centers with the intent of providing a EUC introduction to customers or contractors interested in CSI. Coordination with stakeholders who maintain approved solar contractor lists may also provide an opportunity to deliver the whole house message to parties interested in installing solar systems.

The statewide Energy Advisor program will also provide a unique nexus between CSI and EUC. CSI customers are required to conduct an energy efficiency survey prior to installing solar, which presents a unique opportunity to educate customers on the benefits of improving the efficiency of their home prior to purchasing solar equipment. These efforts are expected to include, but will not be limited to:

- EUC links and information on IOU CSI sites;
- Links to EUC landing pages from Energy Advisor;
- Targeted messaging during and after each survey;
- Information about EUC incentives; and
- Educational information that encourages customers to “reduce then produce.”

In addition, any contractors who work onsite with customers can provide delivery channels for DR programs information or installation of DR technology.

EUC will also serve as a platform to integrate technology advancements in DR and Advanced Metering. IDSM efforts will be part of an ongoing conversation with customers to enhance program offerings and increase their participation in DSM efforts over time.

Table 16: Non-EE Sub-Program Information
[Table 16 to be provided as an Excel Attachment to this PIP]

2) Integration across resource types (energy, water, air quality, etc.): If sub-program aims to integrate across resources types, please provide rationale and general approach.

EUC is designed to deliver comprehensive solutions to customers while integrating across resource types to maximize customer benefits not only in terms of energy savings, but through improvements to occupant health, safety and comfort. Primarily, there are opportunities for water efficiency and indoor air quality improvements.

One of the major benefits of comprehensive home retrofits is improved indoor air quality. Residents will notice more consistent temperatures throughout their home and in many cases, improved indoor air quality. The embodied energy in water distribution will become an increasingly important part of utility programs. The consumer education process in the house-as-a-system approach will provide an opportunity for local governments to present customers with information on non-energy savings inherent in comprehensive retrofits.

[This information can be found in Table 16 Non-EE Sub-Program Information to be provided as an Excel Attachment to this PIP]

c) Leveraging of Resources:

Local Governments

i. SDG&E

Local Governments play a unique and important role in the promotion and advancement of Energy Upgrade California. Beginning in 2009, when the American Recovery and Reinvestment Act was passed and programs like the State Energy Program and the Energy Efficiency & Conservation Block Grant program, jurisdictions across the state were given the unique opportunity to make significant investments on energy programs. Because of the unique and

collaborative relationship that exists among the local jurisdictions and SDG&E, and the existence of a non-resource local government partnership program, the San Diego region saw the development of a number of community focused residential retrofit programs including innovative marketing pilots, specialized workforce education & training programs, and a variety of rebate and loan programs that sought to incentivize residents to perform energy upgrades in their homes.

Over the course of the last few years, SDG&E has worked closely with each local government to ensure local programs are closely coordinated and achieve the highest level of collaboration and consistency across the region. Building off the lessons learned over the course of the last few years as well as the unique authorities afforded local governments, SDG&E and the local government program advisory group has developed the following list of key roles that local governments will play to advance Energy Upgrade California during the transition cycle.

1. Incorporate building retrofits & building occupant health and safety issues into Climate Action Plans, General Plans, and other relevant planning and long term strategy documents;

2. Leverage community relationships and resources to market Energy Upgrade California including targeted outreach and education to the community;

3. Provide targeted education on EUC and its benefits to key community stakeholders, business sectors and elected officials

4. Coordinate workforce education and training program activities;

5. Leverage building permit interactions to encourage EUC enrollment and work to develop streamlined permitting process as it relates to EUC;

6. Leverage unique authority to encourage/require building rating/audits to drive customers to EUC;

7. Pilot unique incentive programs such as point of sale audits, to encourage participation in Energy Upgrade California;

8. Work with the financing community to deploy innovative products and services to further enable residential and commercial energy upgrades throughout their jurisdictions.

9. Pilot incentives for Whole Home Energy Rating System II assessment as part of the EUC.

Please refer to the Local Government Partnership Program PIP for budget details associated with these activities.

EUC will coordinate IOU incentives and marketing outreach with local government efforts in neighborhood outreach and contractor recruitment. This effort allows for multiple levels of engagement that, through coordination with local entities, will reach to a neighborhood level that will drive awareness and market adoption.

ii. PG&E

During the development and implementation of the 2010-2012 Whole House Program PG&E partnered and coordinated closely with recipients of American Recovery Reinvestment Act (ARRA), State Energy Program (SEP), and Energy Efficiency & Conservation Block Grant (EECBG) statewide and within the PG&E service territory. In the 2013-2014 Transition Period, PG&E plans to continue to work with and leverage these partners as described in further detail in the Local Government PIP. In addition, PG&E will continue to work closely with the Bay REN on program design changes and coordinating the respective offerings in the market.

iii. SoCalGas

SoCalGas has worked closely with local governments who received American Recovery Reinvestment Act (ARRA), State Energy Program (SEP), and Energy Efficiency & Conservation Block Grant (EECBG) in the last couple of years. This has allowed SoCalGas and local governments to achieve a high level of collaboration and consistency across the service territory. In conjunction with SCE, SoCalGas is in discussion with local governments who are interested in continuing collaboration post ARRA, SEP, and EECBG era. These discussions will determine key roles for local governments, based on lessons learned and their successful offerings from ARRA, SEP, and EECBG grants. Such activities may include:

1. Expanding existing outreach programs to the Real Estate Community
2. Leveraging existing low-interest financing
3. Drawing upon LA County's experience with FlexPath for modifications to meet the CPUC's goal for a more appealing approach.
4. Marketing and Workforce Development support for contractors

iv. SCE

SCE has worked closely with local governments who received American Recovery Reinvestment Act (ARRA), State Energy Program (SEP), and Energy Efficiency & Conservation Block Grant (EECBG) in the last couple of years. This has allowed SCE and local governments to achieve a high level of collaboration and consistency across the service territory. SCE is in discussion

with local governments who are interested in continuing collaboration post ARRA, SEP, and EECBG era. These discussions will determine key roles for local governments, based on lessons learned and their successful offerings from ARRA, SEP, and EECBG grants. Such activities may include:

1. Expanding existing outreach programs to the Real Estate Community
2. Leveraging existing low-interest financing
3. Drawing upon LA County's experience with FlexPath for modifications to meet the CPUC's goal for a more appealing approach.
4. Marketing and Workforce Development support for contractors

d) Trials/ Pilots:

1) SCE/ SoCalGas Moderate Income Direct Install-MIDI

The Local MIDI Program will be offered by SCE and SoCalGas to eligible customers residing in single family and multifamily properties (multifamily common areas excluded) served by SCE and SoCalGas. The MIDI Program will coordinate with SCE and SoCalGas' Energy Savings Assistance Program (ESAP) to deliver MIDI measures through select ESAP Contractors. ESA Program infrastructure will be used to administer the MIDI Program. When working in joint SCE/SoCalGas territory, shared contractors will offer both IOU's Program measures. The MIDI Program will encourage residential owners/property managers of single family and multifamily properties to install comprehensive energy efficiency improvements.

The EUC Program traditionally requires significant financial contributions by customers who wish to participate. The MIDI Program closes the financial gap by installing no-cost measures thereby reducing the total amount of money a customer would need to invest in their property in order to participate in the single family or multifamily EUC Program.

SCE and SoCalGas propose:

- To implement a MIDI trial with a set goal of 2,000 units served
- Develop a scalable program design for larger rollout in future cycles.
- Evaluate delivery of MIDI Program utilizing existing ESA program infrastructure.

1) Customer/Living Unit Eligibility

To participate, the following guidelines must be met:

a. participants must be income eligible (between 201% and 250% of FPG)
b. living unit must not have received ESAP services after January 1st, 2002
c. living unit must meet the current ESAP/MIDI minimum measure requirements

2) Measures
(ESA program approved measures excluding appliances)

3) Contractors
SCE and SoCalGas will coordinate with select experienced joint ESAP contractors to perform an assessment of the living unit, complete customer enrollment, and install measures as applicable in the MIDI Program trial.

2) SDG&E Trial Incentives
SDG&E may explore additional incentive trial offerings for customers who perform an HVAC QI installation as part of a scope of work. Additional trial integration offerings may include offering IHDs, PCTs, or other enabling technologies for advance path customers who achieve certain saving levels.

12) Market Transformation Information:

1) *Summary of the market transformation objectives of the program.*
The EUC program is designed to fulfill the goals of the *Strategic Plan* by guiding and incenting home and building buyers, owners and renovators to implement a whole house approach in energy consumption undertaken in their purchase and use of existing and new homes and buildings, home and building equipment (e.g. HVAC systems), household appliances, lighting and "plug load" amenities. The target is all existing homes in an effort to realize the maximum energy efficiency potential via the delivery of a comprehensive package of cost-effective whole-house and whole-building energy efficiency retrofit measures. These programs will include building shell upgrades, high-efficiency HVAC systems – appropriately sized for the building structure, and emerging deep energy reductions in the lighting, appliance, plug-load and other residential oriented sectors. This initiative will be structured around a comprehensive audit, installation of the variety of retrofits required across the entire building structure, and access to attractive financing programs. The EUC effort will be achieved via the parallel and coordinated efforts of the utility programs, partners and other private market actors, and the State and local government policies and programs made available. As IOUs implement a system of automatic meters and wide-area network to enable data transport, the IOUs and customers will have the opportunity to integrate additional home automatic systems and integrated energy management features into the home (i.e., interim Intelligent Home Network, comprehensive Home Automatic Network and etc.) to support IDSM integration and deployment. The Plug Load and Appliance Program will have the potential to offer not only hardware based energy savings, but also comprehensive behavior savings opportunities.

2) *Identification of the relevant market actors and the relationships among them*

Energy Upgrade California is designed to serve residential homeowners, moderate income households and property owners and managers. For the 2013-2014, the program consists of the following paths:

- Energy Upgrade California:
  - ~~*Basic*~~*Enhanced Basic/Modified Flex Path*~~,~~
  - *Advanced Path*
  - *Multifamily Path*

Energy Upgrade California is a contractor lead program in that it is the local contractor who interfaces with the customer, markets and sells the concept of Whole House Retrofits, and completes the actual work. The Statewide Process Evaluation (5/1/12) revealed that 32% of participants first heard about the EUC program from a contractor. A number of Local Governments, most initially supported by CEC/ARRA funding during the 2010-12 time frame, also support the program via local marketing and incentive offerings. Coordinated on a Statewide basis – the IOUs offer consistency in program scope (to the degree possible) and a consistent marketing message.

3) *A market characterization and identification of key barriers and opportunities to advance demand-side management technologies and strategies*

Market Characterization

The IOUs statewide Energy Upgrade California program has initially focused on training a pool of qualified contractors available to perform these comprehensive retrofits. The number of individuals with active BPI certifications grew dramatically between January 1, 2010 and November 1, 2011. Total active certified individuals grew from 65 to 1,596. The number of certifications (individuals may have more than one type of BPI certification) grew from 88 to 2,349. The 2010-2012 PG&E and SCE Whole-House process evaluation study by SBW/ODC/ASW produced a number of findings, including:

Overarching program participant profile

- The program participation is primary through the *Advanced Path* and there is little engagement in the *Basic Path* (from 2010-12) service.
- *Advanced Path* jobs report energy savings of 30% average in this first program phase.
- The average cost per job ranges from $13,000 to $16,000
- The utility incentives covered typically 23% to 27% of the project costs.
- Despite the large supply of program contractors, only a limited pool of larger contractors complete the majority of the projects
- Many – 44% of participants – used financing to pay for their projects.

Contractor recruiting/training/mentoring—from SCE's in-depth assessment

- There are widespread contractor performance gaps despite a certification requirement (i.e., BPI),
- The current contractors' participation training does not adequately prepare them for job processing expectations and the rigor of the QA/QC process,
- BPI certification does not guarantee a standardized job performance level

- Since the requirements for certification often vary (i.e., (1) on-line training versus in-person classes, (2) different region may place different emphasis, i.e., Vermont may focus more on heating, while California may focus more on HVAC).

For the targeted population—from PG&E's in-depth market effectiveness assessment

- 29% of the targeted population are aware of Energy Upgrade California (EUC),
- 13% of the targeted population reported seeing logo displayed,
- 3% of the targeted population have visited the website,
- 43% of the targeted population has been exposed to at least one marketing treatment from EUC.
- Among those "aware" in the targeted population, 27% first heard of the program from radio, (PG&E did not do radio ads but the local governments did), 18% from direct mail, 11% Newspaper, and 10% each for Word-of-Mouth, Internet and Television.
- Among workshop participants, word-of-mouth and events are the most effective communication channels.
- Program homeowner participants ranked "comfort", "reduced energy bill", "benefits of the incentive" and "home energy assessments" as important reasons for why they participated.
- Contractors report the most effective messaging in their opinion are the messages of: Comfort, Incentives, Lowering energy bills

Market Actors:

- Homeowners/renters & property owners/managers
- Contractors
- Real Estate Professionals
- Financial Institutions
- Property Appraisers
- Local governments

Relationship Among the Market Actors:

The contractor community is the key actor with the EUC. They are the program actor who outreaches personally to the owner of the building and home and communicates the concepts of approaching a building on an entire whole basis. And it is the contractor who proposes the appropriate work and completes the retrofit. The contractor provides the linkage between the EUC and the customer who receives the rebate.

Working together, the real estate professional, appraisal and financial communities are market actors that can help push energy efficiency in the home resale market. Realtors can be educated to differentiate the advantages of purchasing energy efficient existing residential structures to prospective home buyers. Working with the appraisal community to perceive installed energy efficient measure in a home as monetary assets to a structure thus increasing the property's value can be a significant push to the acceptance and importance of energy efficiency and financial institutions recognizing this effort to provide exceptional financing opportunities to prospective home buyers for their investment in an energy efficient home.

Many local governments were very active in the EUC sector in the prior 2010-12 cycle as supported by ARRA funding. Some of those local government programs will be continuing on into the 2013-14 program cycle. The IOUs will continue to provide EUC as a foundation offering to our customers, and local governments can continue to build upon these (with additional rebates) or support these with customized marketing programs. The IOUs will coordinate and partner with local governments in an effort to achieve the synergy possible between these aligned efforts.

Opportunities to advance demand side management technologies and strategies:
Building owners who have committed to a EUC retrofit solution will have taken the ultimate step in applying energy efficiency technology to minimize their energy usage. They have evidenced their willingness to pursue minimizing energy usage, and are therefore self-identified as highly likely to embrace the next step(s) of demand side technologies and strategies to further minimize energy usage. So the next phase of energy reduction for the EUC retrofit customers will be the variety of demand side reduction programs that the IOUs can make available.

Key Barriers & Opportunity for Intervention:
The barriers for this program for the homeowner sector are the:

(1) Relatively high cost of home assessments,
(2) Relatively high gross costs of comprehensive energy upgrades,
(3) Market not aware of additional non-economic values resulting from comprehensive energy upgrades,
(4) Fledgling contracting and supporting industry for existing home energy upgrades,
(5) Low consumer awareness of incentive subprograms and the concepts of comprehensive home energy assessments and upgrades,
(6) Lack of common home rating protocols and common vernacular for the market to assign value to homes which undergo comprehensive energy upgrades,
(7) The economic downturn and its impact on the residential housing sector.
(8) Contractor awareness and access to information,
(9) Access to financing,
(10) Lack of access to skilled labor.

Note: Potential participants who have attended a workshop (PG&E) also explain their lack of participation in that they haven't been able to contact/find a contractor yet.

For the owners and/or managers of multifamily buildings, there are another set of barriers, closely aligned to those for private single-family homes, but different in some very important dimensions:

(1) Lack of knowledge regarding energy efficiency as well as the comprehensive programs that are offered by the IOUs,
(2) Challenge of the "split incentive" where it is the building owner/manager who must pay for all building improvements, including those inside of the individual rental units. But it is the tenants of the unit that pay the energy bills and therefore receive the immediate benefits of the energy efficient investment (by the landlord),
(3) Multifamily buildings are managed as businesses, where capital for major improvements must be borrowed. But the extended ROI for most energy efficiency projects is longer than the few years that most business allow for recouping their investments,
(4) To implement a "whole building" retrofit, the apartment owner/manager must typically bring in several specialty contractors for multiple visits, which in tenant occupied units is a very challenging task,
(5) Tenants having to out of the rental units during retrofit work, as well as the management time required on behalf of the building owner/manager – is a costly investment of resources,
(6) Major retrofit often can only happen when the rental unit(s) is unoccupied – which is a significant loss of income for the owner/manager,
(7) Managed as a business – multifamily building owners/managers are not inclined to replace any major building component or energy system prior to its actual wear-out/break-down. Building retrofits usually take place toward the "end-of-life" of key components (HVAC – for example) – but not when they break-down. Building owners/managers cannot afford the impact on tenants of having key systems not functioning for any length of time.

4) A description of proposed intervention(s) and its/their intended results
The EUC seeks to address these barriers for private single-family homes through:

1) Continued marketing of Energy Upgrade California and whole house concepts. (Barrier 3, 5, 8)
Intended Results: Increase awareness

2) Continued contractor recruitment, training and mentoring. (Barrier 4, 5, 8, 10)
Intended Results: Continue to maintain and improve the supply and quality of the contractors serving the program

3) Expanded customer uptake through EUC incentives. (Barrier 1, 2, 5)

Intended Results: Use incentives to reduce the barrier of entry into the comprehensive retrofit projects

4) Offering of Financing programs (by IOUs and/or other entities) (Barrier 1, 2, 9)
Intended Results: Provide building owners the upfront cash they need to borrow to invest in a retrofit project, and amenable loan terms by which to repay that loan (note: this program component will be particularly important in the multifamily sector).

5) Continued stakeholder outreach to address barriers. (Barrier 1, 3, 4, 5, 6, 8, 10)
Intended Results: Leverage resources outside the IOUs to address market needs

6) Continued partnerships with local and state government to address barriers. (Barrier 1, 2, 3, 4, 5, 6, 8, 9, 10)
Intended Results: Leverage local government resources to engage communities and targeted population to participate in the program

And for EUC *Multifamily* the barriers will be addressed by these actions:

1) To improve a property owner or manager's energy efficiency knowledge, the *Multifamily Path* would seek to leverage comprehensive investment grade building assessments to identify potential energy efficiency opportunities. (Barrier 1)
2) To address split incentives and cost of upgrades, the *Multifamily Path* would integrate with the existing Energy Savings Assistance Program ("ESAP") and the Multifamily Energy Efficiency Rebate ("MFEER") Program. This would provide comprehensive services to the building, including "low cost" or "no cost" tenant measures in conjunction with the EUC *Multifamily Path* whole building incentives in order to maximize energy savings for the up-front investment. (Barrier 2)
3) Incentives would assist property owners or managers with overcoming a wide array of market and financial barriers which may otherwise prevent energy efficiency upgrades (Barrier 1, 5)
4) Create a single point of contact that would assist the property owner or manager navigate through the incentive and retrofitting process. This approach would provide support in understanding the various program rules and assistance in determining eligibility. The property owner or manager would be guided through an easy and streamlined preliminary assessment to establish feasibility and estimate project cost for the *Multifamily Path*, with an eye toward leveraging all eligible programs. (Barrier 4)
5) Target buildings planning on or undergoing renovation projects to limit customer time burden and lost rental income. (Barrier 4, 5)
6) Multifamily sector is comprised of a wide diversity of properties which can be segmented by: 1.) rental rate (low – medium – or high; and/or 2.) size of the building and also size of the company that owns or manages the building. Defining the unique concerns and needs of building owners and managers by these variables of tenant socio-economic status and

ownership/management structure will allow much more effective messaging and marketing communications. (Barrier 1, 2, 3, 4, 7)
7) On Bill Financing or Repayment program which could be focused on the tenant or the common property energy agendas. This program will provide access to capital to fund investments in energy efficiency upgrades for buildings at an attractive interest rate. (Barrier 2, 3, 7)

5) A coherent program or "market" logic model

The EUC is designed to use a market transformation framework to pull in new measures and push out the mature measures. The diagram below describes this iterative process.

EUC will be serving both homeowners and property owners/managers, with the intent to coordinate its program activities with the low-income program to meet special needs. Like the other market transformation programs, the EUC program, will work with Emerging Technology (I), Plug Load & Appliance, Residential HVAC Programs and other residential programs to leverage new and innovative technologies and applications, while pruning more mature technologies and applications from program offerings. These program interactions are described in the EUC Program Key Support Activity Process Diagram below. These interaction and coordination decisions will be facilitated by IOUs' Decision Panel (A) as indicated in the logic model.

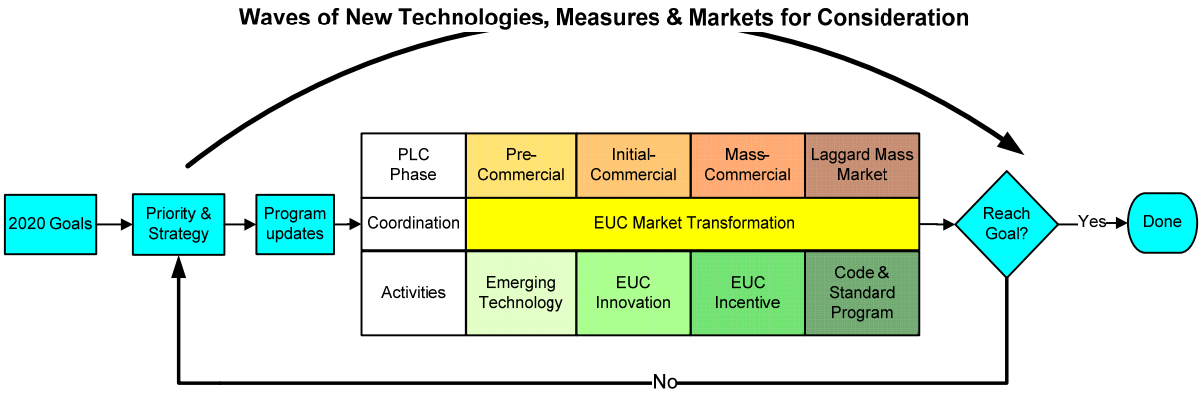
To reduce market barriers, the program's activities are designed to "get the word" out about the benefits of comprehensive retrofits through both mass marketing (D) as well as ground-up individual outreach for neighborhoods and communities (C), by working with local governments and entities. To help property owners understand their energy consumption profile (E), the participants will be encouraged to use an Energy Advisor survey (E) to gauge the overall consumption profile prior to making retrofit decisions, thus respecting the load order of implementation cost effectiveness, and to engage and motivate additional behavior-oriented energy efficiency and conservation actions. To ease the financial burden of the project cost and investment, the program will make financing packages and information available to prospective participants (G).

The program recognizes the importance of having a pool of qualified and competent contractors available to meet the market needs (J & O). The program offers BPI certification training as well as participating contractor ongoing training and mentoring to meet the needs of the workforce and program quality control requirements. This increase in the quality and the quantity of the labor pool, will contribute to contractors' performing projects, outside of the program, to meet deep energy retrofit needs, leading to non-participant spillover effects (R, S & V).

The expected outcome of this program includes increased and improved awareness, knowledge and attitude (AKA) of homeowners and apartment owners towards understanding the benefits of deep energy retrofits (P). After realizing these benefits

from program participation, the participant further enjoys other non-energy benefits such as improved comfort of the house and increased value of their properties. The increased value in the property will become more pronounced as the state finalizes its home rating system, so the home purchasers will be aware of the inherent value of properties complete with deep energy reduction retrofits (U). All of these benefits will help the program participants to continue property improvements outside of the program and outside of the program offerings, leading to spillover effects (T). These participant and non-participant spillover effects will eventually change the overall composition of the housing stock at the market level, making housing and building code ratcheting possible for society (X & Y). These codes and standards changes will lead to further reduction of energy consumption at the market level leading to fulfilling the objectives of the California Long-Term energy and environmental policies (AA).

For the benefit of readers, the associated Program Performance Metrics (PPMs) and appropriate Market Transformation Indicators (MTIs) are identified in this logic model. Additional key program support activities are diagramed as a process diagram for further illustration. The EUC program will have the option to conduct additional pilots/trials to test technologies, applications or other programmatic design and marketing possibilities. The learning from those activities is expected to contribute to the program innovation and further learning.



Within this context, a decision making body, the IOUs Decision Panel, is formed to manage and guide this process. (Please refer to logic model & activities below)

6) *Appropriate evaluation plans, corresponding Market Transformation Indicators and Program Performance Metrics based on the program logic model*
Due to the need to comply with the Decision's timeline for filing the 2013-2014 PIP, and our desire to comply with earlier Decisions that call for gathering stakeholder input in informing market transformation efforts, we suggest that a full market effects evaluation plan be developed during the formulation of the Joint EM&V Plan as

described in section "18.1. Evaluation Budget" in Decision R.09-11-014. Until then, we suggest the following approach:

Summative evaluation: Market Effects. The market transformation program's theory and logic model will be used to guide the evaluation efforts. The scope of the market effects study should be defined by the MT program's scope. The timeline for specific market effects that are to be evaluated should be defined by the MT program theory. Among other indicators, the program theory may specify changes in market characteristics that can be evaluated, such as 1) Spillover, 2) attitudes, awareness and knowledge, 3) reductions in specific market barrier, 4) current pricing and product availability, and 5) other market milestones. We will make the following distinction between program "spillover" and market effects: spillover is energy savings not directly tracked by the program, whereas market effects are broader and would include spillover as well as meaningful changes in the structure or functioning of the market.

Formative evaluation: The formative evaluation of a market transformation program is typically performed at the intervention (i.e. program) level. The methods are the same as would be used in a program process evaluation, and would include interviews with program staff, participants and non-participants as well as an assessment of the program's direct outputs.

Program Performance Metrics:

The IOUs have evaluated 2010-2012 PPMs in Resolution E-4385 for applicability to the 2013-2014 program cycle and propose to work collaboratively with Energy Division to develop revised program targets and PPMs as appropriate for the 2013-2014 program cycle. The IOUs will propose revisions in an advice letter, per additional guidance from Energy Division.

Table 3.1 Short-Term PPMs

On December 2, 2010, the Commission issued Resolution E-4385, approving short-term 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.

This information can be found in Table 3.1 PPM Information to be provided as an Excel Attachment to this PIP.

Table 3.2 Long Term PPMs

PG&E includes long term PPMs[47] per Energy Division guidance received in December 2012. As stated in the Joint Utilities' comments to the Commission in R. 09-11-014 dated November 21, 2011, and discussed between IOUs and ED on January 9, 2013, IOUs plan to finalize long term PPMs in further discussions with involved stakeholders and propose updates to Energy Division at a later date.

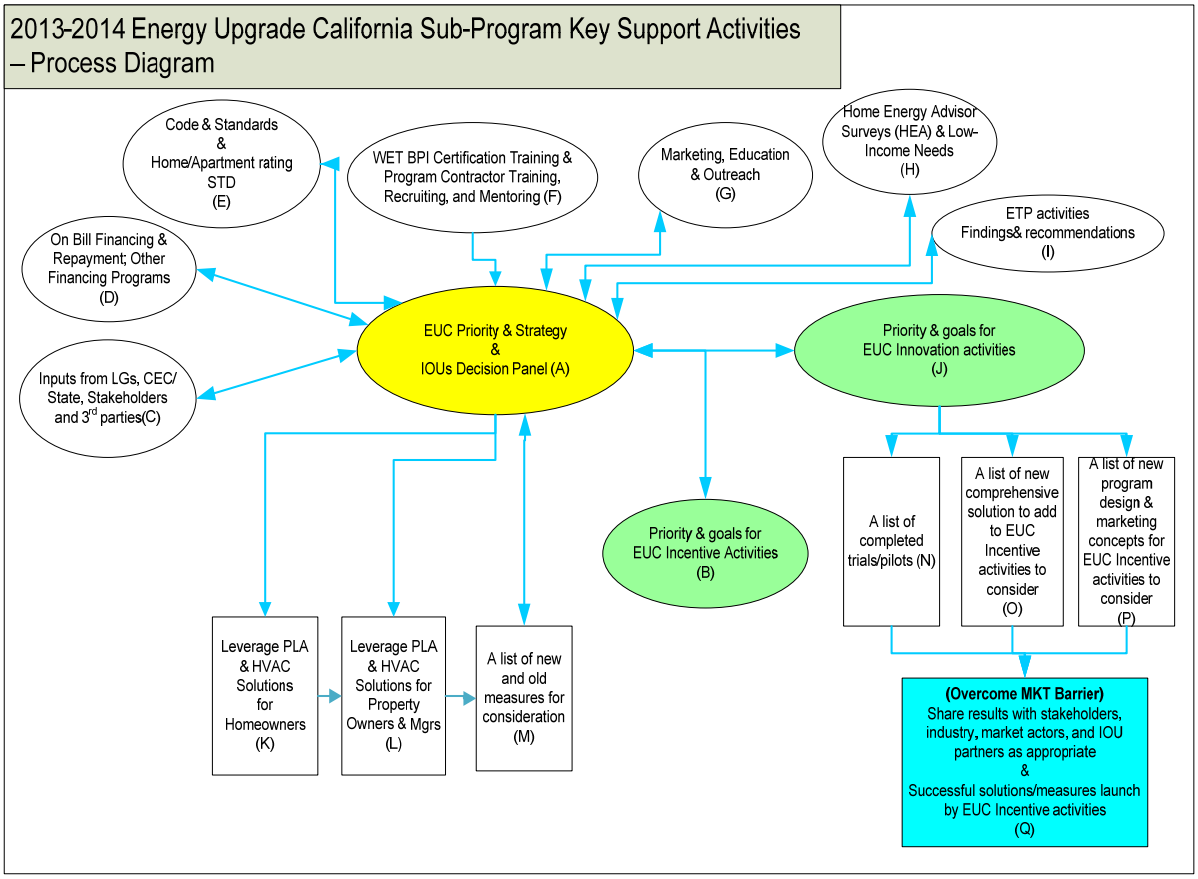
This information can be found in Table 3.2 LTPPM Information to be provided as an Excel Attachment to this PIP.

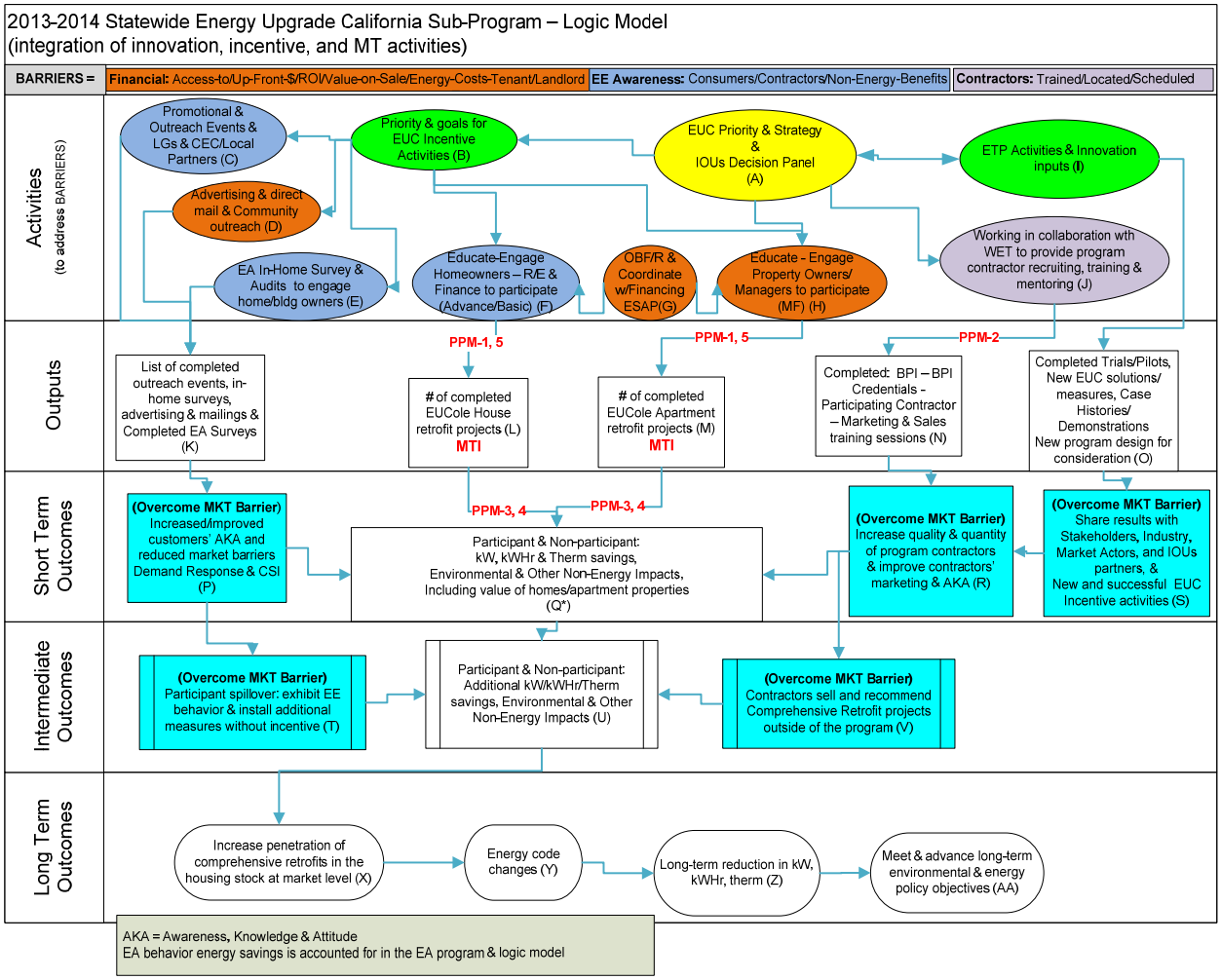
Market Transformation Indicators:

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 guidance from Energy Division received in December 2012, the approved Market Transformation Indicators for 2013-2014 were filed in a Joint IOU matrix in PG&E'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) emphasized that attribution of market effects to programs bears further research. Others (Rosenberg & Hoefgen, 2009; Keating & Prahl (MT Workshop, Nov 2011) suggest that declaring the program's strategic intent through the market transformation initiative's theory and logic model is key to establishing future claim on transformation effects. The methods proposed by Rosenberg & Hoefgen (2009) for attributing market effects to individual programs include a number of approaches, all of them qualitative: self-report of spillover and free ridership; cross-sectional comparisons with other geographic regions; structured expert judging; and case studies. But attribution using a "preponderance of evidence" approach would likely be expensive and still yield arguable results. Attribution by nature focuses on individual program efforts, and we believe the market transformation evaluation discourse should be focused on the overlapping synergy among all programs and influences in the market. We realize we all have a "Shared Mission" of meeting the CPUC's very aggressive Strategic Plan goals. We do not wish to not invest resources in teasing apart which program entity contributed how much, but instead will plan to focus on whether all the market forces across the State of California have succeeded in transforming the market.

[47] From the Energy Division's file "Revised MTIs_10 27 11-formal-release-ED-May-2012.xlsx"


2013-2014 Energy Upgrade California Sub-Program Key Support Activities – Process Diagram
Code & Standards & Home/Apartment rating STD (E)
WET BPI Certification Training & Program Contractor Training, Recruiting, and Mentoring (F)
Marketing, Education & Outreach (G)
Home Energy Advisor Surveys (HEA) & Low-Income Needs (H)
ETP activities Findings& recommendations (I)
On Bill Financing & Repayment; Other Financing Programs (D)
Inputs from LGs, CEC/ State, Stakeholders and 3rd parties(C)
EUC Priority & Strategy & IOUs Decision Panel (A)
Priority & goals for EUC Innovation activities (J)
Priority & goals for EUC Incentive Activities (B)
A list of completed trials/pilots (N)
A list of new comprehensive solution to add to EUC Incentive activities to consider (O)
A list of new program design & marketing concepts for EUC Incentive activities to consider (P)
Leverage PLA & HVAC Solutions for Homeowners (K)
Leverage PLA & HVAC Solutions for Property Owners & Mgrs (L)
A list of new and old measures for consideration (M)
(Overcome MKT Barrier) Share results with stakeholders, industry, market actors, and IOU partners as appropriate & Successful solutions/measures launch by EUC Incentive activities (Q)



13) Additional information as required by Commission decision or ruling or as needed: Include here additional information as required by Commission decision or ruling (As applicable. Indicate decision or ruling and page numbers):

IOU Streamlined Emergency Replacement Protocol and Streamlined High Performing Contractor Protocol

The IOUs have been working closely with the EUC Working Group and its constituent stakeholders, including SolarCity, Efficiency First (formerly CPBCA), BPI, and others to streamline and align emergency equipment replacement procedures. All IOUs have emergency equipment replacement procedures in place, and will continue to work closely with the EUC Working Group to align them to the greatest extent possible.

Similarly, the IOUs and RENs have been in discussions with the EUC Working Group regarding their suggestions for high performing contractors. The IOUs share a commitment to making the QC process as transparent as possible, and for rewarding high performing

contractors for their high quality work with expedited inspections, mentoring opportunities, witness quality-control, and lower inspection rates.

1. SDG&E

a. Streamlined Emergency Replacement Protocol
Per section 7 of SDG&E's QA/QC Quality Assurance and Quality Control Plan:
7.0 Emergency Replacement of Major Systems

7.1 *It is recognized that there may be instances whereas immediate replacement of major systems is required due to health, safety and quality of life circumstances. In the event the customer has immediate need for equipment replacement, the QA/QC process will not interfere with a customer's ability to participate in the EUC.*

7.1.1 Major systems that qualify under this provision are identified as:
   a. HVAC Systems or components
   b. Hot water heater replacements

7.1.2 In the event that a contractor wishes to install a major system identified herein under the provisions of an emergency replacement, the contractor shall contact and notify the QA/QC vendor immediately of the customer's emergency situation and to request accommodation under this provision. The QA/QC provider will determine if the circumstances warrant this provision.
   a. The contractor will provide the QA/QC the customer contact information, make/model/serial numbers of existing equipment and date the replacement will be installed.
   b. The QA/QC vendor may field-verify the equipment to be replaced.
   c. The contractor can proceed with emergency work.
   d. To include the emergency work as part of any EUC project scope, contractors must follow all other procedures for participation in the EUC program.
   e. Any and all changes to the home prior to submitting a Pre-Retrofit Project Submittal Package shall be only for the immediate emergency need pre-approved by the QA/QC vendor and must be documented in the Pre-Retrofit Project Submittal Package.
   f. All other project scope work outside of the approved emergency work must go through the standard QA/QC process as defined in this plan.

b. Streamlined High Performing Contractor Protocol
Per SDG&E's Quality Assurance and Quality Control Plan, SDG&E QA Review turnaround times are guaranteed to be 3 working days or less for both pre and post QA Review (desktop). This time period is consistent with state contracting laws concerning consumer's 72 hr. right to rescind.

Tier 3 contractors, meaning those contractors who have successfully completed a minimum of 30 projects are eligible for random QC Inspection sampling rate of 10% pre and 5% of post project submittals.

In essence this means that high performing contractors with at least 30 projects will have 90% of their pre project submittals and 95% of post project submittals reviewed within 3 working days.

2. PG&E
   a. Streamlined Emergency Replacement Protocol
   The following process that is already in place in 2012 serves the purpose of both an emergency replacement protocol, as well as a Fast Track process for all participating contractors in good standing.

   The general policy for all equipment replacements performed within the PG&E program is that participating contractors and their subcontractors should wait for a Notice to Proceed to be issued before commencing work on a job for the program. However, in order to proceed with emergency replacements or expedited upgrades due to customer specific needs, contractors may proceed within the guidelines of this Fast Track Process. In order to be eligible for this Process, participating contractors must be active and in good standing under the PG&E program.

   Upgrades may be started before the Notice to Proceed is issued if the participating contractor is confident that the job qualifies for the Program. Prior to adjusting or installing measures, the contractor must perform a comprehensive test-in, including combustion safety testing, to document the pre-existing conditions. The contractors should take pictures to document uncommon or unique situations.
   Participating contractors that choose to perform work without the Notice to Proceed accept full liability that the rebate funds have not been reserved and that their customers may not be eligible.

   In order to make the Fast Track Process work for participating contractors and their customers, the PG&E program recommends that the contractors do the following:

   - Ask for a copy of recent PG&E bill to validate that the customer has an active account and have a clear understand the Program eligibility requirements
   - Make sure to understand how to use and model homes in EnergyPro proficiently to reduce the chance of error in rebate calculation or delayed application processing
   - If providing a rebate estimate, make it clear in the proposal that it is based on the un-validated energy model savings and may change after the quality control review process
   - Participate in the Process after completing at least 10 upgrades without desktop or field QA issues
   - Submit the application as soon as possible to ensure timely payment to the customer

3. SCE
   a. Streamlined Emergency Replacement Protocol
   Southern California Edison & Southern California Gas Emergency Equipment Replacement Policy for HVAC/DHW System

Due to the climate of Southern California, during the first few months of summer and winter there is a rise in the volume of HVAC emergency replacements driven by homeowners re-engaging their HVAC systems after periods of non-use. Participating Contractors will be involved in these replacements and they have the opportunity to inform homeowners of the additional benefits of the Program. The Emergency Equipment Replacement Policy for HVAC/DHW Systems allows homeowners to take credit for energy savings from emergency equipment replacement provided all of the following conditions are met.

Eligibility

1. The homeowner meets all mandatory *Advanced Path* program requirements as described in the Advanced Package Minimum Specifications and this Emergency Equipment Replacement Policy for HVAC/DHW Systems.
2. The space heating and/or domestic hot water system must have been 'red tagged' or deemed unsafe by the utility, service technician or building inspector; or the system has failed, cannot be repaired and must be replaced.
3. The contractor submits the completed Record of Emergency Equipment Replacement Form within the timelines indicated in the Notification/Authorization Requirements section.

Note: In the event the customer/contractor fail to meet the timelines indicated the project runs the risk of not being able to include the energy savings from the installation of the new equipment in the energy simulation (Energy Pro) model.

Notification/Authorization Requirements
To submit notification and receive authorization to proceed for an eligible emergency equipment replacement, the following steps must be followed:

Step 1: Submit for Pre-Replacement Approval

1. The contractor is required to submit a Record of Emergency Equipment Replacement Form.
2. The contractor is required to complete Sections 1 – 4 of the Record of Emergency Equipment Replacement Form, sign and date the customer/contractor signature section, provide detailed photographic evidence of the existing equipment installed in the residence (clearly showing the area around the existing unit) to include nameplate information (make, model, serial number, etc.) and then provide a scanned copy in .PDF format to EUCA_Processing@icfi.com.
3. Upon receipt of the completed form, ICF will provide written notification of Authorization to proceed via e-mail to the contractor within one business day (8-10 business hours).

Step 2: Receive Authorization to Proceed
Upon Authorization to proceed the contractor may commence installation of the new HVAC and/or DHW equipment.

Step 3: Complete Emergency Replacement and Submit Final Paperwork

1. Upon completion of the installation of the new equipment the contractor shall complete Section 5 of the Record of Emergency Equipment Replacement Form, sign and date the customer/contractor signature section, detailed installation invoice, and then provide a scanned copy in .PDF format to ICF (EUCA_Processing@icfi.com) within five (5) business days of the new equipment installation. If measures installed exceed the scope of written authorization given, credit will not be given for those additional measures. If the paperwork is not received within those 5 business days, the final decision to allow the credit for the installed equipment will be at the sole discretion of Program Management and will not be able to be appealed.

2. The Incentive Reservation Form must be turned into the Program within 30 calendar days of Emergency Equipment Replacement Approval. Failure to do so will result in not receiving credit for installed equipment.

While age, size and efficiency of the existing system are a factor, it shall not be the sole determining factor for selection of equipment replacement. Best practices dictate that any replacement of central heating or cooling systems require submittal of a Manual J load calculation and must take into account all existing and/or proposed energy efficiency measures that will significantly impact load and allow for correct equipment sizing.

If HVAC re-ducting is required in this emergency, the pre-retrofit building simulation model will automatically use the default vintage default tables for total duct leakage. This percentage is not able to be contested, should an appeal situation arise.

Mandatory Documentation for Emergency Space Heating Equipment Replacement
The contractor shall provide information about the existing equipment being removed utilizing the Record of Emergency Equipment Replacement Form. At a minimum, the information collected regarding the existing space heating equipment shall include the following:

- Contractor’s business name, address and phone number
- Date of removal
- Reason for replacement (operational failure; health and safety)
- Manufacturer's name and model number of space heating equipment
- Rated efficiency, output, input from the nameplate
- Fuel type (natural gas, electric)
- Type of system (forced air, hydronic/radiant or combo)
- Type of venting (e.g. chimney, side vent, barometric damper)

The existing space heating equipment must be replaced with equipment meeting the Advanced Package Minimum Specifications. New gas-fired furnaces must have an Annual Fuel Utilization Efficiency (AFUE) of 92% or greater to qualify under the Emergency Replacement Policy for HVAC Equipment.

The contractor shall provide a copy of the invoice for the new space heating equipment and the Record of Emergency Equipment Replacement Form to their dedicated account

manager within 5 business days of written authorization to proceed with the new equipment installation. At a minimum, the invoice for the new space heating equipment shall include the following:

- Contractor's business name, address and phone number
- Date of installation
- Manufacturer's name, model and serial number of new space heating equipment
- Rated efficiency, output, input from the nameplate
- Fuel type (natural gas, electric)
- Type of system (forced air, hydronic/radiant or combo)
- Type of venting (e.g. chimney, side vent, barometric damper)

While replacing the space heating equipment, this may be an opportunity to also replace the central air conditioner with a higher efficiency model. The existing equipment must be replaced with equipment meeting the requirements listed in the Advanced Package Minimum Specifications. Contractor will need to supply the following information about both the new and existing air conditioning unit:

- Contractor's business name, address and phone number
- Date of installation
- Reason for replacement (operational failure; health and safety; Other, please explain)
- Manufacturer's name and model number of cooling equipment
- Type of system (central air, heat pump)
- Rated efficiency (SEER, HSPF),unit size, and cooling output from the nameplate

Mandatory Documentation for Domestic Hot Water Equipment Replacement
The existing domestic hot water system must be replaced with equipment meeting Advanced Package Minimum Specifications. In addition, new domestic hot water heaters must have an Energy Factor (EF) of 0.62 or greater, and new domestic tankless hot water heaters must have an Energy Factor (EF) of 0.82 or greater to qualify under the Emergency Equipment Replacement Policy.

The contractor shall provide a copy of the invoice for the new domestic hot water equipment and the Record of Emergency Equipment Replacement Form to their dedicated account manager within 5 business days of written authorization to proceed with the new equipment installation. At a minimum, the invoice for the new domestic hot water equipment shall include the following:

- Manufacturer's name and model number of domestic hot water equipment
- Type of system (gas, electric)
- Rated efficiency (energy factor)
- Unit size (gallons)
- Input from the nameplate (Btu's)

Mandatory Requirements for Emergency Equipment Replacement Approval

Once administrative approval and written authorization to proceed is granted, the contractor may immediately install the individual measures if the following conditions are met:

1. Provide photographic evidence of the existing system installed in the residence clearly showing the area around the existing unit and detailed pictures of the existing equipment to include nameplate information (make, model, serial number, etc.).

2. The contractor shall provide a copy of the Invoice for the new space heating and/or cooling equipment and the completed Record of Emergency Equipment Replacement Form to their dedicated account manager within 5 business days of the installation of the new equipment (if applicable).
3. The contractor shall provide a copy of the Invoice for the new domestic hot water equipment and the Record of Emergency Equipment Replacement Form to their dedicated account manager within 5 business days of the installation of the new equipment (if applicable).

In the event the customer/contractor fail to meet the timelines indicated the project runs the risk of not being able to include the energy savings from the installation of the new equipment in the energy simulation (Energy Pro) model.

b. Streamlined High Performing Contractor Protocol
Contractors who have completed 10 ~~Basic~~Enhanced Basic/Modified Flex or 10 Advanced projects and have completed all of their field mentoring and online learning center modules with a passing score can be eligible for their projects to be sampled instead of being selected for 100% pre and post on-site inspection.

4. SoCalGas
   a. Streamlined Emergency Replacement Protocol
   Southern California Gas Emergency Equipment Replacement Policy for HVAC/DHW System
   Due to the climate of Southern California, during the first few months of summer and winter there is a rise in the volume of HVAC emergency replacements driven by homeowners re-engaging their HVAC systems after periods of non-use. Participating Contractors will be involved in these replacements and they have the opportunity to inform homeowners of the additional benefits of the Program. The Emergency Equipment Replacement Policy for HVAC/DHW Systems allows homeowners to take credit for energy savings from emergency equipment replacement provided all of the following conditions are met.

   Eligibility
   1. The homeowner meets all mandatory *Advanced Path* program requirements as described in the Advanced Package Minimum Specifications and this Emergency Equipment Replacement Policy for HVAC/DHW Systems.

2. The space heating and/or domestic hot water system must have been 'red tagged' or deemed unsafe by the utility, service technician or building inspector; or the system has failed, cannot be repaired and must be replaced.
3. The contractor submits the completed Record of Emergency Equipment Replacement Form within the timelines indicated in the Notification/Authorization Requirements section.

Note: In the event the customer/contractor fail to meet the timelines indicated the project runs the risk of not being able to include the energy savings from the installation of the new equipment in the energy simulation (Energy Pro) model.

Notification/Authorization Requirements
To submit notification and receive authorization to proceed for an eligible emergency equipment replacement, the following steps must be followed:

Step 1: Submit for Pre-Replacement Approval
a) The contractor is required to submit a Record of Emergency Equipment Replacement Form.
b) The contractor is required to complete Sections 1 – 4 of the Record of Emergency Equipment Replacement Form, sign and date the customer/contractor signature section, provide detailed photographic evidence of the existing equipment installed in the residence (clearly showing the area around the existing unit) to include nameplate information (make, model, serial number, etc.) and then provide a scanned copy in .PDF format to EUCA_Processing@icfi.com.
c) Upon receipt of the completed form, ICF will provide written notification of Authorization to proceed via e-mail to the contractor within one business day (8-10 business hours).

Step 2: Receive Authorization to Proceed
Upon Authorization to proceed the contractor may commence installation of the new HVAC and/or DHW equipment.

Step 3: Complete Emergency Replacement and Submit Final Paperwork
1. Upon completion of the installation of the new equipment the contractor shall complete Section 5 of the Record of Emergency Equipment Replacement Form, sign and date the customer/contractor signature section, detailed installation invoice, and then provide a scanned copy in .PDF format to ICF (EUCA_Processing@icfi.com) within five (5) business days of the new equipment installation. If measures installed exceed the scope of written authorization given, credit will not be given for those additional measures. If the paperwork is not received within those 5 business days, the final decision to allow the credit for the installed equipment will be at the sole discretion of Program Management and will not be able to be appealed.

2. The Incentive Reservation Form must be turned into the Program within 30 calendar days of Emergency Equipment Replacement Approval. Failure to do so will result in not receiving credit for installed equipment.

While age, size and efficiency of the existing system are a factor, it shall not be the sole determining factor for selection of equipment replacement. Best practices dictate that any replacement of central heating or cooling systems require submittal of a Manual J load calculation and must take into account all existing and/or proposed energy efficiency measures that will significantly impact load and allow for correct equipment sizing.

If HVAC re-ducting is required in this emergency, the pre-retrofit building simulation model will automatically use the default vintage default tables for total duct leakage. This percentage is not able to be contested, should an appeal situation arise.

Mandatory Documentation for Emergency Space Heating Equipment Replacement
The contractor shall provide information about the existing equipment being removed utilizing the Record of Emergency Equipment Replacement Form. At a minimum, the information collected regarding the existing space heating equipment shall include the following:

- Contractor's business name, address and phone number
- Date of removal
- Reason for replacement (operational failure; health and safety)
- Manufacturer's name and model number of space heating equipment
- Rated efficiency, output, input from the nameplate
- Fuel type (natural gas, electric)
- Type of system (forced air, hydronic/radiant or combo)
- Type of venting (e.g. chimney, side vent, barometric damper)

The existing space heating equipment must be replaced with equipment meeting the Advanced Package Minimum Specifications. New gas-fired furnaces must have an Annual Fuel Utilization Efficiency (AFUE) of 92% or greater to qualify under the Emergency Replacement Policy for HVAC Equipment.

The contractor shall provide a copy of the invoice for the new space heating equipment and the Record of Emergency Equipment Replacement Form to their dedicated account manager within 5 business days of written authorization to proceed with the new equipment installation. At a minimum, the invoice for the new space heating equipment shall include the following:

- Contractor's business name, address and phone number
- Date of installation
- Manufacturer's name, model and serial number of new space heating equipment
- Rated efficiency, output, input from the nameplate
- Fuel type (natural gas, electric)
- Type of system (forced air, hydronic/radiant or combo)
- Type of venting (e.g. chimney, side vent, barometric damper)

While replacing the space heating equipment, this may be an opportunity to also replace the central air conditioner with a higher efficiency model. The existing equipment must be replaced with equipment meeting the requirements listed in the Advanced Package Minimum Specifications. Contractor will need to supply the following information about both the new and existing air conditioning unit:

- Contractor's business name, address and phone number
- Date of installation
- Reason for replacement (operational failure; health and safety; Other, please explain)
- Manufacturer's name and model number of cooling equipment
- Type of system (central air, heat pump)
- Rated efficiency (SEER, HSPF),unit size, and cooling output from the nameplate

Mandatory Documentation for Domestic Hot Water Equipment Replacement
The existing domestic hot water system must be replaced with equipment meeting Advanced Package Minimum Specifications. In addition, new domestic hot water heaters must have an Energy Factor (EF) of 0.62 or greater, and new domestic tankless hot water heaters must have an Energy Factor (EF) of 0.82 or greater to qualify under the Emergency Equipment Replacement Policy.

The contractor shall provide a copy of the invoice for the new domestic hot water equipment and the Record of Emergency Equipment Replacement Form to their dedicated account manager within 5 business days of written authorization to proceed with the new equipment installation. At a minimum, the invoice for the new domestic hot water equipment shall include the following:

- Manufacturer's name and model number of domestic hot water equipment
- Type of system (gas, electric)
- Rated efficiency (energy factor)
- Unit size (gallons)
- Input from the nameplate (Btu's)

Mandatory Requirements for Emergency Equipment Replacement Approval
Once administrative approval and written authorization to proceed is granted, the contractor may immediately install the individual measures if the following conditions are met:

1. Provide photographic evidence of the existing system installed in the residence clearly showing the area around the existing unit and detailed pictures of the existing equipment to include nameplate information (make, model, serial number, etc.).
2. The contractor shall provide a copy of the Invoice for the new space heating and/or cooling equipment and the completed Record of Emergency Equipment Replacement Form to their dedicated account manager within 5 business days of the installation of the new equipment (if applicable).
3. The contractor shall provide a copy of the Invoice for the new domestic hot water equipment and the Record of Emergency Equipment Replacement Form to their

dedicated account manager within 5 business days of the installation of the new equipment (if applicable).

In the event the customer/contractor fail to meet the timelines indicated the project runs the risk of not being able to include the energy savings from the installation of the new equipment in the energy simulation (Energy Pro) model.

b. Streamlined High Performing Contractor Protocol
SoCalGas follows the Home Performance with ENERGY STAR® guidelines for QA/QC protocols. Since the implementation of the SoCalGas EUC Program, SoCalGas has established an adjustable onsite inspection rate for contractors based on job experience and performance.

SoCalGas conducts onsite inspections, at set inspection rates, of the work of all participating contractors. This inspection rate is reduced as the contractor gains experience in the program and as onsite inspections show the contractor is performing at a satisfactory level per program requirements. See chart below

a. Tier 1Contractor- 60% onsite inspection of first five project
b. Tier 2 Contractor- 27% onsite inspection of next 15 projects
c. Tier 3 Contractor- 5% onsite inspection after 20th project

ATTACHMENT 1 – EUC Objectives

Program Non-Energy Objectives

For New or Substantially changed programs and sub-programs, provide the following information for Program Non-Energy Objectives and follow the format used for the previous cycle Program Performance Metrics found in Resolution E-4385.

i. List the primary SMART[48] non-energy objectives of the program.

ii. For each SMART objective, identify the quantitative targets, direction or percent of change that you hope to achieve during the program cycle.[49]

iii. For each proposed SMART objective, describe any relevant baseline data on current market conditions that you have assembled or plan to assemble and the sources.

iv. Quantitative program targets (STPPMs and LTPPMs):

Table 3. Quantitative Program Targets (STPPMs and LTPPMs)

Table 3.1 Quantitative Program Targets – Short Term Program Performance Metrics (STPPMs)

See Table 3.1 (Excel Attachment to this PIP) for 2010-2012 PPMs authorized in Resolution E-4385.

The IOUs have evaluated the 2010-2012 PPMs for applicability to the 2013-2014 program cycle and propose to work collaboratively with Energy Division to develop revised program targets and PPMs as appropriate for the 2013-2014 program cycle. The IOUs' will propose revisions in an advice letter, per additional guidance from Energy Division.

---

[48] A SMART objective is one that is **S**pecific (i.e. quantitative and quantifiable generally, in terms of the results to be achieved**),** **M**easurable, **A**mbitious, **R**ealistic, and **T**ime-bound. For example, for a vender training component of an innovative commercial program, two SMART mid-term objectives and one long-term objective might be:

a) During the period 2013-2014, the number of HVAC installers in the SCE service territory who are able to perform quality installations of energy efficient packaged air conditioners will increase by 20%.
b) During the period 2013-2014, the number of installations of energy efficient packaged air conditions in the SCE service territory that are considered quality installations will increase by 25%.
c) By 2020, installations of energy efficient packaged air conditions in the SCE service territory that are considered quality installations will increase by 75%.

[49] Please also add any new program objectives and quantitative targets for statewide programs to the portfolio PPM/MTI reporting template.

Table 3.2 Quantitative Program Targets – Long Term Program Performance Metrics (LTPPMs)

See Table 3.2 (Excel Attachment to this PIP)

PG&E includes long term PPMs[50] per Energy Division guidance received in December 2012. As stated in the Joint Utilities' comments to the Commission in R. 09-11-014 dated November 21, 2011, and discussed between IOUs and ED on January 9, 2013, IOUs plan to finalize long term PPMs in further discussions with involved stakeholders and propose updates to Energy Division at a later date.

[50] From the Energy Division's file "Revised MTIs_10 27 11-formal-release-ED-May-2012.xlsx"

ATTACHMENT 2

Energy Upgrade California Program (EUC) Multifamily Path Pilot Implementation Plan

1. **Program Name:** Energy Upgrade California Program (EUC) Multifamily Path Pilot

2. **Program Type:** Core

3. **Program Descriptors** Market Sector: Existing Residential Multifamily Properties
Program Classification: Statewide
Program Status: Pilot

4. **Program Statement**
The EUC Multifamily Path Pilot is an extension of the existing statewide Energy Upgrade California Program (EUC) within the statewide residential energy efficiency sector. EUC delivers comprehensive energy efficiency upgrades tailored to the needs of existing single family homes and their owners.

   The EUC Multifamily Path Pilot will specifically target the multifamily housing retrofit market. The Pilot will promote long-term energy benefits through comprehensive energy efficiency retrofit measures —including building shell upgrades, high-efficiency HVAC units, central heating and cooling systems, central domestic hot water heating and other deep energy reduction opportunities. These energy efficiency measures will be identified through an investment grade assessment.

   This performance-based approach aims to assist property owners and managers with making informed decisions, identify measures for energy savings, and to maximize energy reductions for each property owner, manager, and tenant, as applicable.

5. **Program Rationale**

   Energy efficiency efforts for this segment must overcome a number of barriers; primarily: 1) lack of energy efficiency knowledge, 2) the economics of “split-incentives” where the building owner invests capital but the savings primarily benefit the tenants, and 3) access to investment capital. Up-front out-of-pocket costs pose a significant participation barrier for property owners and managers. The pilot will include a number of tactics, outlined below:

   - To improve a property owner or manager’s energy efficiency knowledge, the pilot seeks to leverage comprehensive building assessments to identify potential energy efficiency opportunities.

- To address split incentives and cost of upgrades, the Pilot will integrate with the existing Energy Savings Assistance Program ("ESAP") and Multifamily Energy Efficiency Rebate ("MFEER") Program. This will provide comprehensive services to the building, including "low cost" or "no cost" measures in conjunction with the EUC Multifamily Path Pilot incentives to maximize energy savings for the up-front investment. Additionally, low income tenants (ESAP) may qualify for additional "no cost" energy saving measures.
- Incentives will assist property owners or managers with overcoming a wide array of market and financial barriers which may otherwise prevent energy efficiency upgrades.
- A single point of contact will help the property owner or manager navigate through the incentive process.

The EUC Multifamily Path Pilot will field test a single-point-of-contact approach to guide property owners through the various programs in retrofitting their multifamily property. This approach will provide support in understanding the various program rules and assistance in determining eligibility. The customer will be guided through a "clipboard audit" to establish feasibility and estimate project cost for EUC Multifamily Path Pilot, with an eye toward leveraging all eligible programs.

The primary purpose of this pilot program is to test performance based approaches to the multifamily property owner market. Other considerations to meet all income strata and address split incentives for property owners and tenants may include a direct install strategy, as well as prescriptive rebates through the existing MFEER Program.

While programs will be coordinated and integrated, their respective policies and procedures will be followed in the delivery of services. Operational efficiencies will be employed to streamline eligibility, income verification, and installation of measures.

Despite the noted barriers, the multifamily sector presents a significant opportunity for whole building energy efficiency programs with a deep energy reduction approach. A whole building offering has the potential to achieve deep energy savings because:

- Building owners can leverage incentives to address common areas and systems as well as individual unit upgrades to make more cost effective improvements.
- Major rehabilitation projects are common in the multifamily sector. It is cost effective to include energy efficiency upgrades at the time of these renovation projects. These projects typically have well-financed construction budgets and broad scopes that could include energy efficiency measures.
- Multifamily properties tend to be operated and maintained by professional building staff. Providing resources to building staff increases the odds that the building will be operated efficiently after energy upgrades are installed, perpetuating savings benefits.
- From the 2010-2012 EUC Program Process Evaluation by SBW/ODC/ASW, SCE and PG&E have a set of lessons learned applicable to the single family EUC design.

Below is a Summary of EUC Process Evaluation Recommendations:

1) Support contractors' marketing efforts, Support a more flexible EUC website to allow IOU access to make modifications and access data to follow up on customer leads, Marketing recommendations

    a. Foster peer to peer marketing
    b. Continue to promote main program benefits
    c. Continue email and direct mail to targeted groups of customers
    d. Continue with events and workshops,
    e. Offer brief, step-by-step explanation, with emphasis on whole house improvements

2) Convene quarterly statewide meetings of all entities implementing the program Contractor recruiting, training and mentoring recommendations
    a. Focus training and mentoring on top performers
    b. Reduce program required paperwork and adopt common statewide job reporting,
    c. Offer financing options

3) SCE-Specific Training Recommendations
    a. For participant workshop, focus on EnergyPro training and job reporting documentation and process,
    b. For ~~Basic~~Enhanced Basic/Modified Flex /Advanced Path training –Improve detail on ~~Basic~~Enhanced Basic/Modified Flex /Advanced path training requirements
    c. Third Party BPI training – not all third party BPI training is equal, additional retraining may be needed to standardize the quality and content coverage
    d. On-line Learning Center – allow multiple representatives from the same contractor firm to participate, and provide more extensive training topic coverage
    e. Contractor Mentoring – standardize contractor mentoring service

4) Program Design
    a. Allow early installation of HVAC and hot water heaters prior to approval of preliminary application
    b. Modify or drop the ~~Basic~~Enhanced Basic/Modified Flex Upgrade Package
    c. Improve customer service to contractors and customers
    d. Offer contractor incentives, increase customer incentive and subsidize assessment costs
    e. Improve whole house energy modeling, including site-specific schedules

For the EUC Multifamily Path Pilot, there are a few key program design differences:

1) Smaller scale, and only a select few qualified contractors will be used for pilot program implementation,

2) The targeted customers are defined as property owners/managers, as well as properties with low-income renters. This program target is in sharp contrast with the EUC program which focuses on diverse single family homeowners. The marketing initiative for this pilot will be very focused and targeted.
3) The modeling software tool has yet to be determined for this program; however, tools are currently being assessed by program teams.
4) The single family comprehensive audit and whole building comprehensive audit are fundamentally different, leading to different skill requirements. As a result, the program team is planning to engage a few highly qualified contractors and raters to participate for quality control purposes.
5) Unlike the EUC program, where program participation has experienced a slow uptake, SCE expects the EUC Multifamily Path Pilot and subsequent program will experience greater participation due to what currently appears to be greater market demand. The expected increased participation in the program will require the IOUs to create a local, targeted marketing program and contractor infrastructure to ensure quality and consistent outcomes during the pilot.
List of Lessons learned applicable to EUC Multifamily Path Pilot:

SCE/SCG:

1. Utilize target marketing to property owners/managers
2. Offer "no cost" investment-grade audits to qualified customers to eliminate initial barrier of entry
3. Utilize EUC website as a resource for property owners/managers
4. Establish single point of contact to facilitate participation process, reduce paperwork and processing time.

PG&E:

1. Target marketing to property owners/managers using effective and proven messaging techniques
2. Continue to use the website as a resource for property owners /managers
3. Continue participation workshops and trainings with a focus on job reporting and incorporation of adult learning techniques
4. Continue to provide on field mentoring for participating professionals
5. Explore development of common paperwork requirements
6. Leverage single family program infrastructure to support participating professionals
7. As additional improvements are made to the single family EUC they will be considered for the EUC Multifamily Path Pilot

SDG&E:
The SDG&E model is not a contractor model, but is a consultant model and utilizes a single point of contact to serve a market that is uniquely different than the single family market served by the EUC contractor model. Thus, many of the recommendations do not apply. Under the participating contractor model, participating contractors perform both assessments and installation of measures. Under the consultant model, customers may use the contractor of their choosing

but must utilize a participating rater to perform assessments and the test-in, test-out modeling to determine energy savings. Please reference p. A-31 for discussion regarding consultant model.

6. Support of the Strategic Plan

The EUC Multifamily Path Pilot, in support of the California Long Term Energy Efficiency Strategic Plan (Strategic Plan), pursues comprehensive energy efficiency measures and treats multifamily buildings as a system to seek deep energy reductions. One of the goals of the Strategic Plan is the transformation of the home improvement market to apply whole-house energy solutions to existing homes. The overall objective of the goal is to reach all existing homes and maximize their energy efficiency potential through delivery of a comprehensive package of cost effective measures. The Strategic Plan further states that a similar approach must be developed for multifamily housing.

7. Expected Pilot Program Objectives and Outcomes

Objectives: The Pilot Program seeks to transform the multifamily retrofit market from a prescriptive, onesize-fits-all approach, toward a comprehensive building analysis approach. The Pilot will leverage energy consultants and professionals to evaluate a wide range of energy efficiency options when rehabilitating multifamily properties. The creation of energy-efficient complexes provides benefits beyond the direct energy savings. Through the incorporation of energy efficient measures by multifamily property owners and managers, tenant behaviors can be influenced and comfort improved. The hope is that these behaviors can contribute to a virtuous cycle of energy efficiency -as tenants receive upgrades that reduce their energy costs and improve comfort, they in turn recruit and mentor other tenants.

Expected Pilot Program outcomes:

1. Deeper energy savings per building than otherwise possible, with a target of 10-20% or greater savings per building benefitting both property owners and tenants.
2. A broader suite of measures than in typical deemed programs, resulting in deeper savings (i.e., HVAC, envelope, domestic hot water).
3. Improved property owners' and managers' understanding of the benefits of a whole building approach.
4. More comprehensive maintenance follow-up for tenants and building by enrolling them into California Integrated Customer Energy Audit Tool (CA-ICEAT) to enable ongoing comparative energy usage, and energy goal setting, ensuring the persistence of savings after the EUC intervention is complete. *(PG&E will consider utilizing this tactic)*
5. A better understanding of combustion safety as it relates to comprehensive (non-prescriptive) retrofits.

At the time of the original filing of the Advice Letter, the Multifamily IT tools developed using ARRA funding were under development. On March 9, 2012, the IOUs received a demo of the IT Tools including the EUC Multifamily Path Pilot web portal, MF Funding Finder Navigation Tool and MF Tracking System (presumably the "Compass Portfolio Tracker"). The IOUs are still evaluating whether they will use these tools for this pilot.

SCE is initiating an evaluation to identify and evaluate best benchmarking tools for the multifamily market segment. In addition to Compass Portfolio Tracker, the evaluation will also include EnergyStar Portfolio Manager for multifamily facilities (scheduled to launch in June 2013), and EnergyScoreCards, as well as other tools that may be identified.
PG&E is interested in leveraging the tools developed; in particular, the single point of contact could use the Multifamily Funding Finder Navigation tool during the preliminary consultation with the property owner or manager. However, the maintenance and upkeep of these tools needs to be understood to ensure the information contained in the tool is current and accurate. PG&E is also interested in the MF Tracking Tool demonstrated in March 2012, and will work with the other IOUs to further evaluate the approach for the pilot.

SDG&E will not be utilizing the Compass Portfolio Tracker and is currently still evaluating the different functions of the tool.

In as much as the tool can provide a tracking mechanism for owners to follow the workflow of their projects, for the pilot, the single point of contact serves as this contact and notifies the participating rater when projects hit certain milestones. For example, when projects are submitted for review for both pre and post submittals, the single point of contact and participating rater are notified as projects are scheduled for inspection and when they are approved.

8. Innovation:

Integrated Program Design In accordance with the Strategic Plan, the EUC Multifamily Path Pilot will engage with ESA and Core Energy Efficiency programs, such as MFEER. This unprecedented integrated approach combines market-rate and income-qualified energy efficiency measures that will benefit multifamily property owners and tenants.

Please see Attachment 2-A1 for more details on how PG&E plans to implement the EUC Multifamily Path Pilot.

9. Energy Measures:

Measure Information:

Eligible measures may include but are not limited to the list below. Some of these measures are allowed in this subprogram because of the use of modeling software. Additionally, low income tenants (ESAP) may qualify for additional “no cost” energy saving measures (denoted with an *) offered within the respective IOU service areas.

- Screw-in CFL Reflector bulbs (ENERGY STAR® Qualified)
- Interior LED Lamps
- Interior CFL Fixtures (ENERGY STAR® Qualified) *
- T5 or Lamps w/electronic ballasts
- Exterior CFL fixtures (ENERGY STAR® Qualified) *
- Exterior LED lamps

- Exterior LED fixtures
- Occupancy sensors*
- Torchiere*
- Photocells
- Ceiling Fans (ENERGY STAR® Qualified)
- LED Pool and Spa lighting
- Vending Machine Controls
- Landscape/parking lighting
- High Performance Dual-Pane Windows
- Attic and/or wall insulation*
- Floor insulation
- Cool roofs/radiant barriers
- Space heating equipment
- Space cooling equipment
- Duct sealing and insulation
- Pipe insulation*
- Air sealing/envelope: outlet cover plate gaskets, attic access weather-stripping, door weather-stripping, caulking, and minor home repairs. Minor home repairs predominantly are door jamb repair / replacement, door repair, and window putty*
- Electric storage water heaters
- Central system natural gas water heaters
- Natural gas water heater and/or boiler controllers
- Natural gas storage water heater
- Faucet Aerator*
- Water Heater Blanket*
- Water heater repair & replacement*
- Package terminal air conditioners
- Unitary AC Units
- HVAC Quality Maintenance
- Brushless Fan Motor for Central AC
- Evaporative Coolers
- Programmable Thermostats
- A/C Tune-up (Central AC)*
- AC Time Delay*
- Evaporative coolers repair & replacement*
- Refrigerators (ENERGY STAR® Qualified)*
- High-efficiency Clothes Washers
- High-efficiency Dishwasher
- Central Natural Gas Furnace
- Furnace repair & replacement *
- Cold Water Clothes Washers
- Low flow water fixtures

- Microwave-(displacing gas or electric oven use) *
- Variable Speed Pool Pumps
- Programmable Thermostats (Common Areas only)
- Demand Control for Centralized Water Heater Recirculation Pump

Ineligible Measures
The following upgrade measures will not be considered as part of the energy analysis for program participation:

- Solar photovoltaic
- Solar Thermal
- Cold water savings devices (e.g. toilets, irrigation systems, weather controllers)
- Clothes dryers
- Green materials or certification
- Paint, carpet, cabinets, etc.
- Combustion appliance safety testing will take place as appropriate.

10. Budget/Timeframe:

Please see Attachment 2-A1 for details regarding PG&E's projected budget and timelines.

11. Program Performance Metrics:

In the first year of the pilot program, data will be collected for baseline development. Program performance metrics may be developed, as applicable, in conjunction with the Energy Division's plans to develop a comprehensive process to determine program objectives and short and long term program performance metrics, as described in the Energy Division's "Framework of Indicators for Assessing Achievement of Long Term Energy Efficiency Objectives" for the 2013-2014 bridge period and beyond. The IOUs will report on pilot results in the Pilot Program Target Update Report for this program cycle.

12. Methodologies to Test Cost Effectiveness:

The IOUs will examine cost effectiveness of the various measures installed after gathering preliminary information from the pilot.

13. EM&V Plan:

Please see Attachment 2-A1 for PG&E plans for evaluation, measurement, and verification.

14. Plan for Disseminating Best Practices and Lessons Learned; transferring these lessons to resource programs; schedule/plan to expand the pilot to statewide usage:

Best practices and lessons learned from the EUC Multifamily Path Pilot will be disseminated via EUC and will likely include various channels, such as: incentives, education, and

outreach programs. These channels will be used to inform resource programs on the successful practices and tools identified during the pilot.

A successful pilot would warrant ramping up the delivery of a comprehensive package of cost effective measures in order to reach existing multifamily homes and maximize their energy efficiency potential in future portfolio cycles.

EUC Multifamily Path Pilot & 2013-2014 Program PIP

Identified multifamily market barriers to overcome: multifamily

1) Lack of customer (building owners and managers, and building tenants) awareness; limited program information available
2) Lack of access to financing
   a. Need to address split incentives and cost of upgrades for multifamily owners/managers,
   b. Integrate EUC Multifamily Path Pilot with Multifamily Energy Efficiency Rebate Program offerings
   c. Where applicable, leverage EE financing programs to provide financial assistance to building owners and managers to make the comprehensive upgrade possible

3) Lack of-skilled workers trained in energy efficiency concepts and installation

   This pilot will not address Barrier #2 until financing packages may be available.

   To overcome other programmatic and design concerns, actions include:
   a. Creating a single point of contact that would assist the property owners/managers to navigate the incentive and retrofit process regardless of "income qualification" requirements and different program rules
   b. Targeting properties with planned or in-progress renovations to minimize time-burden and lost rental income,
   c. Addressing wide diversity of the multifamily properties through segmentation to ensure broad coverage and to meet special requirements
   d. Developing EE assessment and installation programs that minimize the disruption of tenants in the multifamily property market to multifamily properties on the basis of the company size; consider the number of individual units (bulk) that can be impacted via single program outreach efforts to the larger size property owners and managers.
   e. Using highly skilled and trained contractors to serve and implement program measures to ensure high quality installation, including a comprehensive apartment-wide building envelop audit, to assess the comprehensive needs of the property. Leverage contractors' client relationships and industry profile.

Objective of the Pilot & Researchable Questions

1. Test program design parameters to support single-point of contact

a. How best to leverage and coordinate resources and savings across programs (i.e., ESA program, MIDI program, EUC Multifamily Path Pilot program expenses, etc.)

2. Program results reporting and quality control & inspection
   a. How to address program installation verification and inspection process, and exceptions
   b. Accuracy of the energy savings reported by the contractors
   c. Appropriate program process steps, and QA & QC requirements without overburdening the program/s
   d. Scope of the program inspection plan for the pilot, and the scaled program

3. Determine the optimal program implementation tools and tracking system for the scaled program
   a. Which savings methodology (ies) or tool(s) should be adopted by the program to serve this market segment
   b. What is the scope of the appropriate program tracking system
4. Implement best practices and lessons learned from prior evaluations or industry practices
   a. Did the program implement lessons learned and/or industry best practice? If yes, what are the results? What improvements are necessary as next steps?

Preliminary EUC Multifamily Path Pilot M&E Statement of Work (SOW)
The IOUs will work jointly with ED to finalize the actual research plan. This project will likely have the following study components:

1) Ongoing Rapid M&E feedback
   a. Previously, the M&E team implemented a rapid feedback process to take an in-depth review of the program's energy savings results and associated realization rates and program cycle-time. This information is used to fine-tune and streamline program design. The EUC Multifamily Path Pilot will continue this practice.

2) Process evaluation
   a. Verification of program theory and program logic model
   b. Verification of program process and design, and assess the effectiveness of implementation and the program team's ability for ongoing process improvement, using the list of researchable questions above as the starting place
   c. Verification of program QA/QC process and improvements
   d. Verification of energy savings methodology(ies) and tool(s) using an independent third party evaluation team
   e. Collect customer feedback from all touch points (e.g. Property owners/managers, contractors, tenants and various program teams)
   f. Implement appropriate segmentation question batteries to allow for data analysis across key target groups
   g. Recommendations for program design, implementation and marketing activities for the 2013 – 2014 full-scale program

IOU success will be defined by reaching the expected outcomes described in section 7. Lessons learned from each IOU will be shared and will inform the development of a statewide program.

Consistent with all M&E studies, the IOUs will adhere to the collaborative framework agreed to by all parties.

PG&E:

The PG&E pilot will test a multifamily program delivery model using participating professionals in a range of building types, configurations and climate zones and help identify the most cost effective measures for multifamily buildings and the contractor/trade support required for implementing this complex program. PG&E will also test combustion appliance safety protocols in a multifamily context, use a single point of contact approach to optimize and customize the customer experience and integrate with the existing low income and core multifamily offerings.

SDG&E will test the proposed MF whole building performance design aimed at achieving 20% average building performance energy savings utilizing a whole building approach similar to EUC SF in order for the MF segment to participate in and enjoy the benefits of comprehensive deep energy savings through whole building retrofits. Success will be achieved by reaching the expected outcomes described in section 7. Unique features SDG&E is testing through this pilot to achieve these outcomes are utilizing the consultant model vs. contractor model (Per SW HERC recommendations); utilizing a single point of contact to assist property owners and raters in identifying comprehensive opportunities and leveraging of available programs and financing options. The pilot will also be testing ESAP integration processes with the whole building retrofit process.

The EM&V method that will be used to determine the success of disseminating information associated with this pilot will be a survey instrument distributed to pilot participants. In the fall of 2013, a meeting will be held of the multifamily HERC participants, and the survey will be distributed at that meeting. The survey will include questions related to the best practices and procedures of energy saving methods for multifamily housing. The survey will be developed to determine if the participants were satisfied with the methods of information dissemination, which dissemination practices worked the best and the level of information that was retained by the participants. The goal of the survey would be to determine if participants retained knowledge that was provided through the program and which methods were most effective achieving the goal of relaying energy saving information. From this survey, SDG&E is hoping to determine which methods are the best to disseminate information for multifamily whole house programs and to gain insight into the pilot activities that were most successful.

Attachment 2-A1: PG&E EUC Multifamily Path Pilot

1. Projected Program Budget Table

Table 1 –

IOU	Total Administrative Cost	Total Marketing and Outreach	Total Direct Implementation Non-Incentive	Total Incentives	Total Program Budget by IOU
PG&E	~~$83,333~~	$83,334	$833,333	$500,000	$1,500,000

the 2013-14 program period.

- The proposed 2013-14 Energy Efficiency Portfolio EUC subprogram budget will cover Phases 1 and 2. Additional EUC funding will be needed for additional phases. Any such funding requests will be made at a later date, if needed, after portfolio fund shifting options are explored first.

- **2. Projected Program Gross Impacts Table – by calendar year** PG&E plans to use modeled energy savings from the Phase 1 pilot jobs to inform future energy savings estimates. The other IOUs are estimating their savings based upon a prior program of similar scope in associated climate zones. PG&E, however, does not have comparable historical information. As such, PG&E will estimate future savings after analysis of the data collected in Phase 1 of the pilot.

- **Program Strategy/Implementation** PG&E seeks to implement a phased pilot approach to developing a multifamily component to Energy Upgrade California ("PG&E's Multifamily Energy Upgrade California pilot" or "PG&E's Multifamily EUC pilot"). This will allow PG&E to test the offering on a reasonable scale, understand best practices and areas for improvement, and then consider a larger scale roll out. The pilot will target an average of 10-20% measured whole building energy savings. The proposed phases are outlined below:

- **Phase 1:** In 2013, PG&E will target energy upgrades on five to ten multifamily buildings (expected to be approximately 500 units). The goal of this phase is to install measures in various multifamily settings, including a range of climate zones, building sizes (low rise and high rise), and configurations (central systems and in-unit combustion appliances) to understand the cost effectiveness of the various measures. This will also provide an opportunity to test implementing an integrated offering that coordinates with the Energy Savings Assistance Program ("ESAP"), Moderate Income Direct Install ("MIDI"), Multifamily Energy Efficiency Rebate ("MFEER") programs, and other applicable programs. Perhaps most importantly, this will give PG&E the opportunity to better understand the necessary combustion appliance safety protocols for comprehensive and variable retrofits in multifamily buildings. PG&E plans to cover this phase under PG&E's existing EUC budget.

- **Phase 2**: In late 2013-early 2014, PG&E will analyze the results from Phase 1. PG&E's analysis will focus on identifying the most appropriate and cost effective measures, and examining additional lessons learned before moving forward with a larger roll out. Most importantly, PG&E plans to carefully study combustion appliance safety protocols related to variable, comprehensive, multifamily, whole building retrofits. While there exists standards for combustion safety related to prescriptive installation work (the Natural Gas Appliance Test in ESAP, for example), combustion safety protocols related to whole building multifamily retrofits warrant further investigation. PG&E plans to cover this phase under PG&E's existing EUC budget.

- **Phase 3:** After Phase 2 has concluded**,** PG&E plans to launch a larger-scale roll out that targets energy upgrades for 2000 units in 2013~~-14~~. This phase will be an integrated offering informed by the lessons learned from Phases 1 and 2. Additional funding for this phase will be requested in a future filing.

4. Integration

In addition to the new EUC Multifamily Path Pilot, there are already a number of programs available to multifamily building owners to improve building energy efficiency and tenant quality of life: ESAP, MIDI, MFEER, as well as other PG&E, Third Party and Local Government Partnership Programs that may be applicable. PG&E will explore the concept of instituting a Multifamily Energy Efficiency Manager ("MEEM") to serve as a single point of contact for a multifamily building owner. The MEEM will be well-versed in the requirements for each of these programs, and will help the building owner decide which utility program, or combination of programs; best meet the building owner's goals and budget. Once the appropriate program(s) have been identified, the MEEM will assist the building owner through the upgrade process. In addition, the MEEM will help connect the building owner with known financing programs available at the time of the upgrade. The goal of this process is to reduce building owner confusion while simultaneously helping the building owner maximize energy savings and tenant quality of life.

5. Incentives

PG&E's EUC Multifamily Path Pilot incentive structure will be tiered based on estimated whole building site energy saving ranging from 10%-40%. Incentives will be paid upon successful completion of the job on a per unit basis. The incentives will cover measures that contribute to whole building savings (i.e. central boilers, central water heaters, common area and in-unit upgrades, etc.), that have not been directly installed via participation in another program. Costs for assessments and combustion appliance safety testing will be incurred by the building owner. PG&E may alter the incentive structure throughout the course of the pilot to ensure the most cost effective implementation.
ESAP and MIDI will cover measures currently offered to low and moderate income multifamily tenants and building owners at no cost. Additional incentives can also be realized for non-EUC measures through the MFEER, and other applicable programs, and double dipping will be prevented in this pilot by utility program staff.

For incentives, PG&E assumed an average incentive of $1000 per unit. The incentive structure will be refined upon completion of jobs and additional analysis.

6. Project Pre-Qualification/Assessment/Verification

The MEEM will work with the building owner to pre-qualify a building and facilitate introductions for a preliminary walk through as needed (to confirm eligibility). Next, an investment grade assessment will be conducted to generate a scope of work that meets the building owner's energy savings goals. Simultaneously, a combustion appliance safety plan will be created that is specific to the scope of work. The proposed scope and combustion safety plan will be reviewed prior to issuance of a notice to proceed. Subsequently, the building owner will choose a participating contractor to install the agreed upon-scope of work. A BPI (Building Performance Institute) Multifamily Building Analyst will oversee and conduct all safety testing. Upon completion of work, a final assessment will take place to ensure proper and safe installation of the approved scope of work. Associated documentation will be submitted to PG&E for quality assurance and incentive processing. PG&E seeks to leverage the existing HERS (Home Energy Rating System) II raters, Energy Upgrade California participating contractors and BPI Multifamily Building Analyst networks to implement this work.

Non-Qualifying Buildings At any point in the process, the building owner may decide not to pursue participating in PG&E's EUC Multifamily Path Pilot. However, this does not prevent the building owner from participating in other utility programs. This is where the MEEM will play a critical role in connecting the building owner to the additional available utility programs.

Buildings served by propane are not eligible to participate.

Combustion Appliance Safety Testing PG&E is committed to keeping customers safe. Because this comprehensive whole building pilot will be the first of its kind for California IOUs and will pursue deep energy upgrades in multifamily buildings, the pilot will explore implementation of combustion safety protocols.

This may include the BPI, Natural Gas Appliance Test ("NGAT") and other industry protocols, as appropriate.

PG&E hired a third party consultant to assess the safety protocols used in other successful multifamily whole building programs. Using this information as well as the CA HERCC recommendations, the consultant created a "decision tree" to help guide the installation of measures in a multifamily building. PG&E seeks to test this decision tree approach in the pilot, especially given that the configuration and building types can vary vastly in the multifamily segment. PG&E will use the decision tree in conjunction with industry standard safety protocols.

At the conclusion of the pilot, PG&E will work with the participating professionals to solicit feedback on the decision tree approach, make updates (as necessary) and decide whether or not to adopt this approach for the statewide program.

At the time of the supplemental information request, the "Study on Multifamily Air Leakage Testing Strategies" was still in draft form. As the study becomes publically available, PG&E will review it and consider the recommendations in the pilot program design.

Participating Professional Recruitment
For Phase 1, PG&E will reach out to existing HERS II multifamily raters, Energy Upgrade California participating contractors and BPI Multifamily Building Analysts. PG&E will conduct an orientation event to prepare these professionals for work in Phase 1 of the pilot. Once the professionals commit to the pilot requirements, they will be eligible to perform work as a participating rater, participating contractor or participating BPI Multifamily Building Analyst ("participating professional") under the pilot.

In Phase 2, PG&E will reach out to the participating professionals from Phase 1 to understand the challenges and opportunities realized during Phase 1. Resulting information will help to inform the recruitment strategy for Phase 3.

Participating Professional Requirements
The following are preliminary and summary requirements for participating in PG&E's EUC Multifamily Path Pilot and are subject to change as necessary throughout the pilot program.

- A participating rater must be a HERS II multifamily rater, attend an orientation session, and agree to the pilot requirements to participate in the pilot. Raters may be responsible for the preliminary walk through, investment grade assessment and final assessment.

- A participating contractor must be currently enrolled in EUC, properly licensed for that particular scope of work, attend an orientation session and agree to pilot requirements to participate in the pilot. Participating contractors will be responsible

for installation of the measures agreed upon in the scope of work.

- A participating BPI Multifamily Building Analyst must be certified as a current BPI Multifamily Building Analyst, attend an orientation session, and agree to pilot requirements to participate in the pilot. BPI Multifamily Building Analysts will be responsible for preparing the combustion appliance safety plan and completing all safety testing.

- NGAT tests must be performed by qualified ESAP installers and/or PG&E inspectors according to existing ESAP program requirements.

For ESAP and MIDI measures, work must be performed by contractors authorized to work under those programs and who meet the program requirements. For MFEER measures, the work must be performed by appropriately licensed contractor for the particular measure.

For all other applicable programs, work must be performed by those who are eligible to perform work under the respective programs.

Measures

For PG&E's EUC Multifamily Path Pilot, PG&E will include measures listed in Section 7 of the statewide program description (Attachment 2). PG&E will modify this measure mix as data is collected and the offering is refined throughout the pilot.

For ESAP, MIDI and MFEER, the existing approved measures will be allowed.

7. Customer Description

This pilot is for property owners and managers of multifamily buildings located in PG&E's service territory:

- Offered to PG&E gas and/or electric customers.
- Multifamily properties must contain a minimum of five units for participation in the PG&E EUC Multifamily Path Pilot. For other programs, the multifamily properties must adhere to existing customer eligibility requirements for the respective programs.
- Both affordable and market-rate properties qualify.

8. Energy Savings and Modeling Software:

PG&E will use energy modeling software to generate energy savings for the pilot jobs. For low-rise multifamily buildings, PG&E proposes using the CEC HERS II rating standard using the Energy Pro, Cal Rate Pro module (for TDV savings calculations) and the Residential Performance Module (for site savings calculations) to calculate incentives. For high-rise buildings, PG&E proposes using Energy Pro, Non Residential Module, for measurement of savings and determination of incentive levels. PG&E will consider

additional software tools, as appropriate.

Savings related to measures installed as part of integration efforts with ESAP, MIDI, and MFEER will only be claimed under those respective programs.

9. Program M&E Plan for PG&E:

PG&E's EUC Multifamily Path Pilot team, in close consultation with ED, will submit a detailed Evaluation Measurement & Verification (EM&V) plan for program evaluation. The EM&V plan will include plans for continuously improving this integrated program offering. Phase 1 of the pilot will be informed by soon-to-be-available insights and recommendations that will be reported from the two Process Evaluations currently in progress: PG&E Energy Upgrade California Whole House Retrofit Rebate effort, as well as the traditional Multifamily Energy Efficiency Rebate program. These final reports are anticipated in the first half of 2012.

Drawing from these current studies, the EM&V plan will build on lessons learned in designing a unified and comprehensive evaluation plan. The evaluation efforts will provide the process and strategies for advancing the program's management of key issues including: split incentives between owners and renters; supportive and efficient procedures for participating contractors; effective outreach to building owners; and how to define and influence the decision points where energy efficiency upgrades can be included in building maintenance and improvement investments, among others. PG&E seeks to use Phase 2 to analyze the combustion appliance safety protocols as well as the cost effectiveness of the various measures installed. At the culmination of Phase 3, PG&E also recommends a deeper dive into the pilot's successes and challenges.

10. Marketing/Outreach

For Phase 1, PG&E plans to work directly with market stakeholders to identify buildings that meet the screening criteria.

Phase 3 marketing needs will be informed by the lessons learned in Phases 1 and 2.

Attachment A4.2: PG&E EUC Enhanced Basic/Modified Flex Path PIP (Clean)

PACIFIC GAS AND ELECTRIC COMPANY

2013-2014 ENERGY EFFICIENCY PORTFOLIO

STATEWIDE PROGRAM IMPLEMENTATION PLAN

RESIDENTIAL PROGRAM

PGE2100

RESIDENTIAL PROGRAM OVERVIEW AND ENERGY UPGRADE CALIFORNIA SUBPROGRAM

EXCERPTS ONLY – FOR APRIL 2, 2013 ADVICE LETTER

(REVISED APRIL 2, 2013)

TABLE OF CONTENTS

1. Residential[1] Program, PGE2100, Core

2. Projected Program Budget Table

Table 1[2]

New EEGA	New Sub Program	Total Administrative Cost	Total Marketing & Outreach	Total Direct Implementation (Customer Services)	Direct Implementation (Incentives & Rebates)	Total Compliance Budget
PGE21001	Residential Energy Advisor	$ 519,092	$2,406,431	$ 1,654,143	$19,976,000	$ 24,555,666
PGE21002	Plug Load and Appliances	$3,632,912	$3,476,278	$15,006,802	$15,780,168	$ 37,896,160
PGE21003	Multifamily Energy Efficiency Rebates Program	$ 698,109	$ 37,912	$ 631,268	$1,004,063	$ 2,371,351
PGE21004	Energy Upgrade California Program*	$ 965,126	$ 946,438	$10,358,493	$13,437,814	$ 25,707,870
PGE21005	Residential New Construction	$ 349,809	$ 387,285	$ 2,999,695	$1,248,127	$ 4,984,917
PGE21006	Residential HVAC	$1,078,337	$ 789,010	$ 6,367,684	$7,900,000	$ 16,135,031
		$7,243,385	**$8,043,354**	**$37,018,085**	**$59,346,172**	**$111,650,995**

* PG&E will be filing a Supplemental Compliance Filing Advice Letter on 4/23 and making program budget and savings revisions at that time.

3. Projected Program Gross Impacts Table – by calendar year

The IOU's funding request for the proposed 2013-2014 Residential Program as detailed in Table 1 above. The IOUs believe this amount is reasonable, results in a cost-effective

[1] D.09-09-047, p. 7, refers to the statewide residential energy efficiency subprograms as the California Statewide Subprograms for Residential Energy Efficiency ("CalSPREE")

[2] Definition of Table 1 Column Headings: Total Budget is the sum of all other columns presented here; Total Administrative Cost includes all Managerial and Clerical Labor, Human Resource Support and Development, Travel and Conference Fees, and General and Administrative Overhead (labor and materials); Total Direct Implementation – includes all financial incentives used to promote participation in a subprogram and the cost of all direct labor, installation and service labor, hardware and materials, and rebate processing and inspection used to promote participation in a subprogram; Total Marketing & Outreach includes all media buy costs and labor associated with marketing production; Integrated Budget Allocated to Other Subprograms includes budget utilized to coordinate with other EE, DR, or DG subprograms; Total Budget is the sum of all other columns presented here; Definition of Subprogram: A "subprogram" of a subprogram has a specific title; targets; budget; uses a unique delivery or marketing approach not used across the entire subprogram; and for resource subprograms, has specific estimated savings and demand impacts

portfolio that meets the Commission's energy savings targets for 2013-2014, and supports market transformation and the Strategic Plan.

Table 2

New EEGA	New Sub Program	GROSS KW	GROSS KWH	GROSS Therms
PGE21001	Residential Energy Advisor		149,983,025	5,675,440
PGE21002	Plug Load and Appliances	15,624	78,765,515	(240,374)
PGE21003	Multifamily Energy Efficiency Rebates Program	528	512,239	369,766
PGE21004	Energy Upgrade California Program*	14,378	11,520,361	1,181,341
PGE21005	Residential New Construction	6,034	4,583,902	754,318
PGE21006	Residential HVAC	6,610	7,021,254	(28,831)

* PG&E will be filing a Supplemental Compliance Filing Advice Letter on 4/23 and making program budget and savings revisions at that time.

4. Program Description

The 2013-2014 Residential Sector program is designated as the California Statewide Program for Residential Energy Efficiency (CalSPREE).

CalSPREE will offer and promote both specific and comprehensive energy solutions for residential customers. By encouraging adoption of economically viable energy efficiency technologies, practices, and services, CalSPREE will employ strategies and tactics to overcome market barriers while delivering services that support the CPUC's Long Term Energy Efficiency Strategic Plan.

The ultimate focus of CalSPREE is to:

- Facilitate, sustain, and transform the long-term delivery and adoption of energy-efficient products and services for single and multi-family dwellings;
- Cultivate, promote and sustain lasting energy-efficient behaviors by residential customers through a collaborative statewide education and outreach mechanism; and
- Meet customers' energy efficiency adoption preferences through a range of offerings including single-measure incentives and more comprehensive approaches.

To date, the California IOUs have employed a number of different residential energy efficiency subprograms that are in various stages of maturity and availability across the state. For 2013-2014 and beyond, the IOUs will integrate all of these subprograms to coordinate efforts and increase comprehensiveness of measure delivery.

CalSPREE will conduct a combination of integrated DSM and program specific marketing and outreach to drive ongoing customer participation and behavior change. Both integrated and program-specific marketing activities will work in coordination with the SW ME&O and will serve to complement those efforts.

Integrated marketing and outreach will gather, create, and deliver information to customers in a way that (1) bundles programs, products, and information and (2) customizes delivery for individual or groups of targeted customers based on market intelligence, segmentation analyses, self-selection activities, and event-based knowledge of customer's actions. To drive increased participation and ongoing customer engagement, marketing and outreach will target customers with the right message, through the right channel, at the right time. Integrated marketing will cross-sell relevant DSM programs and services that emphasize the benefits of participation in multiple programs.

Additionally, program specific marketing and outreach will be conducted in order to increase participation and reach specific program goals. Program specific marketing and outreach will target customers with a high potential to participate in a specific programs or service. For example, through the Plug Load and Appliances program, customers identified as having a pool may receive a targeted direct mailer prior to summer encouraging them to take advantage of the pool pump and motor rebate. By motivating customers to take an initial action, it will enable the IOUs to engage customers in an ongoing conversation about the next steps they can take towards becoming better energy managers. Additionally, program specific marketing and outreach enables the utilities to conduct activities necessary to support the measure, such as developing Point of Sale rebate stickers that are placed on select appliances to drive program participation. These efforts drive enrollments that enable the utilities to meet specific program goals.

A mix of communication channels and languages will be used to reach a diverse audience. Communication channels may include: web, call center, bill messaging, email, social media, direct mail, retail partnerships, community- and faith-based partnerships, outreach, events, local government partnerships, general and ethnic media.

CalSPREE is comprised of the Energy Advisor, Plug Load and Appliances (PLA), Multi-Family Energy Efficiency Rebates (MFEER), Energy Upgrade California (EUC), Residential Heating, Ventilation, and Air Conditioning (HVAC), and Residential New Construction (RNC) subprograms. These subprograms are described in more detail below.

Short Description of Each Sub-program

The 2013-2014 CalSPREE includes the following six subprograms:

a) **Energy Advisor (EA)**. The Energy Advisor subprogram will utilize interactive tools designed to engage customers and encourage participation in innovative initiatives. These initiatives are designed to help customers understand - and empower them to manage - their energy use, and will guide them, where appropriate, towards advancing whole-house energy solutions. Although the IOUs share similar Energy Advisor

subprogram theory, design, and goals, they may implement subprogram logistics differently because of their different service territories.

b) **Plug Load and Appliances (PLA)**. The Plug Load and Appliances subprogram merges the previous Home Energy Efficiency Rebate (HEER), Business Consumer Electronics (BCE) and Appliance Recycling subprograms. This subprogram will develop and build upon existing retailer relationships and will include recycling strategies and whole house solutions, plug load efficiency, performance standards, and opportunities for integration with local government, water agencies, Publically Owned Utilities (POUs), and the Demand Side Management (DSM) subprogram.

c) **Multi-Family Energy Efficiency Rebates (MFEER)**. The MFEER subprogram is a continuing subprogram. This subprogram will promote energy efficiency by providing equipment rebates to owners and tenants of multifamily properties, including residential apartment buildings, condominium complexes, and mobile home parks. It will be coordinated with the Energy Savings Assistance (ESA) and the EUC Programs.

d) **Energy Upgrade California (EUC)**. For 2013-2014, the EUC will consolidate the previously separate Prescriptive Whole House Retrofit (PWHRP) and Local Whole House Retrofit (WHRP) and the introduction of a Multi-family component. The EUC sub-program is designed to build customer and contractor awareness of the house-as-a-system approach to residential retrofits and the many benefits of improving the comfort, safety, and energy savings potential of the house. The EUC approach promotes both Enhanced Basic/Modified Flex Path and Advanced Paths to retrofitting; these complementary paths will be presented to customers as one comprehensive offering.

e) **Residential Heating, Ventilation, and Air Conditioning (HVAC)**. The Residential HVAC subprogram is a continuing program with the primary objective of driving high quality levels in California's HVAC market for technology, equipment, installation, and maintenance. An additional objective is to increase customer awareness of the value of HVAC installation and maintenance practices toward driving energy efficiency and peak load reduction. The Residential HVAC subprogram will incorporate revised measures and incentives, policies and procedures, quality assurance, marketing materials, website, and contractor training in performing HVAC installation services for residential customers.

f) **Residential New Construction (RNC)**. The RNC subprogram is a continuing statewide program that consists of the California Advanced Homes Program (CAHP) and, in Southern California, the Energy Star Manufactured Homes (ESMH) Program. The Program is designed to help guide builders to produce the most efficient homes in the most cost-effective manner, and will examine methodologies for supporting the Strategic Plan target of zero net energy (ZNE) by 2020.

1. Sub-Program Name: Energy Upgrade California (EUC)

2. Sub-Program ID number: PGE21004

3. Type of Sub-Program: ✓ Core __Third Party __Partnership

4. Market sector or segment that this sub-program is designed to serve:

a. ☑ Residential
   i. Including Low Income? __Yes ☑ No
   ii. Including Moderate Income? ☑ Yes __ No
   iii. Including or specifically Multifamily buildings ☑ Yes __ No
   iv. Including or specifically Rental units? __Yes ☑ No
b. __ Commercial (List applicable NAIC codes: _____)
c. __ Industrial (List applicable NAIC codes: _____)
d. __ Agricultural (List applicable NAIC codes: _____)

5. Is this sub-program primarily a:

a. Non-resource program __ Yes ☑ No
b. Resource acquisition program __ Yes ☑ No
c. Market Transformation Program ☑ Yes __ No

6. Indicate the primary intervention strategies:

a. Upstream __ Yes ☑ No
b. Midstream __ Yes ☑ No
c. Downstream ☑ Yes __ No
d. Direct Install __ Yes ☑ No
e. Non Resource __ Yes ☑ No

7. Projected Sub-program Total Resource Cost (TRC) and Program Administrator Cost (PAC)

TRC 0.40 PAC 1.56

8. Projected Sub-Program Budget

Table 1. Projected Sub-Program Budget, by Calendar Year

Per D.12.05.015, p. 71, PG&E provides a high customer participation scenario for 2013-2014, a summary of the assumptions, and an associated budget. This EUC participation scenario takes into account possible CAEATFA and other residential energy efficiency financing that may support program growth in the 2013–2014 period, as well as additional activities. Consistent with the direction in D.12.05.015, PG&E is updating this PIP to reflect 2013-2014 revised program design for the Enhanced Basic/Modified Flex Path[35]. See Table

[35] "Enhanced Basic/Modified Flex" Path is a placeholder until the new program name is selected.

17 for PG&E's high scenario targets for customer participation, budget as well as the summary of assumptions associated with this target.[36] *[Table-17 to be provided as an Excel Attachment to this PIP]*

9. Sub-Program Description, Objectives and Theory

a) Sub-Program Description and Theory:

According to a report released by the Office of the Vice President, "homes in the United States generate more than 20 percent of our nation's carbon dioxide emissions, making them a significant contributor to global climate change."[37] The challenge of addressing residential emissions has been a significant topic for California stakeholders and was addressed when D.09-09-047 acknowledged, "Improving the energy efficiency of all households is necessary to achieve the target outcome for the 2020 existing residential *Strategic Plan* goals."[38]

The Office of the Vice President report also identifies three market barriers to comprehensive residential retrofits:

1) Lack of customer and contractor awareness and access to information;
2) Lack of access to financing; and
3) Lack of access to skilled workers.

A shift in market perception, both for contractors and customers, towards a whole house approach must take place to drive customer action. EUC is designed to offer a one-stop approach to whole-house energy efficient improvements that recognize the need for customers to participate over varied timelines. To assist in the effort to overcome these problems and market barriers, EUC for single family residences will:

1) Offer a statewide entry level approach (*Enhanced Basic/Modified Flex Path*) and a comprehensive and flexible performance based approach (*Advanced Path*) whole house incentives to help build the home performance contracting industry and offer customers and building owners and managers an easy entry point on the path to home performance (barrier 1);

[36] Assumptions include:
* Full PG&E Service Territory participation
* Active participating contractor effectiveness (increase)
* Net impact of financing product offerings (i.e. MIST, CAEATFA) (increase)
* Impact of operational efficiencies gained from program optimization (increase)
* Net impact from local government marketing (increase)
* Impact from real estate industry engagement (increase)
* Absence of ARRA funded incentives (decrease)
* Impact of potential economic up/downturn (increase)

[37] Middle Class Task Force. Council on Environmental Quality. "*Recovery Through Retrofit.*" October, 2009. Page 1.
[38] D. 09-09-047. Page 110.

2) Educate customers on the house-as-a-system concept and to encourage behavior changes that increase residential energy efficiency (barrier 1);
3) Educate contractors on the benefits of learning how to properly sell and install whole house measures as part of coordinated WE&T efforts (barrier 1& 3);
4) Offer incentives that influence customers to undertake comprehensive residential retrofits (barrier 1); and
5) Coordinate with relevant utility financing programs and external funding and financing mechanisms at the county, state and federal levels. (barrier 2).

In addition, energy efficiency efforts for the multifamily (MF) segment must overcome a number of barriers, primarily:

1) Lack of knowledge regarding energy efficiency, as well as the comprehensive energy efficiency EE programs offered by IOUs;
2) The economics of "split-incentives" where the building owner invests capital but the savings primarily benefit the tenants;
3) Access to investment capital and insufficient return on investment (ROI). Up-front out-of-pocket costs and extended payback periods required pose a significant participation barrier for property owners and managers;
4) Hassle of dealing with multiple contractors and visits required;
5) Time burden for tenants and owners;
6) Impact on rental income; and
7) Business policy/ profit incentive from replacing equipment on burn-out and unwillingness to negate remaining life in building components requiring capital outlay.

The Multifamily Path is envisioned to include a number of tactics to overcome these barriers, primarily:

1) To improve a property owner or manager's energy efficiency knowledge, the *Multifamily Path* would seek to leverage comprehensive investment grade building assessments to identify potential energy efficiency opportunities. (Barrier 1).

2) To address split incentives and cost of upgrades, the *Multifamily Path* would integrate with the existing Energy Savings Assistance Program ("ESAP") and the Multifamily Energy Efficiency Rebate ("MFEER") Program. This would provide comprehensive services to the building, including "low cost" or "no cost" tenant measures in conjunction with the EUC *Multifamily Path* whole building incentives in order to maximize energy savings for the up-front investment. (Barrier 2).

3) Incentives would assist property owners or managers with overcoming a wide array of market and financial barriers which may otherwise prevent energy efficiency upgrades (Barrier 1 and 5).

4) Create a single point of contact that would assist the property owner or manager navigate through the incentive and retrofitting process. This approach would provide support in understanding the various program rules and assistance in determining eligibility. The property owner or manager would be guided through an easy and streamlined preliminary assessment to establish feasibility and estimate project cost for the *Multifamily Path*, with an eye toward leveraging all eligible programs. (Barrier 4).

5) Target buildings planning on or undergoing renovation projects to limit customer time burden and lost rental income. (Barrier 4 and 5).

6) Multifamily sector is comprised of a wide diversity of properties which can be segmented by: 1.) rental rate (low – medium – or high; and/or 2.) size of the building and also size of the company that owns or manages the building. Defining the unique concerns and needs of building owners and managers by these variables of tenant socio-economic status and ownership/management structure will allow much more effective messaging and marketing communications. (Barrier 1, 2, 3, 4, 7)

7) Statewide EE energy efficiency financing (SW Fin) which could be focused on the tenant or the common property energy agendas. This program will provide access to capital to fund investments in energy efficiency upgrades for buildings at an attractive interest rate. (barrier 2, 3, 7).

Other considerations to meet all income strata and address split incentives for property owners and tenants may include a direct install strategy, as well as prescriptive rebates through the existing MFEER Program. While programs will be coordinated and integrated, their respective policies, and procedures will be followed in the delivery of services. Efforts at operational efficiencies would be made to streamline eligibility, income verification, and installation of measures.

Despite the noted barriers, the multifamily sector presents a significant opportunity for whole building energy efficiency programs with a deep energy reduction approach. A whole building offering has the potential to achieve deep energy savings because:

1) Building owners can leverage incentives to address common areas and systems as well as individual unit upgrades to make more cost effective improvements.

2) Major rehabilitation projects are common in the multifamily sector. It is theoretically more cost effective to include energy efficiency upgrades at the time of these renovation projects. These projects typically have well-financed construction budgets and broad scopes that could include energy efficiency

measures.

3) Multifamily properties tend to be operated and maintained by professional building staff. Providing resources to building staff would theoretically would increases the odds that the building will be operated efficiently after energy upgrades are installed, perpetuating savings benefits.

4) Within the tenant units, the energy efficiency upgrades will often be duplicated – allowing for efficiency in bulk purchases of supplies and equipment, as well as hiring of specialized workers with less non-productive set-up/break-down and travel time.

Energy Upgrade California (EUC) is a continuing Market Transformation-orientated program which began in the 2010-2012 residential energy efficiency portfolio of the four California Investor Owned Utilities (IOUs) – Pacific Gas & Electric Company (PG&E), Southern California Edison (SCE), San Diego Gas & Electric Company (SDG&E) and Southern California Gas Company (SoCalGas).

As a recognized market transformation program only halfway through its second full year of statewide rollout, the EUC is expected to be a major contributor to achieving the goals of the California Long Term Energy Efficiency Strategic Plan (*Strategic Plan*) as it relates to existing residential homes; EUC faces significant hurdles in customer and contractor awareness, industry and workforce development, and traditional cost effective metrics towards measuring effectiveness and success.

This PIP is for the statewide EUC program that will be offered consistently across the IOU service territories. The PIP is intended to align with the goals established in the *Strategic Plan* and is a culmination of ongoing statewide efforts to design EUC.

EUC is designed to build customer and contractor[39] awareness of the house-as-a-system approach to residential retrofits and the many corresponding benefits of improving the energy savings potential and comfort of their dwelling. It promotes the idea that energy efficiency measures are most effective when taking into account the interactive effects of measures.

EUC moves customers from a prescriptive, widget or single-measure based approach to energy efficiency to one of deeper, comprehensive energy retrofits that respect the energy efficiency loading order[40], and which takes the approach that a house is a series of interdependent systems that must be considered holistically.

[39] A successful program recognizes the need to develop the pool of qualified home retrofit contractors (with the help of third party implementers) to engage in – and have the opportunity to profit from – performing quality work. Through comprehensive training curricula (currently available in the marketplace) broken into the key elements of a home: Building Envelope and Lighting, and Heating, Cooling and Hot Water delivery (major systems); skilled tradespersons will have the opportunity to enter the home retrofit market and grow their businesses.

[40] The loading order specifies improvements in the following sequence: (1) air sealing to obtain a tight building envelope; (2) insulation to complete the thermal boundary; (3) proper sizing, design, installation and commissioning of space heating and

In addition, this approach optimizes building shell (thermal boundary) provides increased comfort and indoor air quality while enabling smaller and more affordable space conditioning equipment and reduced energy use associated with space heating and cooling. The thermal boundary consists of two layers or components – air barrier and insulation – which should both be continuous as well as contiguous (in contact with each other) for optimum performance. Because of the interaction between the thermal boundary and space conditioning loads, heating or cooling system upgrades are ideally not to be performed until the building shell is optimized. Building shell and duct air sealing will be addressed in conjunction with combustion appliance safety and indoor air quality tests. Base load reduction measures involving major electrical appliances, lighting, plug loads, and demand response can be performed at any time without compromising the loading order.

Customer outreach and education efforts for the EUC will be coordinated with Energy Advisor, Plug Load and Appliance (PLA), Comprehensive HVAC, SmartAC and other Residential Demand Response programs, Energy Savings Assistance Program, and California Solar Initiative (CSI) to leverage multiple customer touch points.

For single family residences, the whole house approach of EUC promotes two paths, a prescriptive-based Enhanced Basic/Modified Flex Path and a comprehensive, measured Advanced Path. These complimentary paths will be presented to customers[41] as one comprehensive offering.

For multifamily buildings, building owners and managers will be able to participate in the EUC Multifamily Path. EUC will offer a consistent program model that can be contractor or rater driven and/or adopted by local governments for roll-out in their communities.

In sum, these paths will provide an ideal platform to utilize the concept of continuous energy improvement for residential customers; tracking and encouraging a logical sequence of energy improvements made by customers over time, creating an ongoing, actionable dialogue with each customer regarding their energy use.

EUC *Advanced Path*

EUC *Advanced Path* offers customers a customized path to comprehensive whole house energy efficiency that drives the customer to deep retrofits. *Advanced Path* solutions will require Participating Contractors to obtain higher levels of expertise than those who perform the *Enhanced Basic/Modified Flex Path* installations. Customers can also participate in *Advanced Path* by using a Participating Rater. The *Advanced Path* requires diagnostic “test-in” and “test-out” whole house assessments. The “test-in” assessments will generate a comprehensive work scope and the “test-out” assessments will be used to

cooling systems; (4) proper sizing, design, installation, commissioning and insulation of the hot water system, including distribution; (5) efficient lighting and appliances, and demand response measures; and (6) renewables.

[41] Residential customers including homeowners, renters, and multifamily properties when these services are available to them.

document that specified improvements have been properly sized and installed. The *Advanced Path* will build off of the measures of the *Enhanced Basic/Modified Flex Path.*

- Offer a holistic path towards home performance by aggregating key elements of a dwelling into its core elements: building envelope and fixed lighting; heating, cooling and hot water, and appliances;
- Require higher levels of contractor training and qualifications;
- Coordinate with the extensive network of heating ventilation and air conditioning (HVAC) contractors already participating in IOU programs;
- Utilize a commercially available and approved building simulation software and methodology to model performance sites and estimate energy savings for the project;
- Establish a project baseline by a "test-in" and "test-out" method;
- Encourage prospective participants to participate in the IOUs' statewide Energy Advisor Program to gain insights about ways to change their energy use behavior and to identify opportunities to make efficiency improvements within their homes. Additionally, the tool will serve as a lead generator.[42]
- Provide rigorous Quality Assurance and Quality Control;
- Funnel participation from core Energy Efficiency (EE), Demand Response (DR), distributed generation (e.g. California Solar Initiative) portfolios, and increase awareness through statewide coordinated marketing campaigns, and contribute to education and outreach activities with local government partners;
- Coordinate with local financing opportunities, as appropriate;
- Be compatible with Home Energy Rating System (HERS) requirements;[43]
- Provide incentives to reflect modeled levels of energy savings.

The *Advanced Path* delivers comprehensive energy efficiency improvement packages tailored for both the home resale and home remodeling markets. The *Advanced Path* solicits, screens, and trains qualified residential repair and renovation contractors and

[42] The IDSM and Energy Advisor teams are currently working to expand the capabilities of Energy Advisor to better complement EUC. The Energy Advisor program will be used as an entry point to provide consistent messaging to customers and to generate leads to increase participation in EUC. Per D. 09-09-047, the surveys are not intended to be full energy audits.
[43] EUC will not require a HERS rating or a performance-level audit upon completion of work. Participating contractors are encouraged to coordinate with HERS raters to provide customers with ratings upon completion of work as a method of educating the marketplace and leveraging an opportunity to draw customers to EUC.

HERS II Raters, to assemble capable contracting teams and perform whole-house diagnostics, propose a comprehensive energy efficiency improvement package, and install the improvements. The program also includes marketing activities to help educate customers on program services, and in some cases may provide additional customer leads to trained and experienced contractors. Incentives and resources for available financing options will be provided to help offset the initial homeowners cost for the energy efficiency improvements.

Enhanced Basic/Modified Flex Path

The *Enhanced Basic/Modified Flex Path* will offer customers and contractors an easy entry point on the path to home performance with a defined package of measures. Incentives will be available for customers to offset a portion of the cost of specific comprehensive retrofits. The *Enhanced Basic/Modified Flex Path* will allow customers to reduce their energy usage while increasing the energy performance of their existing homes and minimizing lost opportunities for future comprehensive retrofit options.

The *Enhanced Basic/Modified Flex Path* will also educate contractors and customers on the benefits of implementing comprehensive whole house retrofits on existing buildings that will provide systematic reductions in energy use. The *Enhanced Basic/Modified Flex Path* will help to:

- Utilize no-cost (to customer) surveys (Energy Advisor) as an entry point to identify opportunities for efficiency improvements[44];
- Offer targeted marketing campaigns to engage participants that receive stand-alone EE rebates for completing qualified home improvement measures;
- Promote completion of retrofits based on preferred building science loading order;
- Offer incentives to encourage progression along a preferred approach towards comprehensive retrofits;
- Continuously engage customers over time as they progress toward a home performance approach;
- Leverage available opportunities to move customers to the *Advanced Path* by informing them about available local or third-party financing options and other complementary revitalization efforts that may be available within a particular jurisdiction;

[44] The Energy Advisor provides residential customers with entry-level energy surveys online, over the phone, or by mail. The surveys are not intended to serve as an audit but are meant to provide consistent messaging and an easy on-ramp to EUC. The Energy Advisor surveys are also an ideal link between the California Solar Initiative (CSI) and EUC. This synergy will be discussed later in the document.

- Offer a holistic path towards home performance by aggregating key elements of a dwelling into its core elements: building envelope; heating, cooling and hot water, and appliances;

- Coordinate with communities, local governments, workforce education & training, industry organizations and allied third-parties for outreach on local retrofit and contractor training opportunities available.

The *Enhanced Basic/Modified Flex Path* offers a comprehensive approach to delivering prescriptive retrofit solutions to Californians by recognizing the essential interplay and relationships between groups necessary in the delivery of a successful program.

The IOUs and RENs will offer, within their respective territories, a statewide design of the Enhanced Basic/Modified Flex Path as a replacement to the existing Basic Path and marketed with the EUC Advanced Path. The IOUs and RENs have developed a pick list, or menu of eligible measures for the Enhanced Basic/Modified Flex Path that demonstrate strong consistency across all programs, to the extent that differences in existing work papers currently under review by CPUC allow. To market the Enhanced Basic/Modified Flex Path to customers, both IOU and REN measures will be awarded points based upon existing and post-upgrade conditions and diagnostic testing (if required for any specific measure). Customers will be required to install at least 1 of 3 base measures, a minimum of 3 measures total and achieve a minimum point threshold of 100 points that equates to 10% energy savings. This simple, menu-driven, flexible design is expected to greatly increase the volume of projects over the original Basic Path. Both the IOU and REN program designs associate the project points with tiered incentive dollar values. To encourage customers to more fully adhere to the loading order, customers are eligible for additional bonus points for installing additional base measures, i.e. when installing 1 or 2 additional base measures beyond the required one measure, customers will receive bonus points for each additional base measure installed.

EUC *Multifamily Path*

The vision of a EUC *Multifamily Path* is to deliver comprehensive energy efficiency upgrades tailored to the needs of existing multifamily dwellings and their owners, tenants and management companies.

The *Multifamily Path* is envisioned to specifically target the multifamily housing (MF) retrofit market and would promote long-term energy benefits through comprehensive whole building energy efficiency retrofit measures —including building shell upgrades, high-efficiency HVAC units, central heating and cooling systems, central domestic hot water heating and other deep energy reduction

opportunities. These energy efficiency measures would be identified through an investment grade assessment.

This performance-based approach would assist property owners and managers with making informed decisions, identify measures for energy savings, and to maximize energy reductions for each property owner, manager, and tenant, as applicable. The *Multifamily Path* is envisioned as a logical next step to the prescriptive based MFEER and would be coordinated with Energy Savings Assistance Program and MFEER to present a singular and streamlined approach for multifamily tenants, property owners and property managers, in accordance with the Strategic Plan. A key feature of the *Multifamily Path* would be a single point of contact to assist multifamily raters and customers and to streamline their experience. The single point of contact will recruit and assist multifamily owners and property managers to evaluate specific property and advise the program that best suits the needs of particular buildings.

This integrated approach combines market-rate and income-qualified energy efficiency measures and educates building owners on the benefits of energy efficiency and conservation efforts spanning the range of needs for the multifamily market. The *Multifamily Path* will leverage and integrate the MF MFEER resource components and ESA Program offerings in a singular customer facing program that presents a simplified view from the customer perspective.

The *Multifamily Path* would guide multifamily customers towards deeper, comprehensive energy efficiency measures, including: whole house solutions, plug load efficiency, visual monitoring and displays, performance standards, local government opportunities, and IDSM integration. The *Multifamily Path* will support the strategies, where possible, in the Low Income Proposed Decision. Since the *Multifamily Path* is the newest offering under EUC, each utility will test a variety of approaches and offer paths of different size, scale and scope. The lessons learned from these tests will inform future program design.

The IOUs will organize and convene a workshop on lessons learned and best practices in their multifamily pilot programs in late 2013 or early 2014 and notice the workshop to the service list and RENs for this proceeding.

a) Sub-Program Energy and Demand Objectives-

Table 2. Projected Sub-Program Net Energy and Demand Impacts, by Calendar Year
[Table-2 to be provided as an Excel Attachment to this PIP]

b) Program Non-Energy Objectives:
Table-16: Non-Energy Objective
[Table-16 to be provided as an Excel Attachment to this PIP]

c) Cost Effectiveness/Market Need:
The California IOUs look forward to continue playing a leading role, in collaboration with local governments, in moving the existing residential homes market towards larger reductions in energy usage and towards the *Strategic Plan* goal of achieving 40% purchased energy reductions in all existing homes by 2020. At this time, current market conditions and barriers are:

1. Relatively high cost of home assessments.
2. Relatively high gross costs of comprehensive energy upgrades.
3. Market unawareness of non-economic value to comprehensive energy upgrades.
4. Fledgling contracting and supporting industry for existing home energy upgrades.
5. Low consumer awareness of incentive programs and the concepts of comprehensive home energy assessments and upgrades.
6. Lack of common home rating protocols and common vernacular for the market to assign value to homes which undergo comprehensive energy upgrades.

EUC seeks to address these barriers through:

1. Continued marketing of Energy Upgrade California and whole house concepts. (Barrier 3, 5).
2. Continued contractor recruitment (at a pace aligned with demand), training and mentoring. (Barrier 4, 5).
3. Continued customer uptake through EUC incentives. (Barrier 1, 2, 5).
4. Continued stakeholder outreach to address barriers. (Barrier 1, 3, 4, 5, 6).
5. Continued partnerships with local and state government to address barriers. (Barrier 1, 2, 3, 4, 5, 6).

It will be critical to establish market transformation (MT) metrics and milestones that are in alignment with cost effective metrics that can more accurately assign cost effectiveness of resources expended towards MT goals. As the Value Proposition figure below represents, there currently is significant non-economic value being assigned by the marketplace towards whole house projects but which are not accounted for in cost effectiveness metrics currently used.

Non-economic value can be assigned as:
Gross Cost – (annual savings x EUL) – (assigned increased market value of home)

By this definition, and information regarding gross costs and savings to date, it would appear that the market currently is assigning significant non-economic value to EUC projects. However, current cost effective metrics assign all value towards economic value related to energy savings only. Failure to align MT goals and cost effective metrics will result in inaccurate measurement of resource impacts on MT goals.

VALUE PROPOSITION
(Greater the Value Proposition = Faster Market Transformation and Consumer Uptake)

	Consumer Value	Consumer Costs
Economic Value	• Monthly utility bill savings (kWh, kW, therm) • Recognized Market Value of EE home	• Gross Project Costs

Non-Economic Value	• Health & Comfort
	• Altruistic
	  • Environment
	  • National Security
	  • Being part of Green Movement
		• *Offsets:*
		IOU Incentives
		Financing

	Driving Up Value	**Driving Down Costs**
	• Standard Ratings where the Market can assign value • Higher monthly utility bills	• More Qualified Providers • Higher Demand • Streamlined Processes • Innovative Marketplace

d) Measure Savings/ Work Papers:

EUC *Enhanced Basic/Modified Flex Path* utilizes deemed savings values by climate zone for building pre-1978, 1978-1992, or 1993-2001 vintages, as represented by the DEER 2011 Single Family Home prototypes available from the MASControl tool, v2.00.10 [A].
EUC *Advanced Path* utilizes CEC approved software (i.e. Energy Pro Res Module at the time of this PIP) for calculated project savings.

EUC *Multifamily Path* envisions measured savings for all low-rise multi-family buildings utilizing the Energy Pro, Residential Performance Module (for Site savings calculations). For all high-rise buildings, would utilize the Non Res Module.

a. Indicate work paper status for program measures:

Table 4 – Work paper Status
[Table 4 Work paper Status to be provided as an Excel Attachment to this PIP]

10) Program Implementation Details

In addition to traditional marketing efforts, the IOUs will work through service providers and vendors to engage qualified tradespersons in the crafts that they have chosen and will continue to invite input from stakeholders to further develop additional ways to meet program objectives.

One of the avenues that the IOUs plan to pursue to advance the program's efforts to achieve deeper energy savings retrofits in homes is to build closer partnerships with California's real estate industry, including via such activities such as voluntary training and outreach partnerships. Based on input already gathered from relevant stakeholder groups, experts, and Commission Staff, the IOUs plan to implement the following main areas of activities for this initiative to leverage partnerships with the real estate industry:

1) Training for all relevant aspects of the real estate industry and point of sale chain (real estate agents, lenders, inspectors, green/efficiency specialists, appraisers, rater's public agencies and contractors). An emphasis will be placed on training the cross-functional teams that already work together in the market, since all pieces of the process needs to be covered to be effective, especially on the financing side. The use of successful case studies will also be explored.

2) Driving customer demand for energy efficient homes via collaborative consumer education and outreach, using easy to understand messaging and including efforts such as the promotion of home energy improvements and "green" labeling around the time of purchase and sale of a home. This is a critical timing in the market that can be leveraged. The Joint Center for Housing Studies estimates that home buyers spend more than $6,000 per year on home improvements in the first two years after buying homes. In subsequent years, the annual average outlay drops to $2,500.[45]

A key to success for this initiative is properly aligning design with the personal and business interests of the stakeholders involved particularly the Realtors, home buyers, and sellers. While promotion of energy efficiency and green building practices is the paramount objective, the initiative would remain consistent with stakeholders' interests. By remaining stakeholder focused, the initiative aligns short-term private interests with long-term public interests.

Further details and continuous improvement of this plan will be developed by inviting additional input from an ongoing set of stakeholder collaboration discussions. Identification of appropriate regional differences and their implications to implementation will be incorporated into the plan. And short- and long-term success criteria and a periodic assessment timeline for evaluation of this initiative will be developed.

[45] Joint Center for Housing Studies of Harvard University (2011), *The State of the Nation's Housing: 2011*, http://www.jchs.harvard.edu/research/state_nations_housing

Also, during the transition cycle the IOUs will explore potential of offering pilot tests of expanding building science certifications and home evaluation and performance improvement processes beyond BPI to potentially include equivalent certifications, and home evaluation and performance improvement processes such as those through ACCA. To increase the number of qualified participating contractors and contribute to the creation of a sustainable workforce, third party program implementers will solicit and screen qualified contractors. The program will also include marketing activities to help educate customers on program services and other activities to provide additional customer leads to trained contractors.

The program will employ a number of integrated delivery strategies:

1) Educate contractors and residential customers on the concept of home performance;
2) Coordinate with existing residential program offerings (e.g. ESAP, HVAC, PLA, Energy Advisor and MFEER) within the utility portfolios;
3) Provide robust quality assurance and quality control protocols that encourage quality installation and drive contractors to obtain additional training and qualifications;
4) Provide robust EM&V feedback loops to inform program enhancements;
5) Integrate with marketing efforts of the broadened statewide "Energy Upgrade California" brand, when launched, and deliver complementary marketing messaging to drive customer demand and contractor participation;
6) Coordinate contractor training, marketing and outreach efforts with local governments, as appropriate; and
7) Develop an incentive structure that drives customers to undertake comprehensive residential retrofits.

Additionally, PG&E will direct at least 25% more of their marketing and outreach budgets for the Energy Upgrade California program to Climate Zones 9-16 in 2013 and 2014, in accordance with Ordering Paragraph 25 of the November 8, 2012 CPUC Decision 12-11-015 approving IOU energy efficiency programs and budgets.

EUC Working Group

Given the ambitious market transformation goals of EUC, its relatively new entrance into the IOU EE portfolio, and its challenges during the first two years of rollout, the IOUs are committed during the 2013-2014 transition cycle to providing the leadership and working with CPUC, CEC, local government staff, as well as relevant stakeholders to convene a statewide EUC Working Group to address relevant and significant issues for adoption in the 2015 IOU program cycle. The IOUs seek a cooperative design and implementation approach that involves all parties with an interest in EUC.

The Working Group will be co-chaired by one IOU, determined by IOU consensus (Sam Diego Gas & Electric), and one non-utility co-chair selected by the Working Group (California Center for Sustainable Energy). The Working Group co-chairs will solicit views and direction from Commission staff on the Working Group operations. The Working group may choose to form subgroups and/or hold stakeholder outreach meetings as necessary.

The Working Group will be composed of all former EUC Steering Committee members, the RENs, EUC Contractors, and other interested stakeholders and implementers, including the EUC implementers, Commission, and CEC staff, and CCSE as the statewide marketing and outreach coordinator.

Where feasible, necessary and relevant, the IOUs will retain the services of qualified consultants or other entities with experience in the whole house retrofit industry to assist in these efforts in the areas of research, facilitation, or other assistance as may be required. IOUs will also engage utilities, non-profits and other stakeholders who may have experience in other parts of the country in deploying whole house programs.

In this regard, the IOUs will hire a market transformation consultant to assist with improvements to the long-term EUC design and to support a constructive IOU engagement in the AB758 process. The Working Group IOU co-chair will be the lead IOU for this contract. Members of the EUC Working Group will be offered the opportunity to substantively shape the work scope and priorities of the market transformation consultant. Timelines and general framework for the market transformation consultant will begin at the first meeting of the EUC Working Group in January 2013.

The EUC Working Group will as necessary to focus on the following issues on a statewide level for consideration in the 2015 program cycle:

1. Role of local governments
2. Software standards
3. Data collection standards
4. Home Assessment standards
5. Home Assessment reporting standards
6. HERS II Ratings and alignment with EUC EE Programs
7. Contractor certification standards
8. QA/QC standards
9. Streamlined project reporting and programmatic best practices
10. Integration of HVAC programs
11. Engagement of California Real Estate Market
12. Development and refinement of Enhanced Basic/Modified Flex Path
13. Identification of Market Transformation Milestones and Metrics
14. Cost effectiveness metrics aligned with Market Transformation goals.
15. Long term incentive structure

16. Applicable AB758 issues

In addition, the EUC Working Group has, and will continue to provide substantive contributions to program design and implementation plans on the following items:

1. Final statewide aligned and streamlined protocols regarding heating, ventilation and air-conditioning (HVAC) emergency replacements and high performing contractors.
   Enhanced Basic/Modified Flex-Path

a) Timelines:
Table 5: Sub-Program Milestones
[Table-5 to be provided as an Excel Attachment to this PIP]

b) Geographic Scope:
Table 6: Geographic Regions Where the Program Will Operate
[Table 6 Geographic Regions to be provided as an Excel Attachment to this PIP]

c) Program Administration
Table 7: Program Administration of Program Components
[Table 7 to be provided as an Excel Attachment to this PIP]

d) Program Eligibility Requirements:

i. Customers:
Single family or multi-family building customers with an active IOU account OR owners or property management firms who own or operate single family or multifamily buildings that are served by an active IOU account, may participate in EUC provided they utilize a Participating Contractor or a Participating Rater per program guidelines.

Participating Contractors or Participating Raters shall be the single point of contact for customers and are responsible for submission of all program requirements. Participating Contractors and Participating Raters will install or ensure installation of all measures in accordance with IOU QA/QC and Measures Installation Standards guidelines in accordance with applicable contractor/ rater participation agreements.

Per program requirements, process, and protocol, for all EUC projects, customers must install a minimum of three energy efficiency measures which support the energy efficiency loading order and must perform appropriate combustion safety testing.

Table 8: Customer Eligibility Requirements (Joint Utility Table)
[Table 8 to be provided as an Excel Attachment to this PIP]

ii. Contractors/Participants:

Participating Contractor Requirements for *Enhanced Basic/Modified Flex* Path and *Advanced Path*

Participating Contractors must be certified and licensed according to all applicable federal, state and local laws. Participating Contractors shall meet, and provide sufficient evidence and supporting documentation for the following minimum requirements:

1. Contractor State Licensing Board (CSLB) license in the appropriate specialty;
2. Bonding and in good standing.
3. Insurance to IOU minimum insurance standard;
4. Execution of a contractor participation agreement;
5. Completion of all utility training course requirements, including Participation Workshop and a 3-Day Enhanced Basic/Modified Flex and/or Energy Upgrade Training, Workshop (for the existing Enhanced Basic/Modified Flex Path), if not BPI-certified Enhanced Basic/Modified Flex or Advanced Training, as appropriate;
6. BPI-certified Building Analyst (BA) to complete Combustion Safety and Carbon Monoxide Protection and all other minimum Health and Safety Requirements specified in the BPI Technical Standards for Building Analyst Professional;
7. Ensure HVAC permits will be pulled on all work that is appropriate per local jurisdiction requirements;
8. Participating Contractors who participate in *Advanced Path* projects must employ at least one staff person who holds an active BPI Building Analyst certification. BPI accreditation is strongly encouraged and may be required of all participating contractors at some point during the program cycle;
9. Additional IOU requirements, as appropriate.

Participating Rater Requirements for All EUC Paths

Participating Energy Upgrade Raters must meet all requirements as a Participating Contractor and must be both HERS II certified and hold an active BPI Building Analyst certification or BPI MF Building Analyst certification as may be applicable. EUC *Enhanced Basic/Modified Flex Path* and *Advanced Path* projects submitted by a Participating Rater must utilize a EUC Participating Contractor for installation of the measures specified by the Participating Rater.

Table 9: Contractor/Participant Eligibility Requirements (Joint Utility Table)
[Table 9 to be provided as an Excel Attachment to this PIP]

e) Program Partners:

a. Manufacturer/Retailer/Distributor partners:

Table 10: Manufacturer/Retailer/Distributor Partners
[Table 10 to be provided as an Excel Attachment to this PIP]

b. Other key program partners:
Table 15: Energy Division, California Energy Commission, local governments, BPI and other standards bodies, as well as other partners
[Table 15 to be provided as an Excel Attachment to this PIP]

f) Measures and incentive levels:

Advanced Path Incentives
Incentives for the *Advanced Path* will be paid based upon modeled site savings energy utilizing any CEC approved simulation modeling software approved by IOUs. Incentives for *Advanced Path* are designed to encourage customers to reach for deep energy savings. *Advanced Path* incentives are for both gas and electric measures provided by the customers' participating utility program.[46] Currently, Energy Pro simulation modeling software is the only approved software for use with EUC. During the 2013-2014 transition cycle, the IOUs will work collaboratively with the CEC and other stakeholders to identify potential approaches to adequately broaden the allowable software under the EUC while containing costs required for needed Commission Staff reviews.

Savings/ Participation Level: % Reduction	Incentive Amount
10%	$1,000
15%	$1,500
20%	$2,000
25%	$2,500
30%	$3,000
35%	$3,500
40%	$4,000
45%+	$4,500

[46] In various service territory where one of the customer's utility service provider (municipality), is not a program participant adjustments may be necessary to the incentive.

Enhanced Basic/Modified Flex Path Incentives
The *Enhanced Basic/Modified Flex Path* customer incentive is up to $ 2,500. The IOUs and RENS are currently collaborating on points for the eligible measures simultaneous to the work paper review process. The *Enhanced Basic/Modified Flex Path* incentives are shown in the table below and will be:

Consistent statewide;

- Lower than the *Advanced Path* incentives;
- Compatible with municipal financing options; and
- Implemented so as to leverage external funding where appropriate.

Participation Level: Points	Incentive Amount
100 Points	**$1,000**
150 Points	**$1,500**
200 Points	**$2,000**
250 Points	**$2,500**

Multifamily Path Incentives
Incentives for *Multifamily Path* will be paid based upon modeled site savings energy utilizing any CEC approved simulation software approved by IOUs. Incentives will be offered on a tiered structure, paid per building on a "per dwelling unit" basis according to the total building energy savings percentage. The tiered approach will reward participants for realizing deeper savings. While a "per unit" approach enables participants to experience economies of scale with larger multifamily buildings.

Ten Year Stepwise Incentive Structure
During the 2013-2014 transition period, the IOUs will meet at least twice with statewide stakeholders to develop a 10 year stepwise incentive structure which will be triggered at defined market transformation milestones. It is anticipated that the plan will include a defined timeline, for incentive update decisions and that incentive level changes will be updated at defined market trigger metrics associated with the number of participating homes (i.e. number of jobs or homes treated) towards the *Strategic Plan* goals. As the number of participants increases over time, incentive levels will be lowered accordingly to reset the incentive amounts.

The IOUs will invite statewide stakeholder inputs to lock in these targets prior to the start of 2015, using every 20,000 homes/dwelling units treated and decreasing

incentive levels in $250 increments as a starting point for discussion. Once the statewide target is confirmed, the IOUs will notify contractors when the program has reached 75%, 90% and 95% of the goal so contractors can plan accordingly.

Table 11: Summary Table of Measures, Incentive Levels and Verification Rates
[Table 11 to be provided as an Excel Attachment to this PIP]

Permitting Requirements
No incentives for equipment requiring a building permit shall be provided any contractor or customer without that contractor or customer certifying that s/he has complied with all permit requirements and utilized a licensed contractor.

Qualified Measures
During the transition cycle, the IOUs will work to better leverage EUC to achieve greater energy savings from plug loads, appliances and swimming pools through:

1. Greater cross marketing of PLA and EUC customers.
2. Work with EnergySoft to find solutions to pool pump modeling.
3. Incorporate lighting and appliance options as a more predominate feature in standard assessment reports to customers.

Enhanced Basic/Modified Flex Path Measures Installed Per Measures Installation Standards:

Base Measures:
Attic Insulation & Attic Air Sealing
Duct Sealing OR Duct Replacement
Whole Building Air Sealing

Flex Measures:
Floor Insulation
Wall Insulation
Duct Insulation
Attic Radiant Barrier
Gas Water Heater
Electric Water Heater
Gas Furnace
High Efficiency AC
Right-Size HVAC Kicker (N/A until QI work paper approval)
High Performance Windows (Phase II)

Stand-Alone Measures:
Variable Speed Pool Pump
Refrigerators
Clotheswashers

Refrigerator/ Freezer Recycling

Advanced Path Measures Installed Per Measures Installation Standards:

Attic Insulation
Cool Roof Installation (CRRC-certified)
Cooling System Upgrade
Domestic Hot Water Heater Upgrade (non-solar)
Domestic Hot Water Pipe Insulation
Duct Insulation
Duct Test and Seal
Exterior Lighting Upgrade – Permanently Installed High-Efficacy
Floor Insulation
Heating System Upgrade
Interior Lighting Upgrade – Permanently Installed High-Efficacy
Low-Flow Shower Head
Radiant Barrier Installation
Thermostatic Shut-Off Valve
Wall Insulation
Whole House Fan Installation
Whole House Air Sealing
Window Upgrade
Other Measures as may be modeled and allowed by IOUs per regional market needs

Ineligible Measures
Screw-In Lighting Fixtures and Lamps
Solar Domestic Hot Water Heater System
Distributed Generation Systems - Solar PV, Fuel Cell, Wind, etc.
Pool Pump Upgrade
Clothes Washer Upgrade
Clothes Dryer Upgrade
Dishwasher Upgrade

Multifamily Building Eligible Measures
Attic insulation upgrade

Wall Insulation upgrade
Floor insulation upgrade
Window replacements – 2008 T-24 standard or better
Cool roof – CRRC rated product
Radiant barrier
Window shading – permanent, non-retractable
Duct Sealing - with HERS test
A/C equipment replacement – Must meet current T-20 standard
Furnace replacement – Must meet current T-20 standard
Premium efficiency motors (ECM included)
VFD controls for CHW, HW, CW pumps
VFD controls for cooling tower fans
Pipe insulation – From ½ inch to 1-inch, or none to 1-inch
Controls optimization (OA reset, zone reset)
Boiler or DHW replacement – Must meet current T-20 standard
Insulate hot water piping – From ½-inch to 1-inch, or none to 1-inch
DHW tank insulation
Add VFD to circulation pump
Update central DHW pump to demand control – From no control to demand control
Common area lighting fixtures – high efficacy hardwired fixtures
Dwelling unit lighting fixtures – high efficacy hardwired fixtures
Lighting controls – Occupancy sensor, photo sensor, or dimmer switch
Outdoor lighting retrofits – high efficacy hardwired fixtures
ENERGY STAR® Refrigerator
ENERGY STAR® Dishwasher (if a dishwasher is installed in pre-retrofit condition)

g) Additional Services:
Table 12: Additional Service
[Table 12 to be provided as an Excel Attachment to this PIP]

h) Sub-Program Specific Marketing and Outreach:
IOUs will conduct integrated as well as program-specific marketing and outreach which will be coordinated with the statewide marketing and outreach program. The utilities may use a range of tactics such as; e-mails, flyers, on-Line marketing, direct mail, bill messaging, social media, local events, ethnic media, and other channels that suit the target audience, the message, and the resources.

Marketing, Education and Outreach plans

1) Objectives
   - Generate greater awareness, understanding and for the whole house system concept;
   - Drive response amongst qualified customers to seek out whole house projects; and
   - Build demand in the marketplace for home retrofit services.

2) Target Audiences
EUC marketing and outreach aims to include all stakeholders in the retrofit process, throughout the life of the program. This will help to ensure that all audiences receive consistent information and will enable a more informed dialogue about program specifics, in an effort to continuously engage stakeholders in the energy efficiency retrofit process. The initial target group is comprised of the following audiences listed below based on the results of the statewide market survey research.

Target Group:

- Single family residential customers in proposed targeted segments
- Multifamily residential customers
- Residential customers with a history of prior EE engagement including, but not limited to: rebates, online tool enrollment and energy audits
- Local governments, community-based organizations and other stakeholders (i.e. the realtor community)
- Efforts may target select public events and work with local earned media to publicize the program's benefits.

3) Keys to Success
Execution of a successful campaign that introduces customers and contractors to the benefits of comprehensive home energy efficiency retrofits will largely be dependent on funding available to support outreach to all audiences. With that in mind, following is the proposed approach and specific tactical recommendations that the IOUs aim to pursue, funding permitting:

- Continue to utilize a statewide brand and message; and a creative envelope for EUC marketing efforts to avoid market confusion;
- Co-brand where feasible;
- Coordinate with local governments;
- Engage contractors, stakeholders and local governments in generating customer demand; and
- Provide collateral pieces to participating contractors to assist in lead generation and education;
- Employ expanded community based marketing approach; and
- Use a variety of innovative marketing strategies such as time of sale assessment vouchers.

i) Sub-Program Specific Training:
Specific workforce development efforts supporting EUC include the following:

- CEC/EDD: California Clean Energy Workforce Training Program Community college programs;

- Third party programs; and
- IOU training offerings (IOU trainings will serve as backup if required. IOU courses do not duplicate modules available in the marketplace but will serve backup role in the event that a market need is identified and best served by the IOU Energy Training Centers).

EUC will be coordinated with the statewide IOU WE&T program, local government residential retrofit and contractor training programs that are tied directly to workforce education and training efforts on a state and federal level. In addition, IOU WE&T programs will continue to offer both building-block house as a system courses that educate students on the concepts that form the foundation of home retrofit programs when a needs assessment determines that these areas require attention. Those concepts include:

- Advanced house-as-a-system concepts and issues;
- Combustion and other safety training updates;
- Green building techniques applicable to the program;
- Blower Door Based Air Sealing;
- Codes and standards (Title-24) implications;
- Advanced lighting, HVAC technologies and problem solving; and
- Business training (including the enhancement of sales, marketing, training, and accounting skills).

Contractor training requirements will be based EUC requirements and will provide contractors necessary training without sacrificing any considerations for applicable safety requirements.

Contractor recruitment efforts will be conducted primarily by third party program implementers – a model that has proven successful in the EUC and statewide HVAC programs in the 2010-12 program cycle. Program implementers will continue to primarily recruit contractors through:

- The network of contractors already participating in IOU HVAC, insulation and weatherization programs;
- Direct outreach through trade groups with locally active memberships;
- Workforce development departments (to target unemployed general contractors); and

Program implementers will verify and enroll Participating Contractors and Raters and provide required program participation related training. Once enrolled, the Participating Contractor and Rater lists will be posted in a centralized location for customers to view. IOUs will direct customers to appropriate websites for lists of eligible Participating Contractors and Raters.

Upon completion of 2012 Energy Upgrade California process evaluations, the IOUs will convene a workshop to review workforce training needs.

j) Sub-Program Software and/or Additional Tools:

a. List all eligible software or similar tools required for sub-program participation.

- Energy Pro energy simulation modeling software

b. Indicate if pre and/or post implementation audits will be required for the sub-program.

Pre-implementation audit required _x__ Yes ___ No
Post-implementation audit required _x__ Yes ___ No

c. As applicable, indicate levels at which such audits shall be rebated or funded, and to whom such rebates/funding will be provided (i.e. to customer or contractor).

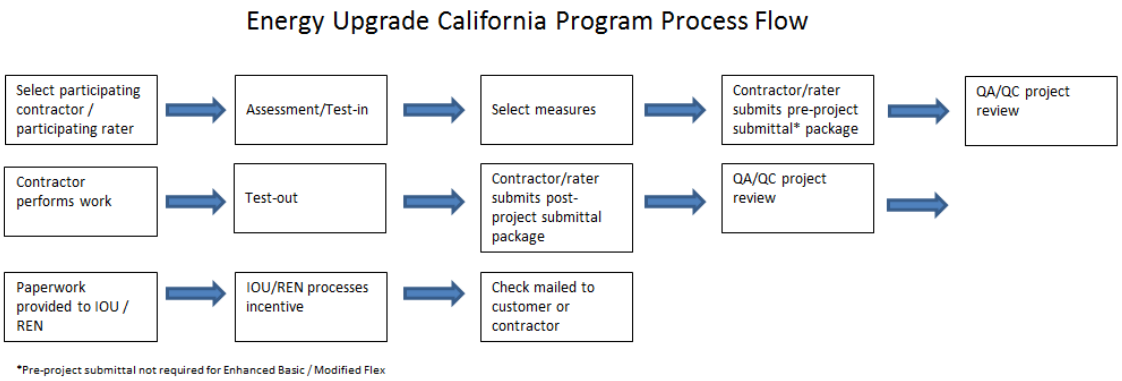
Table 13: Post-implementation Audits
[Table 13 Program to be provided as an Excel Attachment to this PIP]

k) Sub-Program Quality Assurance Provisions:
Payment of customer incentives will be tied to the contractor's delivery of full job required program documentation. Program implementers will randomly select a minimum of 5 percent of each participating contractor's reported retrofits for onsite job verification and review 100 percent of the job data inputs from contractors. Verifications will include homeowner interviews, intensive visual checklist inspections, and selective retesting of key items. A subset of these energy savings estimates may later be validated against the first year's after-retrofit utility bills plus climate data and homeowner interviews as needed to identify changes in other factors affecting energy use. IOUs will collaborate to develop QA/QC plans and documents that reflect statewide uniformity to the greatest extent possible. QA/ QC documents and standards will be updated regularly with contractor input and will include:

1. QA/QC Process and Protocols
2. Minimum installation standards for all allowable measures
3. Emergency and Fast Track equipment replacement protocols.
   a. Exhibit A attached includes existing and continuing IOU Emergency and Fast Track protocols.
4. Permitting requirements
   a. EUC shall support Heating Ventilation and Air Conditioning permit acquisition as a matter of course.
   b. EUC jobs involving HVAC replacement must include submittal of the HVAC permit number and a contractor certification that appropriate permits have been obtained, for inclusion in program records.

Table 14: Quality Assurance Provisions
[Table 14 to be provided as an Excel Attachment to this PIP]

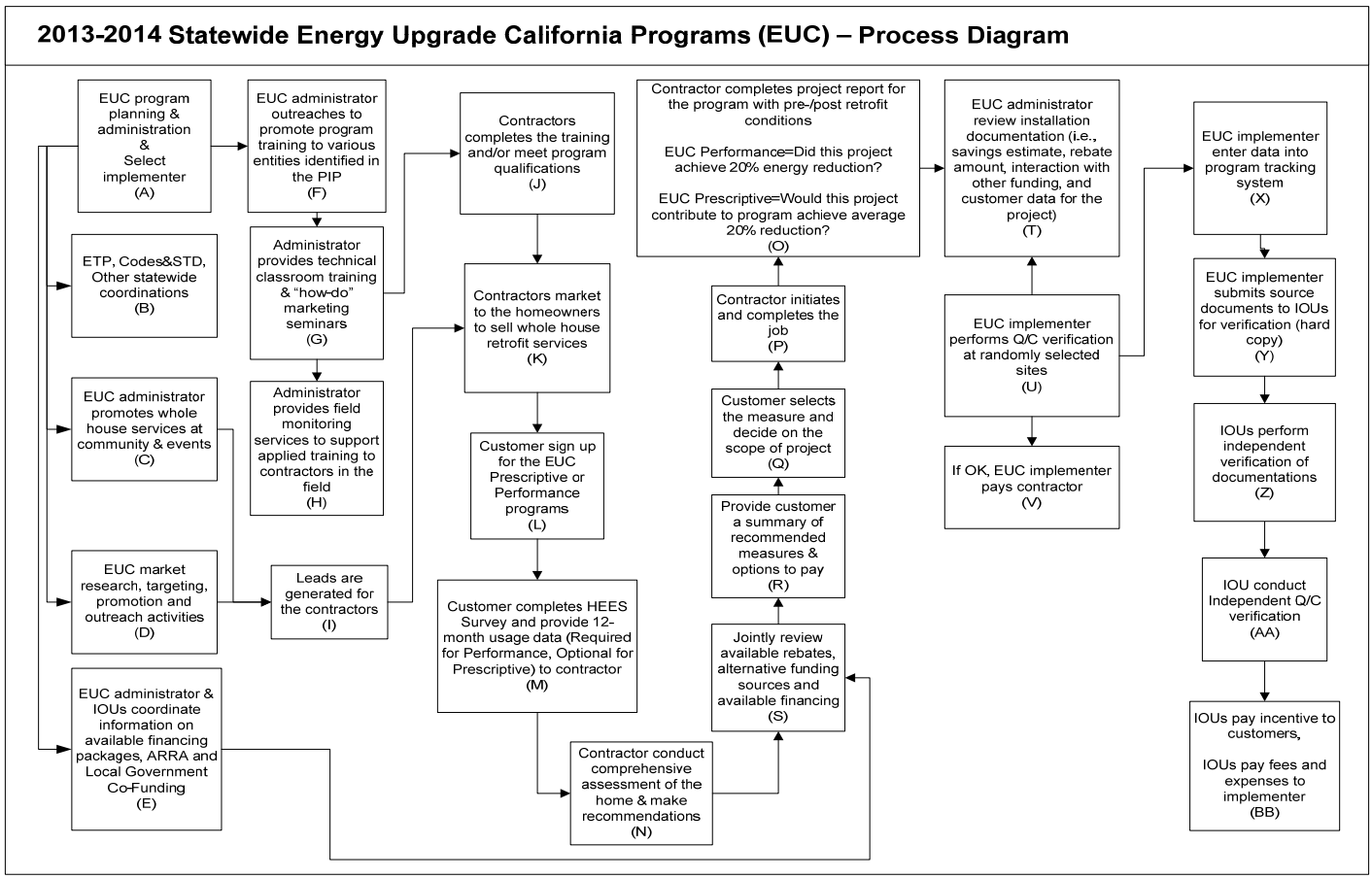
l) Sub-program Process Flow Chart:



m) Cross-cutting Sub-program and Non-IOU Partner Coordination:

Table 15: Cross-cutting Sub-program and Non-IOU Partner Coordination
[Table 15 to be provided as an Excel Attachment to this PIP]

n) Logic Model:



11) Additional Sub-Program Information

a) Advancing Strategic Plan Goals and Objectives:

The EUC is consistent with the requirements of the *Strategic Plan*. It addresses the Whole-House Strategy of the *Strategic Plan* by influencing contractors and customers to implement comprehensive home retrofit energy efficiency measures through either the *Enhanced Basic/Modified Flex Path*, *Advanced Path* or *Multifamily Path.*

EUC responds to the need for much larger energy savings in existing homes and multifamily buildings than is possible with conventional checklist audits or single measure improvement (prescriptive) programs. It addresses the key "whole house" strategy of the *Strategic Plan* by influencing "decision triggers" to improving energy efficiency and understand advantages to expand participation to reach savings goals. This program is also a vehicle to increase penetration of shell upgrades and cost effective, high efficiency appliances, water heaters and HVAC upgrades. The *Strategic Plan* further states that a similar approach must be developed for multifamily housing. The program will help to achieve the following goals identified in Section 2 of the *Strategic Plan*:

Table 6. EUC Alignment with California Long Term Energy Efficiency *Strategic Plan*			
Residential and Low Income Goal 2: Existing Homes			
Goal Number	Strategy	**EUC** Strategy	Integrated Programs & Activities
2-1	Deploy full-scale Whole-House programs.	Monitor performance of selected lower energy homes. Design implement, monitor and continuously improve full-scale programs for whole-house energy efficiency and renewable energy retrofits.	Programs: EUC , Solar, Demand Response, MFEER, Plug Loads, ESAP Marketing: Customer segmentation and local coordination EM&V: Studies to provide early feedback and establish baselines
2-2	Promote effective decision-making to create widespread demand for energy efficiency measures.	Continue to offer Energy Advisor programs online, by mail, and over-the-phone to provide customers with information to promote effective decision-making, in combination with other segment specific marketing outreach and educational activities.	Programs: Energy Advisor EUC , MFEER Marketing: Customer and contractor education to promote building efficiency and appropriate EE behaviors in a segmented manner
2-3	Manage research into new/advanced cost-effective innovations to reduce energy use in existing homes.	Coordinate with Emerging Technologies and other programs to integrate market-ready technologies into the Whole House offering when appropriate. Promote commercialization of home energy management tools including AMI-based monitoring and display tools	Programs: Emerging Technologies, Demand Response, Solar, and others
2-4	Develop financial products and programs such as on-bill financing to encourage demand for energy efficiency building products, home systems, and appliances.	Ensure that customers are aware of the most effective and attractive financing packages that are available to them.	Programs: EUC Coordination: Local government partnerships and other state/federal financing entities
2-5	Increase Title 24 compliance through specific measures leading to aggressive statewide enforcement.	Partner with local governments to expedite the permitting process to decrease the barriers to entry in the home performance industry.	Coordination: Local government partnerships

b) Integration

1) Integrated/coordinated Demand Side Management: As applicable, describe how sub-program will promote customer education and sub-program participation across all DSM options. Provide budget information of non-EE sub-programs where applicable.

The IOUs have identified IDSM as an important priority. The IOUs plan to monitor the progress of other IDSM efforts and to work closely to identify comprehensive integration approaches that feed into the overall statewide strategy and to implement best practices as rapidly as practical.
The statewide EUC is a platform for integration of solutions to the residential customer and is intended to provide an easy entry point for customers and contractors that ultimately integrate other programs for whole house and customer solutions. As awareness of the cost-effective opportunities in whole house retrofits grows through training and education efforts, customers will be

presented with the ability to integrate Demand Response and properly-sized onsite generation.

With the inherent synergy that exists between the energy efficiency awareness efforts of CSI and the Whole House programs, EUC information will be made available to IOU teams in call-centers with the intent of providing a EUC introduction to customers or contractors interested in CSI. Coordination with stakeholders who maintain approved solar contractor lists may also provide an opportunity to deliver the whole house message to parties interested in installing solar systems.

The statewide Energy Advisor program will also provide a unique nexus between CSI and EUC. CSI customers are required to conduct an energy efficiency survey prior to installing solar, which presents a unique opportunity to educate customers on the benefits of improving the efficiency of their home prior to purchasing solar equipment. These efforts are expected to include, but will not be limited to:

- EUC links and information on IOU CSI sites;
- Links to EUC landing pages from Energy Advisor;
- Targeted messaging during and after each survey;
- Information about EUC incentives; and
- Educational information that encourages customers to "reduce then produce."

In addition, any contractors who work onsite with customers can provide delivery channels for DR programs information or installation of DR technology.

EUC will also serve as a platform to integrate technology advancements in DR and Advanced Metering. IDSM efforts will be part of an ongoing conversation with customers to enhance program offerings and increase their participation in DSM efforts over time.

Table 16: Non-EE Sub-Program Information
[Table 16 to be provided as an Excel Attachment to this PIP]

2) Integration across resource types (energy, water, air quality, etc.): If sub-program aims to integrate across resources types, please provide rationale and general approach.

   EUC is designed to deliver comprehensive solutions to customers while integrating across resource types to maximize customer benefits not only in terms of energy savings, but through improvements to occupant health, safety and comfort. Primarily, there are opportunities for water efficiency and indoor air quality improvements.

One of the major benefits of comprehensive home retrofits is improved indoor air quality. Residents will notice more consistent temperatures throughout their home and in many cases, improved indoor air quality. The embodied energy in water distribution will become an increasingly important part of utility programs. The consumer education process in the house-as-a-system approach will provide an opportunity for local governments to present customers with information on non-energy savings inherent in comprehensive retrofits.

[This information can be found in Table 16 Non-EE Sub-Program Information to be provided as an Excel Attachment to this PIP]

c) Leveraging of Resources:

Local Governments

i. SDG&E

Local Governments play a unique and important role in the promotion and advancement of Energy Upgrade California. Beginning in 2009, when the American Recovery and Reinvestment Act was passed and programs like the State Energy Program and the Energy Efficiency & Conservation Block Grant program, jurisdictions across the state were given the unique opportunity to make significant investments on energy programs. Because of the unique and collaborative relationship that exists among the local jurisdictions and SDG&E, and the existence of a non-resource local government partnership program, the San Diego region saw the development of a number of community focused residential retrofit programs including innovative marketing pilots, specialized workforce education & training programs, and a variety of rebate and loan programs that sought to incentivize residents to perform energy upgrades in their homes.

Over the course of the last few years, SDG&E has worked closely with each local government to ensure local programs are closely coordinated and achieve the highest level of collaboration and consistency across the region. Building off the lessons learned over the course of the last few years as well as the unique authorities afforded local governments, SDG&E and the local government program advisory group has developed the following list of key roles that local governments will play to advance Energy Upgrade California during the transition cycle.

1. Incorporate building retrofits & building occupant health and safety issues into Climate Action Plans, General Plans, and other relevant planning and long term strategy documents;

2. Leverage community relationships and resources to market Energy Upgrade California including targeted outreach and education to the community;

3. Provide targeted education on EUC and its benefits to key community stakeholders, business sectors and elected officials

4. Coordinate workforce education and training program activities;

5. Leverage building permit interactions to encourage EUC enrollment and work to develop streamlined permitting process as it relates to EUC;

6. Leverage unique authority to encourage/require building rating/audits to drive customers to EUC;

7. Pilot unique incentive programs such as point of sale audits, to encourage participation in Energy Upgrade California;

8. Work with the financing community to deploy innovative products and services to further enable residential and commercial energy upgrades throughout their jurisdictions.

9. Pilot incentives for Whole Home Energy Rating System II assessment as part of the EUC.

Please refer to the Local Government Partnership Program PIP for budget details associated with these activities.

EUC will coordinate IOU incentives and marketing outreach with local government efforts in neighborhood outreach and contractor recruitment. This effort allows for multiple levels of engagement that, through coordination with local entities, will reach to a neighborhood level that will drive awareness and market adoption.

ii. PG&E

During the development and implementation of the 2010-2012 Whole House Program PG&E partnered and coordinated closely with recipients of American Recovery Reinvestment Act (ARRA), State Energy Program (SEP), and Energy Efficiency & Conservation Block Grant (EECBG) statewide and within the PG&E service territory. In the 2013-2014 Transition Period, PG&E plans to continue to work with and leverage these partners as described in further detail in the Local Government PIP. In addition, PG&E will continue to work closely with the Bay REN on program design changes and coordinating the respective offerings in the market.

iii. SoCalGas

SoCalGas has worked closely with local governments who received American Recovery Reinvestment Act (ARRA), State Energy Program (SEP), and Energy Efficiency & Conservation Block Grant (EECBG) in the last couple of years. This has allowed SoCalGas and local governments to achieve a high level of collaboration and consistency across the service territory. In conjunction with SCE, SoCalGas is in discussion with local governments who are interested in continuing collaboration post ARRA, SEP, and EECBG era. These discussions will determine key roles for local governments, based on lessons learned and their successful offerings from ARRA, SEP, and EECBG grants. Such activities may include:

1. Expanding existing outreach programs to the Real Estate Community
2. Leveraging existing low-interest financing
3. Drawing upon LA County's experience with FlexPath for modifications to meet the CPUC's goal for a more appealing approach.
4. Marketing and Workforce Development support for contractors

iv. SCE

SCE has worked closely with local governments who received American Recovery Reinvestment Act (ARRA), State Energy Program (SEP), and Energy Efficiency & Conservation Block Grant (EECBG) in the last couple of years. This has allowed SCE and local governments to achieve a high level of collaboration and consistency across the service territory. SCE is in discussion with local governments who are interested in continuing collaboration post ARRA, SEP, and EECBG era. These discussions will determine key roles for local governments, based on lessons learned and their successful offerings from ARRA, SEP, and EECBG grants. Such activities may include:

1. Expanding existing outreach programs to the Real Estate Community
2. Leveraging existing low-interest financing
3. Drawing upon LA County's experience with FlexPath for modifications to meet the CPUC's goal for a more appealing approach.
4. Marketing and Workforce Development support for contractors

d) Trials/ Pilots:

1) <u>SCE/ SoCalGas Moderate Income Direct Install-MIDI</u>
The Local MIDI Program will be offered by SCE and SoCalGas to eligible customers residing in single family and multifamily properties (multifamily common areas excluded) served by SCE and SoCalGas. The MIDI Program will coordinate with SCE and SoCalGas' Energy Savings Assistance Program (ESAP) to deliver MIDI measures through select ESAP Contractors. ESA Program infrastructure will be used to administer the

MIDI Program. When working in joint SCE/SoCalGas territory, shared contractors will offer both IOU's Program measures. The MIDI Program will encourage residential owners/property managers of single family and multifamily properties to install comprehensive energy efficiency improvements.

The EUC Program traditionally requires significant financial contributions by customers who wish to participate. The MIDI Program closes the financial gap by installing no-cost measures thereby reducing the total amount of money a customer would need to invest in their property in order to participate in the single family or multifamily EUC Program.

SCE and SoCalGas propose:

- To implement a MIDI trial with a set goal of 2,000 units served
- Develop a scalable program design for larger rollout in future cycles.
- Evaluate delivery of MIDI Program utilizing existing ESA program infrastructure.

1) Customer/Living Unit Eligibility

To participate, the following guidelines must be met:

a. participants must be income eligible (between 201% and 250% of FPG)
b. living unit must not have received ESAP services after January 1st, 2002
c. living unit must meet the current ESAP/MIDI minimum measure requirements

2) Measures

(ESA program approved measures excluding appliances)

3) Contractors

SCE and SoCalGas will coordinate with select experienced joint ESAP contractors to perform an assessment of the living unit, complete customer enrollment, and install measures as applicable in the MIDI Program trial.

2) SDG&E Trial Incentives

SDG&E may explore additional incentive trial offerings for customers who perform an HVAC QI installation as part of a scope of work. Additional trial integration offerings may include offering IHDs, PCTs, or other enabling technologies for advance path customers who achieve certain saving levels.

12) Market Transformation Information:

1) Summary of the market transformation objectives of the program.

The EUC program is designed to fulfill the goals of the *Strategic Plan* by guiding and incenting home and building buyers, owners and renovators to implement a whole house approach in energy consumption undertaken in their purchase and use of existing and new homes and buildings, home and building equipment (e.g. HVAC systems), household appliances, lighting and "plug load" amenities. The target is all existing homes in an effort to realize the maximum energy efficiency potential via the delivery of a comprehensive package of cost-effective whole-house and whole-building energy efficiency retrofit measures. These programs will include building shell upgrades, high-efficiency HVAC systems – appropriately sized for the building structure, and emerging deep energy reductions in the lighting, appliance, plug-load and other residential oriented sectors. This initiative will be structured around a comprehensive audit, installation of the variety of retrofits required across the entire building structure, and access to attractive financing programs. The EUC effort will be achieved via the parallel and coordinated efforts of the utility programs, partners and other private market actors, and the State and local government policies and programs made available. As IOUs implement a system of automatic meters and wide-area network to enable data transport, the IOUs and customers will have the opportunity to integrate additional home automatic systems and integrated energy management features into the home (i.e., interim Intelligent Home Network, comprehensive Home Automatic Network and etc.) to support IDSM integration and deployment. The Plug Load and Appliance Program will have the potential to offer not only hardware based energy savings, but also comprehensive behavior savings opportunities.

2) *Identification of the relevant market actors and the relationships among them*
Energy Upgrade California is designed to serve residential homeowners, moderate income households and property owners and managers. For the 2013-2014, the program consists of the following paths:

- Energy Upgrade California:
  - *Enhanced Basic/Modified Flex Path*
  - *Advanced Path*
  - *Multifamily Path*

Energy Upgrade California is a contractor lead program in that it is the local contractor who interfaces with the customer, markets and sells the concept of Whole House Retrofits, and completes the actual work. The Statewide Process Evaluation (5/1/12) revealed that 32% of participants first heard about the EUC program from a contractor. A number of Local Governments, most initially supported by CEC/ARRA funding during the 2010-12 time frame, also support the program via local marketing and incentive offerings. Coordinated on a Statewide basis – the IOUs offer consistency in program scope (to the degree possible) and a consistent marketing message.

3) A market characterization and identification of key barriers and opportunities to advance demand-side management technologies and strategies

Market Characterization

The IOUs statewide Energy Upgrade California program has initially focused on training a pool of qualified contractors available to perform these comprehensive retrofits. The number of individuals with active BPI certifications grew dramatically between January 1, 2010 and November 1, 2011. Total active certified individuals grew from 65 to 1,596. The number of certifications (individuals may have more than one type of BPI certification) grew from 88 to 2,349. The 2010-2012 PG&E and SCE Whole-House process evaluation study by SBW/ODC/ASW produced a number of findings, including:

Overarching program participant profile

- The program participation is primary through the *Advanced Path* and there is little engagement in the *Basic Path* (from 2010-12) service.
- *Advanced Path* jobs report energy savings of 30% average in this first program phase.
- The average cost per job ranges from $13,000 to $16,000
- The utility incentives covered typically 23% to 27% of the project costs.
- Despite the large supply of program contractors, only a limited pool of larger contractors complete the majority of the projects
- Many – 44% of participants – used financing to pay for their projects.

Contractor recruiting/training/mentoring—from SCE's in-depth assessment

- There are widespread contractor performance gaps despite a certification requirement (i.e., BPI),
- The current contractors' participation training does not adequately prepare them for job processing expectations and the rigor of the QA/QC process,
- BPI certification does not guarantee a standardized job performance level

- Since the requirements for certification often vary (i.e., (1) on-line training versus in-person classes, (2) different region may place different emphasis, i.e., Vermont may focus more on heating, while California may focus more on HVAC).

For the targeted population—from PG&E's in-depth market effectiveness assessment

- 29% of the targeted population are aware of Energy Upgrade California (EUC),
- 13% of the targeted population reported seeing logo displayed,
- 3% of the targeted population have visited the website,
- 43% of the targeted population has been exposed to at least one marketing treatment from EUC.
- Among those "aware" in the targeted population, 27% first heard of the program from radio, (PG&E did not do radio ads but the local governments

did), 18% from direct mail, 11% Newspaper, and 10% each for Word-of-Mouth, Internet and Television.

- Among workshop participants, word-of-mouth and events are the most effective communication channels.
- Program homeowner participants ranked "comfort", "reduced energy bill", "benefits of the incentive" and "home energy assessments" as important reasons for why they participated.
- Contractors report the most effective messaging in their opinion are the messages of: Comfort, Incentives, Lowering energy bills

Market Actors:

- Homeowners/renters & property owners/managers
- Contractors
- Real Estate Professionals
- Financial Institutions
- Property Appraisers
- Local governments

Relationship Among the Market Actors:

The contractor community is the key actor with the EUC. They are the program actor who outreaches personally to the owner of the building and home and communicates the concepts of approaching a building on an entire whole basis. And it is the contractor who proposes the appropriate work and completes the retrofit. The contractor provides the linkage between the EUC and the customer who receives the rebate.

Working together, the real estate professional, appraisal and financial communities are market actors that can help push energy efficiency in the home resale market. Realtors can be educated to differentiate the advantages of purchasing energy efficient existing residential structures to prospective home buyers. Working with the appraisal community to perceive installed energy efficient measure in a home as monetary assets to a structure thus increasing the property's value can be a significant push to the acceptance and importance of energy efficiency and financial institutions recognizing this effort to provide exceptional financing opportunities to prospective home buyers for their investment in an energy efficient home.

Many local governments were very active in the EUC sector in the prior 2010-12 cycle as supported by ARRA funding. Some of those local government programs will be continuing on into the 2013-14 program cycle. The IOUs will continue to provide EUC as a foundation offering to our customers, and local governments can continue to build upon these (with additional rebates) or support these with customized marketing programs. The IOUs will coordinate and partner with local governments in an effort to achieve the synergy possible between these aligned efforts.

Opportunities to advance demand side management technologies and strategies:

Building owners who have committed to a EUC retrofit solution will have taken the ultimate step in applying energy efficiency technology to minimize their energy usage. They have evidenced their willingness to pursue minimizing energy usage, and are therefore self-identified as highly likely to embrace the next step(s) of demand side technologies and strategies to further minimize energy usage. So the next phase of energy reduction for the EUC retrofit customers will be the variety of demand side reduction programs that the IOUs can make available.

Key Barriers & Opportunity for Intervention:
The barriers for this program for the homeowner sector are the:

(1) Relatively high cost of home assessments,
(2) Relatively high gross costs of comprehensive energy upgrades,
(3) Market not aware of additional non-economic values resulting from comprehensive energy upgrades,
(4) Fledgling contracting and supporting industry for existing home energy upgrades,
(5) Low consumer awareness of incentive subprograms and the concepts of comprehensive home energy assessments and upgrades,
(6) Lack of common home rating protocols and common vernacular for the market to assign value to homes which undergo comprehensive energy upgrades,
(7) The economic downturn and its impact on the residential housing sector.
(8) Contractor awareness and access to information,
(9) Access to financing,
(10) Lack of access to skilled labor.

Note: Potential participants who have attended a workshop (PG&E) also explain their lack of participation in that they haven't been able to contact/find a contractor yet.

For the owners and/or managers of multifamily buildings, there are another set of barriers, closely aligned to those for private single-family homes, but different in some very important dimensions:

(1) Lack of knowledge regarding energy efficiency as well as the comprehensive programs that are offered by the IOUs,
(2) Challenge of the "split incentive" where it is the building owner/manager who must pay for all building improvements, including those inside of the individual rental units. But it is the tenants of the unit that pay the energy bills and therefore receive the immediate benefits of the energy efficient investment (by the landlord),
(3) Multifamily buildings are managed as businesses, where capital for major improvements must be borrowed. But the extended ROI for most energy efficiency projects is longer than the few years that most business allow for recouping their investments,

(4) To implement a "whole building" retrofit, the apartment owner/manager must typically bring in several specialty contractors for multiple visits, which in tenant occupied units is a very challenging task,
(5) Tenants having to out of the rental units during retrofit work, as well as the management time required on behalf of the building owner/manager – is a costly investment of resources,
(6) Major retrofit often can only happen when the rental unit(s) is unoccupied – which is a significant loss of income for the owner/manager,
(7) Managed as a business – multifamily building owners/managers are not inclined to replace any major building component or energy system prior to its actual wear-out/break-down. Building retrofits usually take place toward the "end-of-life" of key components (HVAC – for example) – but not when they break-down. Building owners/managers cannot afford the impact on tenants of having key systems not functioning for any length of time.

4) A description of proposed intervention(s) and its/their intended results
The EUC seeks to address these barriers for private single-family homes through:

1) Continued marketing of Energy Upgrade California and whole house concepts. (Barrier 3, 5, 8)
Intended Results: Increase awareness

2) Continued contractor recruitment, training and mentoring. (Barrier 4, 5, 8, 10)
Intended Results: Continue to maintain and improve the supply and quality of the contractors serving the program

3) Expanded customer uptake through EUC incentives. (Barrier 1, 2, 5)
Intended Results: Use incentives to reduce the barrier of entry into the comprehensive retrofit projects
4) Offering of Financing programs (by IOUs and/or other entities) (Barrier 1, 2, 9)
Intended Results: Provide building owners the upfront cash they need to borrow to invest in a retrofit project, and amenable loan terms by which to repay that loan (note: this program component will be particularly important in the multifamily sector).

5) Continued stakeholder outreach to address barriers. (Barrier 1, 3, 4, 5, 6, 8, 10)
Intended Results: Leverage resources outside the IOUs to address market needs

6) Continued partnerships with local and state government to address barriers. (Barrier 1, 2, 3, 4, 5, 6, 8, 9, 10)
Intended Results: Leverage local government resources to engage communities and targeted population to participate in the program

And for EUC *Multifamily* the barriers will be addressed by these actions:

1) To improve a property owner or manager's energy efficiency knowledge, the *Multifamily Path* would seek to leverage comprehensive investment grade building assessments to identify potential energy efficiency opportunities. (Barrier 1)
2) To address split incentives and cost of upgrades, the *Multifamily Path* would integrate with the existing Energy Savings Assistance Program ("ESAP") and the Multifamily Energy Efficiency Rebate ("MFEER") Program. This would provide comprehensive services to the building, including "low cost" or "no cost" tenant measures in conjunction with the EUC *Multifamily Path* whole building incentives in order to maximize energy savings for the up-front investment. (Barrier 2)
3) Incentives would assist property owners or managers with overcoming a wide array of market and financial barriers which may otherwise prevent energy efficiency upgrades (Barrier 1, 5)
4) Create a single point of contact that would assist the property owner or manager navigate through the incentive and retrofitting process. This approach would provide support in understanding the various program rules and assistance in determining eligibility. The property owner or manager would be guided through an easy and streamlined preliminary assessment to establish feasibility and estimate project cost for the *Multifamily Path*, with an eye toward leveraging all eligible programs. (Barrier 4)
5) Target buildings planning on or undergoing renovation projects to limit customer time burden and lost rental income. (Barrier 4, 5)
6) Multifamily sector is comprised of a wide diversity of properties which can be segmented by: 1.) rental rate (low – medium – or high; and/or 2.) size of the building and also size of the company that owns or manages the building. Defining the unique concerns and needs of building owners and managers by these variables of tenant socio-economic status and ownership/management structure will allow much more effective messaging and marketing communications. (Barrier 1, 2, 3, 4, 7)
7) On Bill Financing or Repayment program which could be focused on the tenant or the common property energy agendas. This program will provide access to capital to fund investments in energy efficiency upgrades for buildings at an attractive interest rate. (Barrier 2, 3, 7)

5) A coherent program or "market" logic model

The EUC is designed to use a market transformation framework to pull in new measures and push out the mature measures. The diagram below describes this iterative process.

EUC will be serving both homeowners and property owners/managers, with the intent to coordinate its program activities with the low-income program to meet special needs. Like the other market transformation programs, the EUC program, will work with Emerging Technology (I), Plug Load & Appliance, Residential HVAC Programs and other residential programs to leverage new and innovative technologies and

applications, while pruning more mature technologies and applications from program offerings. These program interactions are described in the EUC Program Key Support Activity Process Diagram below. These interaction and coordination decisions will be facilitated by IOUs' Decision Panel (A) as indicated in the logic model.

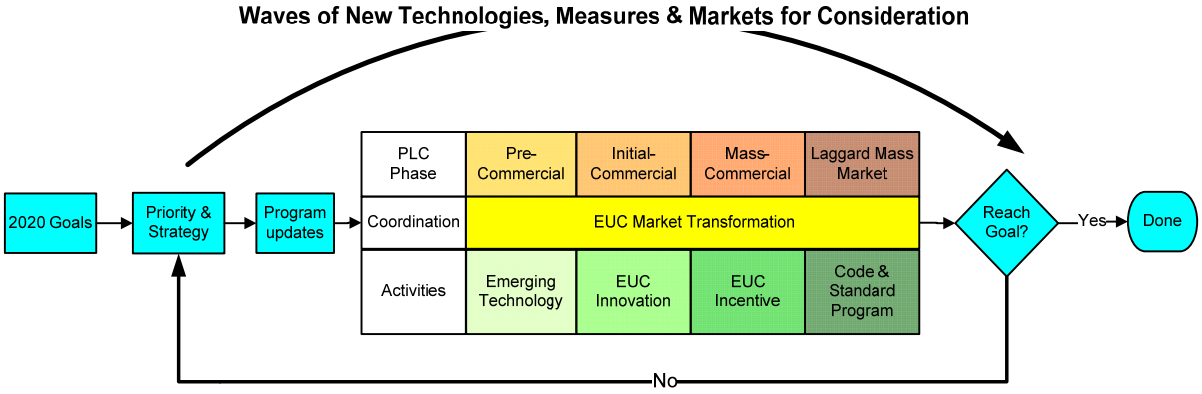
To reduce market barriers, the program's activities are designed to "get the word" out about the benefits of comprehensive retrofits through both mass marketing (D) as well as ground-up individual outreach for neighborhoods and communities (C), by working with local governments and entities. To help property owners understand their energy consumption profile (E), the participants will be encouraged to use an Energy Advisor survey (E) to gauge the overall consumption profile prior to making retrofit decisions, thus respecting the load order of implementation cost effectiveness, and to engage and motivate additional behavior-oriented energy efficiency and conservation actions. To ease the financial burden of the project cost and investment, the program will make financing packages and information available to prospective participants (G).

The program recognizes the importance of having a pool of qualified and competent contractors available to meet the market needs (J & O). The program offers BPI certification training as well as participating contractor ongoing training and mentoring to meet the needs of the workforce and program quality control requirements. This increase in the quality and the quantity of the labor pool, will contribute to contractors' performing projects, outside of the program, to meet deep energy retrofit needs, leading to non-participant spillover effects (R, S & V).

The expected outcome of this program includes increased and improved awareness, knowledge and attitude (AKA) of homeowners and apartment owners towards understanding the benefits of deep energy retrofits (P). After realizing these benefits from program participation, the participant further enjoys other non-energy benefits such as improved comfort of the house and increased value of their properties. The increased value in the property will become more pronounced as the state finalizes its home rating system, so the home purchasers will be aware of the inherent value of properties complete with deep energy reduction retrofits (U). All of these benefits will help the program participants to continue property improvements outside of the program and outside of the program offerings, leading to spillover effects (T). These participant and non-participant spillover effects will eventually change the overall composition of the housing stock at the market level, making housing and building code ratcheting possible for society (X & Y). These codes and standards changes will lead to further reduction of energy consumption at the market level leading to fulfilling the objectives of the California Long-Term energy and environmental policies (AA).

For the benefit of readers, the associated Program Performance Metrics (PPMs) and appropriate Market Transformation Indicators (MTIs) are identified in this logic model. Additional key program support activities are diagramed as a process diagram for further illustration. The EUC program will have the option to conduct additional

pilots/trials to test technologies, applications or other programmatic design and marketing possibilities. The learning from those activities is expected to contribute to the program innovation and further learning.



Within this context, a decision making body, the IOUs Decision Panel, is formed to manage and guide this process. (Please refer to logic model & activities below)

6) *Appropriate evaluation plans, corresponding Market Transformation Indicators and Program Performance Metrics based on the program logic model*
Due to the need to comply with the Decision's timeline for filing the 2013-2014 PIP, and our desire to comply with earlier Decisions that call for gathering stakeholder input in informing market transformation efforts, we suggest that a full market effects evaluation plan be developed during the formulation of the Joint EM&V Plan as described in section "18.1. Evaluation Budget" in Decision R.09-11-014. Until then, we suggest the following approach:

Summative evaluation: Market Effects. The market transformation program's theory and logic model will be used to guide the evaluation efforts. The scope of the market effects study should be defined by the MT program's scope. The timeline for specific market effects that are to be evaluated should be defined by the MT program theory. Among other indicators, the program theory may specify changes in market characteristics that can be evaluated, such as 1) Spillover, 2) attitudes, awareness and knowledge, 3) reductions in specific market barrier, 4) current pricing and product availability, and 5) other market milestones. We will make the following distinction between program "spillover" and market effects: spillover is energy savings not directly tracked by the program, whereas market effects are broader and would include spillover as well as meaningful changes in the structure or functioning of the market.

Formative evaluation: The formative evaluation of a market transformation program is typically performed at the intervention (i.e. program) level. The methods are the same as would be used in a program process evaluation, and would include interviews

with program staff, participants and non-participants as well as an assessment of the program's direct outputs.

Program Performance Metrics:

The IOUs have evaluated 2010-2012 PPMs in Resolution E-4385 for applicability to the 2013-2014 program cycle and propose to work collaboratively with Energy Division to develop revised program targets and PPMs as appropriate for the 2013-2014 program cycle. The IOUs will propose revisions in an advice letter, per additional guidance from Energy Division.

Table 3.1 Short-Term PPMs

On December 2, 2010, the Commission issued Resolution E-4385, approving short-term 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.

This information can be found in Table 3.1 PPM Information to be provided as an Excel Attachment to this PIP.

Table 3.2 Long Term PPMs

PG&E includes long term PPMs[47] per Energy Division guidance received in December 2012. As stated in the Joint Utilities' comments to the Commission in R. 09-11-014 dated November 21, 2011, and discussed between IOUs and ED on January 9, 2013, IOUs plan to finalize long term PPMs in further discussions with involved stakeholders and propose updates to Energy Division at a later date.

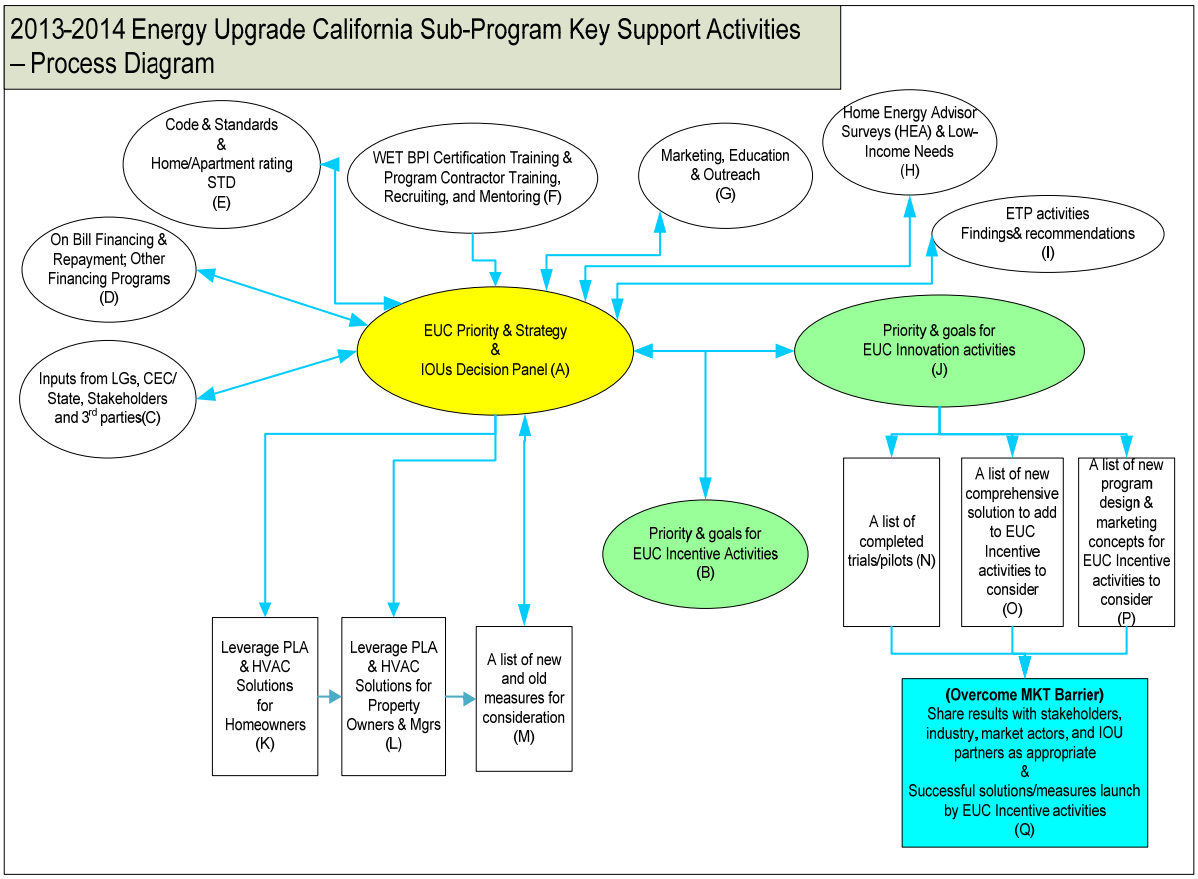
This information can be found in Table 3.2 LTPPM Information to be provided as an Excel Attachment to this PIP.

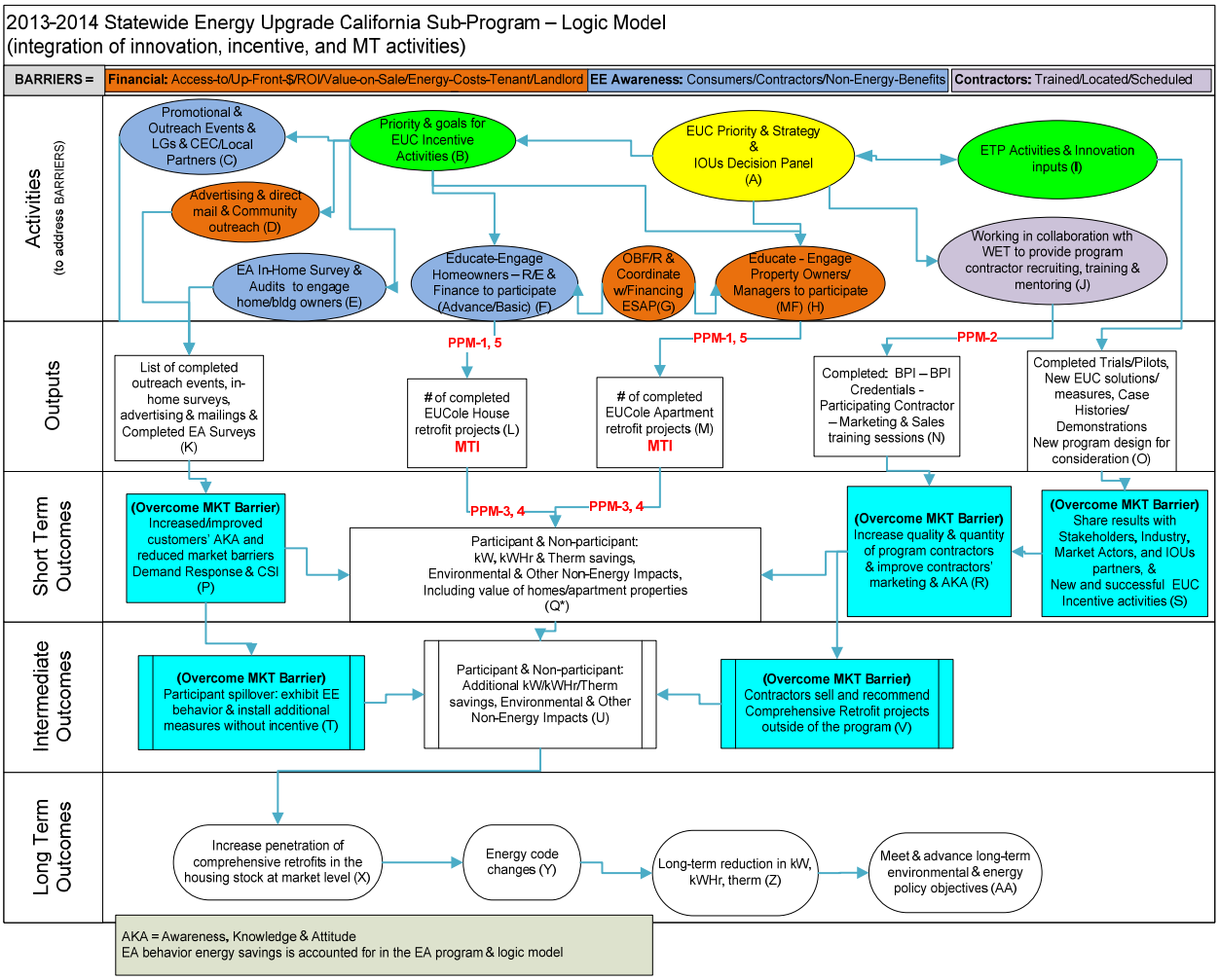
Market Transformation Indicators:

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 guidance from Energy Division received in December 2012, the approved Market Transformation Indicators for 2013-2014 were filed in a Joint IOU matrix in PG&E's January 14, 2013 compliance filing.

[47] From the Energy Division's file "Revised MTIs_10 27 11-formal-release-ED-May-2012.xlsx"

Attribution. Outside of California, most guidelines for evaluating market transformation acknowledge that it is very difficult to attribute market effects to any single program, and nearly impossible to partition out the respective contributions of several coordinated programs on market effects and market transformation. In California, the Framework (Sebold et al., 2001) emphasized that attribution of market effects to programs bears further research. Others (Rosenberg & Hoefgen, 2009; Keating & Prahl (MT Workshop, Nov 2011) suggest that declaring the program's strategic intent through the market transformation initiative's theory and logic model is key to establishing future claim on transformation effects. The methods proposed by Rosenberg & Hoefgen (2009) for attributing market effects to individual programs include a number of approaches, all of them qualitative: self-report of spillover and free ridership; cross-sectional comparisons with other geographic regions; structured expert judging; and case studies. But attribution using a "preponderance of evidence" approach would likely be expensive and still yield arguable results. Attribution by nature focuses on individual program efforts, and we believe the market transformation evaluation discourse should be focused on the overlapping synergy among all programs and influences in the market. We realize we all have a "Shared Mission" of meeting the CPUC's very aggressive Strategic Plan goals. We do not wish to not invest resources in teasing apart which program entity contributed how much, but instead will plan to focus on whether all the market forces across the State of California have succeeded in transforming the market.





13) Additional information as required by Commission decision or ruling or as needed: Include here additional information as required by Commission decision or ruling (As applicable. Indicate decision or ruling and page numbers):

IOU Streamlined Emergency Replacement Protocol and Streamlined High Performing Contractor Protocol

The IOUs have been working closely with the EUC Working Group and its constituent stakeholders, including SolarCity, Efficiency First (formerly CPBCA), BPI, and others to streamline and align emergency equipment replacement procedures. All IOUs have emergency equipment replacement procedures in place, and will continue to work closely with the EUC Working Group to align them to the greatest extent possible.

Similarly, the IOUs and RENs have been in discussions with the EUC Working Group regarding their suggestions for high performing contractors. The IOUs share a commitment to

making the QC process as transparent as possible, and for rewarding high performing contractors for their high quality work with expedited inspections, mentoring opportunities, witness quality-control, and lower inspection rates.

1. SDG&E

a. Streamlined Emergency Replacement Protocol
Per section 7 of SDG&E's QA/QC Quality Assurance and Quality Control Plan:
7.0 Emergency Replacement of Major Systems

7.1 *It is recognized that there may be instances whereas immediate replacement of major systems is required due to health, safety and quality of life circumstances. In the event the customer has immediate need for equipment replacement, the QA/QC process will not interfere with a customer's ability to participate in the EUC.*

7.1.1 Major systems that qualify under this provision are identified as:
   a. HVAC Systems or components
   b. Hot water heater replacements

7.1.2 In the event that a contractor wishes to install a major system identified herein under the provisions of an emergency replacement, the contractor shall contact and notify the QA/QC vendor immediately of the customer's emergency situation and to request accommodation under this provision. The QA/QC provider will determine if the circumstances warrant this provision.
   a. The contractor will provide the QA/QC the customer contact information, make/model/serial numbers of existing equipment and date the replacement will be installed.
   b. The QA/QC vendor may field-verify the equipment to be replaced.
   c. The contractor can proceed with emergency work.
   d. To include the emergency work as part of any EUC project scope, contractors must follow all other procedures for participation in the EUC program.
   e. Any and all changes to the home prior to submitting a Pre-Retrofit Project Submittal Package shall be only for the immediate emergency need pre-approved by the QA/QC vendor and must be documented in the Pre-Retrofit Project Submittal Package.
   f. All other project scope work outside of the approved emergency work must go through the standard QA/QC process as defined in this plan.

b. Streamlined High Performing Contractor Protocol
Per SDG&E's Quality Assurance and Quality Control Plan, SDG&E QA Review turnaround times are guaranteed to be 3 working days or less for both pre and post QA Review (desktop). This time period is consistent with state contracting laws concerning consumer's 72 hr. right to rescind.

Tier 3 contractors, meaning those contractors who have successfully completed a minimum of 30 projects are eligible for random QC Inspection sampling rate of 10% pre and 5% of post project submittals.

In essence this means that high performing contractors with at least 30 projects will have 90% of their pre project submittals and 95% of post project submittals reviewed within 3 working days.

2. PG&E
   a. Streamlined Emergency Replacement Protocol
   The following process that is already in place in 2012 serves the purpose of both an emergency replacement protocol, as well as a Fast Track process for all participating contractors in good standing.

   The general policy for all equipment replacements performed within the PG&E program is that participating contractors and their subcontractors should wait for a Notice to Proceed to be issued before commencing work on a job for the program. However, in order to proceed with emergency replacements or expedited upgrades due to customer specific needs, contractors may proceed within the guidelines of this Fast Track Process. In order to be eligible for this Process, participating contractors must be active and in good standing under the PG&E program.

   Upgrades may be started before the Notice to Proceed is issued if the participating contractor is confident that the job qualifies for the Program. Prior to adjusting or installing measures, the contractor must perform a comprehensive test-in, including combustion safety testing, to document the pre-existing conditions. The contractors should take pictures to document uncommon or unique situations.
   Participating contractors that choose to perform work without the Notice to Proceed accept full liability that the rebate funds have not been reserved and that their customers may not be eligible.

   In order to make the Fast Track Process work for participating contractors and their customers, the PG&E program recommends that the contractors do the following:

   - Ask for a copy of recent PG&E bill to validate that the customer has an active account and have a clear understand the Program eligibility requirements
   - Make sure to understand how to use and model homes in EnergyPro proficiently to reduce the chance of error in rebate calculation or delayed application processing
   - If providing a rebate estimate, make it clear in the proposal that it is based on the un-validated energy model savings and may change after the quality control review process
   - Participate in the Process after completing at least 10 upgrades without desktop or field QA issues
   - Submit the application as soon as possible to ensure timely payment to the customer

3. SCE
   a. Streamlined Emergency Replacement Protocol
   Southern California Edison & Southern California Gas Emergency Equipment Replacement Policy for HVAC/DHW System

Due to the climate of Southern California, during the first few months of summer and winter there is a rise in the volume of HVAC emergency replacements driven by homeowners re-engaging their HVAC systems after periods of non-use. Participating Contractors will be involved in these replacements and they have the opportunity to inform homeowners of the additional benefits of the Program. The Emergency Equipment Replacement Policy for HVAC/DHW Systems allows homeowners to take credit for energy savings from emergency equipment replacement provided all of the following conditions are met.

Eligibility

1. The homeowner meets all mandatory *Advanced Path* program requirements as described in the Advanced Package Minimum Specifications and this Emergency Equipment Replacement Policy for HVAC/DHW Systems.
2. The space heating and/or domestic hot water system must have been 'red tagged' or deemed unsafe by the utility, service technician or building inspector; or the system has failed, cannot be repaired and must be replaced.
3. The contractor submits the completed Record of Emergency Equipment Replacement Form within the timelines indicated in the Notification/Authorization Requirements section.

Note: In the event the customer/contractor fail to meet the timelines indicated the project runs the risk of not being able to include the energy savings from the installation of the new equipment in the energy simulation (Energy Pro) model.

Notification/Authorization Requirements

To submit notification and receive authorization to proceed for an eligible emergency equipment replacement, the following steps must be followed:

Step 1: Submit for Pre-Replacement Approval

1. The contractor is required to submit a Record of Emergency Equipment Replacement Form.
2. The contractor is required to complete Sections 1 – 4 of the Record of Emergency Equipment Replacement Form, sign and date the customer/contractor signature section, provide detailed photographic evidence of the existing equipment installed in the residence (clearly showing the area around the existing unit) to include nameplate information (make, model, serial number, etc.) and then provide a scanned copy in .PDF format to EUCA_Processing@icfi.com.
3. Upon receipt of the completed form, ICF will provide written notification of Authorization to proceed via e-mail to the contractor within one business day (8-10 business hours).

Step 2: Receive Authorization to Proceed

Upon Authorization to proceed the contractor may commence installation of the new HVAC and/or DHW equipment.

Step 3: Complete Emergency Replacement and Submit Final Paperwork

1. Upon completion of the installation of the new equipment the contractor shall complete Section 5 of the Record of Emergency Equipment Replacement Form, sign and date the customer/contractor signature section, detailed installation invoice, and then provide a scanned copy in .PDF format to ICF (EUCA_Processing@icfi.com) within five (5) business days of the new equipment installation. If measures installed exceed the scope of written authorization given, credit will not be given for those additional measures. If the paperwork is not received within those 5 business days, the final decision to allow the credit for the installed equipment will be at the sole discretion of Program Management and will not be able to be appealed.

2. The Incentive Reservation Form must be turned into the Program within 30 calendar days of Emergency Equipment Replacement Approval. Failure to do so will result in not receiving credit for installed equipment.

While age, size and efficiency of the existing system are a factor, it shall not be the sole determining factor for selection of equipment replacement. Best practices dictate that any replacement of central heating or cooling systems require submittal of a Manual J load calculation and must take into account all existing and/or proposed energy efficiency measures that will significantly impact load and allow for correct equipment sizing.

If HVAC re-ducting is required in this emergency, the pre-retrofit building simulation model will automatically use the default vintage default tables for total duct leakage. This percentage is not able to be contested, should an appeal situation arise.

Mandatory Documentation for Emergency Space Heating Equipment Replacement
The contractor shall provide information about the existing equipment being removed utilizing the Record of Emergency Equipment Replacement Form. At a minimum, the information collected regarding the existing space heating equipment shall include the following:

- Contractor’s business name, address and phone number
- Date of removal
- Reason for replacement (operational failure; health and safety)
- Manufacturer's name and model number of space heating equipment
- Rated efficiency, output, input from the nameplate
- Fuel type (natural gas, electric)
- Type of system (forced air, hydronic/radiant or combo)
- Type of venting (e.g. chimney, side vent, barometric damper)

The existing space heating equipment must be replaced with equipment meeting the Advanced Package Minimum Specifications. New gas-fired furnaces must have an Annual Fuel Utilization Efficiency (AFUE) of 92% or greater to qualify under the Emergency Replacement Policy for HVAC Equipment.

The contractor shall provide a copy of the invoice for the new space heating equipment and the Record of Emergency Equipment Replacement Form to their dedicated account

manager within 5 business days of written authorization to proceed with the new equipment installation. At a minimum, the invoice for the new space heating equipment shall include the following:

- Contractor's business name, address and phone number
- Date of installation
- Manufacturer's name, model and serial number of new space heating equipment
- Rated efficiency, output, input from the nameplate
- Fuel type (natural gas, electric)
- Type of system (forced air, hydronic/radiant or combo)
- Type of venting (e.g. chimney, side vent, barometric damper)

While replacing the space heating equipment, this may be an opportunity to also replace the central air conditioner with a higher efficiency model. The existing equipment must be replaced with equipment meeting the requirements listed in the Advanced Package Minimum Specifications. Contractor will need to supply the following information about both the new and existing air conditioning unit:

- Contractor's business name, address and phone number
- Date of installation
- Reason for replacement (operational failure; health and safety; Other, please explain)
- Manufacturer's name and model number of cooling equipment
- Type of system (central air, heat pump)
- Rated efficiency (SEER, HSPF),unit size, and cooling output from the nameplate

Mandatory Documentation for Domestic Hot Water Equipment Replacement
The existing domestic hot water system must be replaced with equipment meeting Advanced Package Minimum Specifications. In addition, new domestic hot water heaters must have an Energy Factor (EF) of 0.62 or greater, and new domestic tankless hot water heaters must have an Energy Factor (EF) of 0.82 or greater to qualify under the Emergency Equipment Replacement Policy.

The contractor shall provide a copy of the invoice for the new domestic hot water equipment and the Record of Emergency Equipment Replacement Form to their dedicated account manager within 5 business days of written authorization to proceed with the new equipment installation. At a minimum, the invoice for the new domestic hot water equipment shall include the following:

- Manufacturer's name and model number of domestic hot water equipment
- Type of system (gas, electric)
- Rated efficiency (energy factor)
- Unit size (gallons)
- Input from the nameplate (Btu's)

Mandatory Requirements for Emergency Equipment Replacement Approval

Once administrative approval and written authorization to proceed is granted, the contractor may immediately install the individual measures if the following conditions are met:

1. Provide photographic evidence of the existing system installed in the residence clearly showing the area around the existing unit and detailed pictures of the existing equipment to include nameplate information (make, model, serial number, etc.).

2. The contractor shall provide a copy of the Invoice for the new space heating and/or cooling equipment and the completed Record of Emergency Equipment Replacement Form to their dedicated account manager within 5 business days of the installation of the new equipment (if applicable).
3. The contractor shall provide a copy of the Invoice for the new domestic hot water equipment and the Record of Emergency Equipment Replacement Form to their dedicated account manager within 5 business days of the installation of the new equipment (if applicable).

In the event the customer/contractor fail to meet the timelines indicated the project runs the risk of not being able to include the energy savings from the installation of the new equipment in the energy simulation (Energy Pro) model.

b. Streamlined High Performing Contractor Protocol
Contractors who have completed 10 Enhanced Basic/Modified Flex or 10 Advanced projects and have completed all of their field mentoring and online learning center modules with a passing score can be eligible for their projects to be sampled instead of being selected for 100% pre and post on-site inspection.

4. SoCalGas
   a. Streamlined Emergency Replacement Protocol
   Southern California Gas Emergency Equipment Replacement Policy for HVAC/DHW System
   Due to the climate of Southern California, during the first few months of summer and winter there is a rise in the volume of HVAC emergency replacements driven by homeowners re-engaging their HVAC systems after periods of non-use. Participating Contractors will be involved in these replacements and they have the opportunity to inform homeowners of the additional benefits of the Program. The Emergency Equipment Replacement Policy for HVAC/DHW Systems allows homeowners to take credit for energy savings from emergency equipment replacement provided all of the following conditions are met.

   Eligibility
   1. The homeowner meets all mandatory *Advanced Path* program requirements as described in the Advanced Package Minimum Specifications and this Emergency Equipment Replacement Policy for HVAC/DHW Systems.

2. The space heating and/or domestic hot water system must have been 'red tagged' or deemed unsafe by the utility, service technician or building inspector; or the system has failed, cannot be repaired and must be replaced.
3. The contractor submits the completed Record of Emergency Equipment Replacement Form within the timelines indicated in the Notification/Authorization Requirements section.

Note: In the event the customer/contractor fail to meet the timelines indicated the project runs the risk of not being able to include the energy savings from the installation of the new equipment in the energy simulation (Energy Pro) model.

Notification/Authorization Requirements
To submit notification and receive authorization to proceed for an eligible emergency equipment replacement, the following steps must be followed:

Step 1: Submit for Pre-Replacement Approval
a) The contractor is required to submit a Record of Emergency Equipment Replacement Form.
b) The contractor is required to complete Sections 1 – 4 of the Record of Emergency Equipment Replacement Form, sign and date the customer/contractor signature section, provide detailed photographic evidence of the existing equipment installed in the residence (clearly showing the area around the existing unit) to include nameplate information (make, model, serial number, etc.) and then provide a scanned copy in .PDF format to EUCA_Processing@icfi.com.
c) Upon receipt of the completed form, ICF will provide written notification of Authorization to proceed via e-mail to the contractor within one business day (8-10 business hours).

Step 2: Receive Authorization to Proceed
Upon Authorization to proceed the contractor may commence installation of the new HVAC and/or DHW equipment.

Step 3: Complete Emergency Replacement and Submit Final Paperwork
1. Upon completion of the installation of the new equipment the contractor shall complete Section 5 of the Record of Emergency Equipment Replacement Form, sign and date the customer/contractor signature section, detailed installation invoice, and then provide a scanned copy in .PDF format to ICF (EUCA_Processing@icfi.com) within five (5) business days of the new equipment installation. If measures installed exceed the scope of written authorization given, credit will not be given for those additional measures. If the paperwork is not received within those 5 business days, the final decision to allow the credit for the installed equipment will be at the sole discretion of Program Management and will not be able to be appealed.

2. The Incentive Reservation Form must be turned into the Program within 30 calendar days of Emergency Equipment Replacement Approval. Failure to do so will result in not receiving credit for installed equipment.

While age, size and efficiency of the existing system are a factor, it shall not be the sole determining factor for selection of equipment replacement. Best practices dictate that any replacement of central heating or cooling systems require submittal of a Manual J load calculation and must take into account all existing and/or proposed energy efficiency measures that will significantly impact load and allow for correct equipment sizing.

If HVAC re-ducting is required in this emergency, the pre-retrofit building simulation model will automatically use the default vintage default tables for total duct leakage. This percentage is not able to be contested, should an appeal situation arise.

Mandatory Documentation for Emergency Space Heating Equipment Replacement
The contractor shall provide information about the existing equipment being removed utilizing the Record of Emergency Equipment Replacement Form. At a minimum, the information collected regarding the existing space heating equipment shall include the following:

- Contractor’s business name, address and phone number
- Date of removal
- Reason for replacement (operational failure; health and safety)
- Manufacturer's name and model number of space heating equipment
- Rated efficiency, output, input from the nameplate
- Fuel type (natural gas, electric)
- Type of system (forced air, hydronic/radiant or combo)
- Type of venting (e.g. chimney, side vent, barometric damper)

The existing space heating equipment must be replaced with equipment meeting the Advanced Package Minimum Specifications. New gas-fired furnaces must have an Annual Fuel Utilization Efficiency (AFUE) of 92% or greater to qualify under the Emergency Replacement Policy for HVAC Equipment.

The contractor shall provide a copy of the invoice for the new space heating equipment and the Record of Emergency Equipment Replacement Form to their dedicated account manager within 5 business days of written authorization to proceed with the new equipment installation. At a minimum, the invoice for the new space heating equipment shall include the following:

- Contractor’s business name, address and phone number
- Date of installation
- Manufacturer's name, model and serial number of new space heating equipment
- Rated efficiency, output, input from the nameplate
- Fuel type (natural gas, electric)
- Type of system (forced air, hydronic/radiant or combo)
- Type of venting (e.g. chimney, side vent, barometric damper)

While replacing the space heating equipment, this may be an opportunity to also replace the central air conditioner with a higher efficiency model. The existing equipment must be replaced with equipment meeting the requirements listed in the Advanced Package Minimum Specifications. Contractor will need to supply the following information about both the new and existing air conditioning unit:

- Contractor's business name, address and phone number
- Date of installation
- Reason for replacement (operational failure; health and safety; Other, please explain)
- Manufacturer's name and model number of cooling equipment
- Type of system (central air, heat pump)
- Rated efficiency (SEER, HSPF),unit size, and cooling output from the nameplate

Mandatory Documentation for Domestic Hot Water Equipment Replacement
The existing domestic hot water system must be replaced with equipment meeting Advanced Package Minimum Specifications. In addition, new domestic hot water heaters must have an Energy Factor (EF) of 0.62 or greater, and new domestic tankless hot water heaters must have an Energy Factor (EF) of 0.82 or greater to qualify under the Emergency Equipment Replacement Policy.

The contractor shall provide a copy of the invoice for the new domestic hot water equipment and the Record of Emergency Equipment Replacement Form to their dedicated account manager within 5 business days of written authorization to proceed with the new equipment installation. At a minimum, the invoice for the new domestic hot water equipment shall include the following:

- Manufacturer's name and model number of domestic hot water equipment
- Type of system (gas, electric)
- Rated efficiency (energy factor)
- Unit size (gallons)
- Input from the nameplate (Btu's)

Mandatory Requirements for Emergency Equipment Replacement Approval
Once administrative approval and written authorization to proceed is granted, the contractor may immediately install the individual measures if the following conditions are met:

1. Provide photographic evidence of the existing system installed in the residence clearly showing the area around the existing unit and detailed pictures of the existing equipment to include nameplate information (make, model, serial number, etc.).
2. The contractor shall provide a copy of the Invoice for the new space heating and/or cooling equipment and the completed Record of Emergency Equipment Replacement Form to their dedicated account manager within 5 business days of the installation of the new equipment (if applicable).
3. The contractor shall provide a copy of the Invoice for the new domestic hot water equipment and the Record of Emergency Equipment Replacement Form to their

dedicated account manager within 5 business days of the installation of the new equipment (if applicable).

In the event the customer/contractor fail to meet the timelines indicated the project runs the risk of not being able to include the energy savings from the installation of the new equipment in the energy simulation (Energy Pro) model.

b. Streamlined High Performing Contractor Protocol
SoCalGas follows the Home Performance with ENERGY STAR® guidelines for QA/QC protocols. Since the implementation of the SoCalGas EUC Program, SoCalGas has established an adjustable onsite inspection rate for contractors based on job experience and performance.

SoCalGas conducts onsite inspections, at set inspection rates, of the work of all participating contractors. This inspection rate is reduced as the contractor gains experience in the program and as onsite inspections show the contractor is performing at a satisfactory level per program requirements. See chart below

a. Tier 1Contractor- 60% onsite inspection of first five project
b. Tier 2 Contractor- 27% onsite inspection of next 15 projects
c. Tier 3 Contractor- 5% onsite inspection after 20th project

ATTACHMENT 1 – EUC Objectives

Program Non-Energy Objectives

For New or Substantially changed programs and sub-programs, provide the following information for Program Non-Energy Objectives and follow the format used for the previous cycle Program Performance Metrics found in Resolution E-4385.

i. List the primary SMART[48] non-energy objectives of the program.

ii. For each SMART objective, identify the quantitative targets, direction or percent of change that you hope to achieve during the program cycle.[49]

iii. For each proposed SMART objective, describe any relevant baseline data on current market conditions that you have assembled or plan to assemble and the sources.

iv. Quantitative program targets (STPPMs and LTPPMs):

Table 3. Quantitative Program Targets (STPPMs and LTPPMs)

Table 3.1 Quantitative Program Targets – Short Term Program Performance Metrics (STPPMs)

See Table 3.1 (Excel Attachment to this PIP) for 2010-2012 PPMs authorized in Resolution E-4385.

The IOUs have evaluated the 2010-2012 PPMs for applicability to the 2013-2014 program cycle and propose to work collaboratively with Energy Division to develop revised program targets and PPMs as appropriate for the 2013-2014 program cycle. The IOUs' will propose revisions in an advice letter, per additional guidance from Energy Division.

[48] A SMART objective is one that is **S**pecific (i.e. quantitative and quantifiable generally, in terms of the results to be achieved**),** **M**easurable, **A**mbitious, **R**ealistic, and **T**ime-bound. For example, for a vender training component of an innovative commercial program, two SMART mid-term objectives and one long-term objective might be:

a) During the period 2013-2014, the number of HVAC installers in the SCE service territory who are able to perform quality installations of energy efficient packaged air conditioners will increase by 20%.
b) During the period 2013-2014, the number of installations of energy efficient packaged air conditions in the SCE service territory that are considered quality installations will increase by 25%.
c) By 2020, installations of energy efficient packaged air conditions in the SCE service territory that are considered quality installations will increase by 75%.

[49] Please also add any new program objectives and quantitative targets for statewide programs to the portfolio PPM/MTI reporting template.

Table 3.2 Quantitative Program Targets – Long Term Program Performance Metrics (LTPPMs)

See Table 3.2 (Excel Attachment to this PIP)

PG&E includes long term PPMs[50] per Energy Division guidance received in December 2012. As stated in the Joint Utilities' comments to the Commission in R. 09-11-014 dated November 21, 2011, and discussed between IOUs and ED on January 9, 2013, IOUs plan to finalize long term PPMs in further discussions with involved stakeholders and propose updates to Energy Division at a later date.

[50] From the Energy Division's file "Revised MTIs_10 27 11-formal-release-ED-May-2012.xlsx"

Attachment A4.3: PG&E EUC Enhanced Basic/Modified Flex Path Tables

Table 1: Total Projected Program Budget & Savings by Subprogram

Subprogram	PG&E ($)	SCE ($)	SDG&E ($)	SCG ($)	Kwh	KW	Therms
EUC	$36,202,940						
Total	**$36,202,940**			**-**	**-**	**-**	**-**

Table 2: Total Projected Program Savings by IOU

Subprogram	PG&E Kwh	PG&E KW	PG&E Therms	SCE Kwh	SCE KW	SDG&E Kwh	SDG&E KW	SDG&E Therms	SCG Therms	Total
EUC	16,207,443	20,227	1,661,972							
Total	**16,207,443**	**20,227**	**1,661,972**	**-**	**-**					**-**

Table 1. Projected Sub-Program Budget, by Calendar Year

	Program Year		
PG&E EUC	**2013**	**2014**	**Total**
Admin ($)	526,534	526,534	1,053,068
Marketing & Outreach ($)	494,815	494,815	989,630
Implementation Non-Incentives ($)	5,418,509	5,418,509	10,837,017
Incentives ($)	11,661,613	11,661,613	23,323,225
Total Budget	**18,101,470**	**18,101,470**	**36,202,940**

Table 2. Projected Sub-Program Net Energy and Demand Impacts, by Calendar Year

PG&E EUC	2013	2014	Total
Gross KW	10,114	10,114	20,227
Gross kWh	8,103,722	8,103,722	16,207,443
Gross Therms	830,986	830,986	1,661,972

			2013					2014					2013-2014
PPM ID	**Target**	**Metric Type***	**SDG&E**	**SCE**	**SoCalGas**	**PG&E**	**TOTAL**	**SDG&E**	**SCE**	**SoCalGas**	**PG&E**	**TOTAL**	**TOTAL**
RES-16.1	Number of homes treated in the sub-program for 2013-2014. (Basic Path)	2a				100					120		-
RES-16.2	Number of homes treated in the sub-program for 2013-2014. (Advanced Path)	2a				3,200					3,500		-
RES-17	Number of enrolled contracting firms participating in the sub-program	2a				225					240		-
RES-18.1	Average Ex-ante savings per home as reported (average kWh, therms, kW) for **Advanced** path by climate zone	2a				N/A					N/A		N/A
RES-18.2	Average Ex-ante savings per home as reported (average kWh, therms, kW) for **Basic Path** by climate zone	2a				N/A					N/A		N/A
RES-19	Average and range of evaluated energy savings per home (Basic and Advanced Paths)	2b				N/A					N/A		N/A
RES-20.1	Number of homes not passing Quality Assurance/Quality Control review, by IOU	2a				N/A					N/A		N/A
RES-20.2	Percentage of homes not passing Quality Assurance/Quality Control review, by IOU	2a				N/A					N/A		N/A

PPM's for Multifamily path will need to be developed as this path progresses towards full program implementation.

Table 3.2 Long Term Program Performance Metrics (PPMs)

PG&E includes long term PPMs per Energy Division guidance received in December 2012. As stated in the Joint Utilities' comments to the Commission in R. 09-11-014 dated November 21, 2011, and discussed between IOUs and ED on January 9, 2013, IOUs plan to finalize long term PPMs in further discussions with involved stakeholders and propose updates to Energy Division at a later date.

MTI Index#	RE-CATEGORIZED Metric (LTPPM - or SPI) [E-4385 Appendix B original text except for noted edits]
Deep Retrofit 3	MT Indicator 3: The number and percent of audits performed compared to the number of customers signed up for an audit (NRDC, p.7). Number of IOU customer households that undergo a deep retrofit (Advanced and/or IDSM) audit through IOU programs.

*Metric Type 2a: Report on an annual basis
Metric Type 2b: Report at the end of cycle

Unresolved Issues

Table 4 – Work paper Status

#	Workpaper Number/Measure Name	Approved	Pending Approval	Submitted but Awaiting Review
1				
2				
3	PGECOALL104 Whole House Rebate			x
4				
5	PGECOALL100_R3 Custom Measures			x
6				

Table 5:. Sub-Program Milestones and Timeline (example)

Milestone	**Date**
Launch Multifamily Path trials	1/31/2013
Complete Multifamily Path trials	12/31/2013
IOU/ ED Monthly Progress Meetings	1/31/2013-12/31/2014

Table 6 Geographic Regions

Geographic Region	SDG&E	SCE	PG&E	SoCalGas
CEC Climate Zone 1			x	
CEC Climate Zone 2			x	
CEC Climate Zone 3			x	
CEC Climate Zone 4			x	
CEC Climate Zone 5			x	
CEC Climate Zone 6				
CEC Climate Zone 7				
CEC Climate Zone 8				
CEC Climate Zone 9				
CEC Climate Zone 10				
CEC Climate Zone 11			x	
CEC Climate Zone 12			x	
CEC Climate Zone 13			x	
CEC Climate Zone 14				
CEC Climate Zone 15				
CEC Climate Zone 16			x	

Table 7: Program Administration of Program Components

Program Name	Program Component	Implemented by IOU Staff? (X = Yes)	Implemented by contractors to be selected by competitive bid process (if Yes then enter type of contractor/other maket actor possibly used)	Implemented by contractors NOT selected by competitive bid process (list prime contractor and sub-contractor names)	Implemented by local government or other entity (X = Yes)
	PG&E Marketing and Outreach		X (EE program vendor with subject matter expertise)		x
	PG&E Program Administration		X (EE program vendor with subject matter expertise)		
	PG&E Contractor/ Rater Training		X (EE program vendor with subject matter expertise)		x
	PG&E QA/QC		X (EE program vendor with subject matter expertise)		

Table 8: Customer Eligibility Requirements (Joint Utility Table)

Customer Eligibity Requirement (list of requirements)	**PGE**	**SCE**	**SDGE**	**SCG**
Tennant or Owner of SF Bldg with active IOU account(s)	x			
Owner or property mgt. co. of MF Bldg with active IOU account(s)	x			
Must utilize participating EUC Contractor or Rater	x			
Two to Four Unit Building with active individually metered accounts	x			

The utilities must work together and submit this table jointly in their respective applications

Table 9: Contractor Eligibility Requirements (Joint Utility Table)

Contractor Eligibity Requirement (list of requirements)	**PGE**	**SCE**	**SDGE**	**SCG**
Contractor State Licensing Board (CSLB) in appropriate specialty	x			
CSLB "B" General Contractor License (Advance Path Only)	x			
Bonding and in good standing	x			
Insurance to IOU minimum standards	x			
Execution of Contractor/ or Rater Participation Agreement	x			
BPI Building Analyst Certified OR 3-day Basic Training (Basic Path Only)	x			
BPI Building Analyst Certified on Staff (Advanced Path)	x			
BPI MF Building Analyst Certified (MF Participating Rater Path)	TBD			
HERSII Certified (MF Participating Rater Path)	TBD			
HERSII and BPI BA Certified (SF Participating Rater Path)	x			
2 Years of Relevant Work Experience	x			
B, C-2 or C-20 license for Basic Only	x			

List any contractor (and/or developer, manufacturer, retailer or other “participant”) eligibility requirements (e.g. specific IOU required trainings; specific contractor accreditations; and/or, specific technician certifications required).

The utilities must work together and submit this table jointly in their respective applications

Table 10: Manufacturer/Retailer/Distributor Partners

Manufacturer/Retailer/Distributor Parnter Information	PGE	SCE	SDGE	SCG
Manufacturers enrolled in program	none			
Manufacturers targeted for enrollment in program	none			
Retailers enrolled in program	none			
Retailers targeted for enrollment in program	none			
Distributors enrolled in program	none			
Distributors targeted for enrollment in program	none			

Table 11: Summary Table of Measures, Incentive Levels and Verification Rates

Measure Group	Market Actor Receiving Incentive or Rebate	PGE		SCE		SDGE		SCG	
		Incentive Level	Installation Sampling Rate	Incentive Level	Installation Sampling Rate	Incentive Level	Installation Sampling Rate	Incentive Level	Installation Sampling Rate
10% Performance SF	Customers	$ 1,000	Tiered 100%-3%						
15% Performance SF	Customers	$ 1,500	Tiered 100%-3%						
20% Performance SF	Customers	$ 2,000	Tiered 100%-3%						
25% Performance SF	Customers	$ 2,500	Tiered 100%-3%						
30% Performance SF	Customers	$ 3,000	Tiered 100%-3%						
35% Performance SF	Customers	$ 3,500	Tiered 100%-3%						
40% Performance SF	Customers	$ 4,000	Tiered 100%-3%						
45%+ Performance SF	Customers	$ 4,500	Tiered 100%-3%						
Basic Path	Customers	$ 1,000	Tiered 100%-3%						
10% Performance MF	Customers	TBD	TBD						
15% Performance MF	Customers	TBD	TBD						
20% Performance MF	Customers	TBD	TBD						
25% Performance MF	Customers	TBD	TBD						
30% Performance MF	Customers	TBD	TBD						
35% Performance MF	Customers	TBD	TBD						
40% Performance MF	Customers	TBD	TBD						

a. Use a single excel spreadsheet to indicate the eligible measures for the program across all IOUs. Indicate the expected incentive level by measure or measure grouping for each IOU, making clear where these vary.
b. For each incented or rebated measure, indicate the market actor to whom this will be provided.

Table 12: Additional Services

Additional Services that the Sub-Program Will Provide	To Which Market Actors	PGE	SCE	SDGE	SCG
		[indicate the level at which the service will be incented or funded]	[indicate the level at which the service will be incented or funded]	[indicate the level at which the service will be incented or funded]	[indicate the level at which the service will be incented or funded]
N/A	N/A	N/A			

a. For each service provided, indicate any expected charges to market actors of the services, and/or the level at which any such services will be incented or funded.

Table 13: Program Related Audits

Levels at Which Program Related Audits Are Rebated or Funded	Who Receives the Rebate/Funding (Customer or Contractor)
None	

NOTE: If software tools are required sub-program participation, and if there is a program related audit for the sub-program, this table shows the levels at which the audit is rebated or funded and to whom such rebates/funding will be provided (i.e., customer or contractor)

Table 14: Quality Assurance Provisions

QA Requirements	QA Sampling Rate (Indicate Pre/Post Sample)	QA Personnel Certification Requirements
PG&E QA requirement #1	100% Pre Project QA (desktop)	BPI BA - Program Implementer
PG&E QA requirement #2	100% Post Project QA (desktop)	BPI BA - Program Implementer
PG&E QC requirement #1	60% first 5 projects (Post)	BPI BA - Program Implementer
PG&E QC requirement #2	20% of next 20 projects (Post)	BPI BA - Program Implementer
PG&E QC requirement #3	15% rate for Contractors without BPI-BA on staff (1 in 7) and 5% rate for Contractors with BPI-BA on staff (1 in 20) after 25th project (Post)	BPI BA - Program Implementer
PG&E QC requirement #4	15% in field QC (post)	PG&E Central Inspection Team

*SCE sampling rate is subject to modification to meet program needs

NOTE: Please list quality assurance, quality control, including accreditations/certification or other credentials required.

Table 15: Cross-cutting Sub-program and Non-IOU Partner Coordination

Sub-Program Name		
Other IOU Sub-program Name	**Coordination Mechanism**	**Expected Frequency**
PLA (HEER)	Meetings	Monthly/As-Needed
MFEER	Meetings	Monthly/As-Needed
HEES	Meetings	Monthly/As-Needed
QI/ QM	Meetings	Monthly/As-Needed
CSI	Meetings	Monthly/As-Needed
Coordination Partners Outside CPUC		
CCSE	Meetings	Weekly/ Monthly
City of San Diego	Meetings	As-Needed
County of San Diego	Meetings	As-Needed
City of Chula Vista	Meetings	As-Needed
Retrofit Advisory Council (RAC)	Meetings	Quarterly
Los Angeles County	Meetings	Monthly
Santa Barbara County	Call	Monthly
City of San Bernardino	Call	As-Needed
City of Long Beach	Call	As-Needed
Efficiency First	Call	Bi-Weekly
ABAG	Meetings	As-Needed
County of San Francisco	Meetings	As-Needed
County of Marin	Meetings	As-Needed
County of Sonoma	Meetings	As-Needed
County of Solano	Meetings	As-Needed
County of Alameda	Meetings	As-Needed
County of Contra Costa	Meetings	As-Needed
County of Santa Clara	Meetings	As-Needed
County of San Mateo	Meetings	As-Needed
County of Fresno	Meetings	As-Needed
County of Santa Barbara	Meetings	As-Needed
SMUD	Meetings	As-Needed
MIST	Meetings	As-Needed

Note: “Mechanisms” refers to communication methods (i.e. quarterly meetings; internal list serves; monthly calls, etc.) and/or any cross-program review methods (i.e., feedback on program plans; sign off on policies, etc). or harmonization techniques (i.e. consistent certification requirements across programs, program participant required cross trainings, etc.).

Table 16: Non-EE Sub-Program Information

Sub-Program Name		
Non-EE Sub-Program	**Budget**	**Rationale and General Approach for Integrating Across Resource Types**
N/A	N/A	N/A

NOTE: Column C --> Integrated/coordinated Demand Side Management: As applicable, describe how sub-program will promote customer education and sub-program participation across all DSM options. Provide budget information of non-EE sub-programs where applicable. Column D --> Integration across resource types (energy, water, air quality, etc): If sub-program aims to integrate across resources types, please provide rationale and general approach

Table 17

Below is PG&E's high scenario for Energy Upgrade California Program customer participation and budgets, based on the assumptions shown.

PG&E							
Scenarios	Single-Family Homes			Budget			Assumptions
	2013	2014	Total	2013	2014	Total	
High	4,300	5,500	9,800	$ 11,465,410	$ 14,242,460	$ 25,707,870	* Assumes full PG&E Service Territory participation * Active participating contractor effectiveness (increase) * Net impact of financing product offerings (i.e. MIST, CAEATFA) (increase) * Impact of operational efficiencies gained from program optimization (increase) * Net impact from local government marketing (increase) * Impact from real estate industry engagement (increase) * Absence of ARRA funded incentives (decrease) * Impact of potential economic up/downturn (increase)
Note: Budgets are program totals, including multifamily (MF) activites, but since there is not yet program history for MF, customer participation analysis is for just single-family homes.							

Attachment A5.1: SoCalREN EUC Enhanced Basic/Modified Flex Path PIP
(Redline)

SoCalREN

ENERGY UPGRADE CALIFORNIA

FLEX PATH
PROGRAM IMPLEMENTATION PLAN

APRIL 4, 2013

TABLE OF CONTENTS

A3: Continue, enhance and expand EUCLA "Flex Path" Incentive Program which supplements the under-performing EUC Basic Package and is more attainable for most low-moderate income households and for EUC contractors. - $4,614,308

The Existing ARRA Flex Path Program

(Modified EUC Flex Path Program Implementation Plan begins on page 10)

Formatted: Centered, Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines

Formatted: No underline

I. INTRODUCTION

Formatted: Line spacing: 1.5 lines

Flex Path is a new and innovative Energy Upgrade option developed and administered by the LA County team using American Recovery and Reinvestment Act (ARRA) funding. This pilot program provides more flexibility than the Basic Path, and uses the same list of eligible Basic and Advanced Path measures in a user-friendly, prescriptive, point value menu format. The program is intended to test market acceptance of a simple, flexible, prescriptive approach in terms of engaging both homeowners and contractors. EUCLA provides a $1,500 incentive for a Flex Path project, and homeowners may also qualify for individual IOU measure incentives. The ARRA funded Flex Path program was fully subscribed with 1,650 approved projects and a wait list of 187 project applications on October 19, 2012, just nine months after program launch. LA County is now confident~~hopeful~~ that all wait list applications will be processed and paid early in 2013 using remaining ARRA funds for a total of more than 1,800~~37~~ projects.

SoCal REN has been authorized to continue the current Flex Path pilot design in LA County until the April 1, 2013 Advice Filing is approved. The program could be re-launched within three weeks ~~from SCE~~; however, this is not the REN's preferred course of action. The REN proposes a Modified EUC Flex Path Program (page 11) ~~would like to offer the Commission the option of implementing a modified Flex Path program~~ that is fully compliant with the final decision~~. in place of the current program design.~~ The final decision has mandated that the following design elements be incorporated into a Basic Path replacement program:

1. Require that each project include at least three qualifying energy efficiency measures;
2. Include scaled or tiered incentives;
3. Support the energy efficiency loading order that provides that ~~building shell~~envelope improvements generally occur first; and
4. Support appropriate combustion safety testing protocols.

II. SoCalREN ARRA FLEX PATH PROGRAM OVERVIEW

In discussions with the IOU's, SCE and SCG have made it clear that they intend to pilot ~~implement~~ an enhanced Basic Path pilot program immediately after ~~prior to~~ the April 1 advice filing date. The REN requests the same consideration to implement the ARRA ~~a modified~~ Flex Path program design using ratepayer funds with slight improvements immediately upon approval by Commission staff.~~prior to the April 1 advice filing.~~ The minor modifications are intended to mitigate Commission concerns about overpaying for energy savings and include the following:

1. Eliminate all five-point measures and require or recommend them as best practices in appropriate equipment replacement or system upgrade measures.
2. Require thermal control valves be installed on all showers in the home with no points added.
3. Reduce the program incentive from $1,500 to $1,000.

This will serve to extend what is a successful pilot, enhanced~~modified~~ to provide a bridge to the Modified EUC Flex Path program design being proposed in this advice filing. ~~be fully compliant with the Commission decision while the REN and IOU's continue to collaborate on a single program design to replace the Basic Path.~~ In addition, continuing with a slightly modified Flex Path pilot, with the same name~~tentatively called Home Performance Flex Path~~, will provide significant, additional data for evaluation and program design going forward. While ~~Ideally,~~ the REN's and IOU's did not come to complete agreement ~~can reach an agreement~~ on a single program design statewide, substantial progress has been made on coming to agreement on major program design elements. ~~and submit an advice filing well before the April 1, 2013 deadline.~~

A. Tracking Energy Usage

With the help of the IOU's, the REN hopes to track actual energy usage of Flex Path participants. The success of Flex Path and its approval by the U.S. Department of Energy and the California Energy Commission regarding design and achievement of program savings objectives, clearly demonstrates that a government entity is perfectly capable of designing, developing, and implementing a successful community scale energy efficiency incentive based program.

B. Moving Homeowners To Action

Flex Path, in its current format, has served to augment the under-utilized Basic Path to put homeowners on the path toward a whole house energy upgrade and provides contractors with a simple introductory offer that can be used to upsell a homeowner to a more comprehensive, Advanced Path retrofit. This feature will continue to be tested during 2013-14. The program also encourages more contractors to become active in EUC with the goal of expanding their participation over time and bringing the EUC program

Formatted: Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines, Outline numbered + Level: 1 + Numbering Style: 1, 2, 3, … + Start at: 1 + Alignment: Left + Aligned at: 0" + Tab after: 0.5" + Indent at: 0.5"

Formatted: Font: Arial Narrow

Formatted: Heading 2, Indent: First line: 0"

Formatted: Heading 2, Indent: First line: 0"

to scale. Flex Path is a contractor delivered program and therefore does not require a large marketing and outreach budget.

C. Qualifying Measures

To participate in the current Flex Path, two or more qualifying retrofit measures with a combined point total of one hundred or more must be installed using a EUC participating contractor. Flex Path motivates contractors and homeowners to consider higher levels of efficiency (beyond code) when selecting new equipment or upgrading ~~building shell~~envelope systems. Under the proposed ~~Home Performance~~Modified EUC Flex Path program the REN~~LA County~~ proposes to add a walk-through energy audit component (draft audit form displayed in Attachment D) to the program delivery, creating a roadmap and priority of Flex Path projects that can be done over time or providing the justification for moving up to an Advanced Path project. The ARRA Flex Path program includes the measures listed in ~~the~~ Figure 1, edited for five-point measures requested to be removed, along with pre-and-post retrofit requirements and point values.

Formatted: Heading 2, Indent: First line: 0"

Formatted: Line spacing: 1.5 lines

Figure 1: ARRA Flex Path Measure List

To participate in the Flex Path, ~~the~~ homeowners must install two or more qualifying measures with a combined point value of 100 or greater using an Energy Upgrade California Participating Contractor. All Flex Path projects require installation of a thermostatic shut-off valve on all showers in the home except when installing a tankless water heating system. Limit two Flex Path applications per household.

I. Insulation & Air Sealing

Retrofit Measure	Pre-Retrofit Condition	Post-Retrofit Condition	Point Value
Crawlspace insulation	No insulation	≥ R-11 Supporting documentation required for close out: specification sheet, before & after photos	55
Wall insulation	No insulation	≥ R-13 Supporting documentation required for close out: specification sheet	90
Air sealing	CFM50 ≥ 1900	CFM50 ≤ 1100 Supporting documentation required for close out: blower door test-in results, blower door test-out results, combustion safety test results	30
Attic insulation & sealing	≤ R-11	≥ R-38 Supporting documentation required for close out: specification sheet, before & after photos. It is highly recommended that all incandescent recessed can lighting fixtures be replaced with ENERGY STAR® CFL fixtures or ENERGY STAR® LED fixtures.	45
Attic radiant barrier	No radiant barrier	Continuous rolled or pre-laminated Supporting documentation required for close out: specification sheet, before & after photos	50

II. Heating, Ventilation, & Air Conditioning

Retrofit Measure	Pre-Retrofit Condition	Post-Retrofit Condition	Point Value
Replace existing central forced air furnace with new ENERGY STAR® central forced air furnace	Gas-fired; AFUE ≤ 0.80	ENERGY STAR®; Gas-fired; AFUE ≥ 0.95 Supporting documentation required for close out: specification sheet, before & after photos including nameplate. Recommend replacement of a manual thermostat with digital, setback programmable model.	90
Replace existing central AC with new central AC	≤ 10 SEER	≥ 15 SEER 11 EER Supporting documentation required for close out: specification sheet, before & after photos including nameplate. Recommend replacement of a manual thermostat with digital, setback programmable model.	90

Formatted: Font: Bold
Formatted: Indent: First line: 0"
Formatted Table
Formatted: Font: Not Bold
Formatted: Underline

Replace existing heat pump with new heat pump	≤ 5.6 HSPF, 8 SEER 6 EER	≥ 8 HSPF, 15 SEER 11 EER Supporting documentation required for close out: specification sheet, before & after photos including nameplate. Recommend replacement of a manual thermostat with digital, setback programmable model.	90
~~**ENERGY STAR® programmable thermostat**~~	~~Manual thermostat~~	~~ENERGY STAR® Programmable thermostat(s) covering whole house~~ ~~Supporting documentation required for close out: specification sheet, before & after photos~~	~~5~~
Duct insulation & sealing OR Duct replacement with insulation	Leakage ≥ 28% ≤ R-4	Leakage ≤ 15%; ≥ R-8 Supporting documentation required for close out: Duct Blaster® test-in results and test-out results, specification sheet, before and after photos. Recommend replacement of a manual thermostat with digital, setback programmable model.	95

III. Windows

Retrofit Measure	Pre-Retrofit Condition	Post-Retrofit Condition	Point Value
Replace all windows to be ENERGY STAR®	Single metal clear pane (U-factor ≥ 1.19; SHGC ≥ .83)	ENERGY STAR®; U-Factor ≤ 0.40; SHGC ≤ 0.30 Supporting documentation required for close out: specification sheet, before & after photos	65

IV. Domestic Hot Water

Retrofit Measure	Pre-Retrofit Condition	Post-Retrofit Condition	Point Value
Domestic hot water heater (gas)	Gas-fired tank heater; EF ≤ 0.525	Gas-fired; EF ≥ 0.62 Supporting documentation required for close out: specification sheet, before & after photos including nameplate. Must include pipe wrap for first five feet of exposed pipes.	45
Domestic hot water heater (electric)	Electric tank heater; ≥ 40 gallons; EF ≤ 0.88	EF ≥ 0.93; ≥ 30 gallons Supporting documentation required for close out: specification sheet, before & after photos including nameplate. Must include pipe wrap for first five feet of exposed pipes.	90
~~**Pipe wrap for domestic hot water heating**~~	~~Un-wrapped~~	~~Wrapped~~ ~~Supporting documentation required for close out: before & after photos~~	~~5~~
ENERGY STAR® whole house tankless hot water heater (gas)	Gas-fired tank heater; EF ≤ 0.525	ENERGY STAR®; gas-fired; EF ≥ 0.82 Supporting documentation required for close out: specification sheet, before & after photos including nameplate. Must include pipe wrap for first five feet of	90

		exposed pipes.	
~~**Low-flow showerhead with thermostatic shut-off valve & faucet aerators**~~	~~No thermostatic flow controls~~	~~Evolve™ ShowerStart™ Roadrunner on all showers and low-flow restrictor (i.e. aerators) on all faucets (bathroom faucets ≤ 1.5 gpm at 60 psi; kitchen faucets ≤ 2.2 gpm at 60 psi) Supporting documentation required for close out: specification sheet(s), before & after photos (one per fixture type)~~	~~5~~

V. Lighting

Retrofit Measure	**Pre-Retrofit Condition**	**Post-Retrofit Condition**	**Point Value**
~~**ENERGY STAR® lighting fixtures**~~	~~3 incandescent fixtures~~	~~3 ENERGY STAR® CFL fixtures or 3 ENERGY STAR® LED fixtures Supporting documentation required for close out: specification sheet(s), before & after photos (one per fixture type)~~	~~5~~

VI. Cool Roof

Retrofit Measure	**Pre-Retrofit Condition**	**Post-Retrofit Condition**	**Point Value**
Cool roof	≤ R-11	All of the following requirements must be met for ≥ 75% of the roof over conditioned space: ≥ R-38; Low slope (≤ 2:12): SRI≥ 70, Thermal Emittance Factor ≥ 0.85; Steep slope (> 2:12): SRI ≥ 40; Thermal Emittance Factor ≥ 0.85 Supporting documentation required for close out: specification sheet, before & after photos	40

Formatted: Line spacing: 1.5 lines

Flex Path is marketed to homeowners primarily through contact with EUC participating contractors. By educating EUC participating contractors and targeting specialty building service companies, the workforce is able to sell the program directly to homeowners. When the program ended in October, 2012 there were 57 contractors actively participating in the Flex Path pilot. The fact that only 15 of these contractors have delivered an Advanced or Basic Path project demonstrates that Flex Path is getting idle contractors off the sideline and into the game. Since there are many different combinations of retrofit measures that can make up a Flex Path project, the program structure allows specialty contractors to develop a business model that works

for them, or partner with other specialty contractors to provide more comprehensive upgrade options. Another delivery channel is the Flex Path webpage, www.energyupgradeca.org/LAflex on the EUC Los Angeles web site. This webpage encourages contractors and homeowners to participate in the program using Frequently Asked Questions, a Qualifying Measures list, information about Supplemental Utility Rebates, an Online Application, and the Project Completion Form.

D. INCENTIVE STRUCTURE

In the current design, Flex Path projects receive an incentive of $1,500. SoCalREN would like to reduce the incentive amount to $1,000 should the program be reinstated until such time as a Basic Path replacement program is approved by the Commission. The incentive amount cannot exceed project cost. The average cost of a Flex Path project is about $5,800. Modeled energy savings predict an average energy savings of 15 percent for a typical home in a typical LA County climate zone. This level of energy savings, along with an estimation of average project cost, was used to determine the incentive amount of $1,500. Once a completed application is received, the incentive funds are reserved for 60 days. When installation is complete, the contractor must submit an online Project Completion Form that includes uploading required supporting documentation. Required supporting documentation includes an itemized paid invoice and, if applicable, before and after photos, specification sheets, diagnostic test-in/test-out results and proof of a post-installation combustion appliance safety test conducted by a BPI certified building analyst.

Formatted: Heading 2, Indent: First line: 0"

E. Project Tracking

The program administrator uploads customer and project data into a secure, closed-loop, secure program tracking database (energyOrbit) and monitors progress throughout the application process. When any of five status codes changes on a Flex Path project, the tracking system automatically sends an email status notification to both the homeowner and contractor. If all program requirements have been met after a review of the Project Completion Form, required supporting documentation, and Quality Control on-site inspection, a Flex Path project is approved and a check request is processed with LA County. Checks are routinely paid by LA County within two weeks of project completion approval.

Formatted: Heading 2, Indent: First line: 0"

F. Quality Assurance

Flex Path Quality Assurance includes ~~a~~ one hundred percent desktop review of the Utility Service Account Holder and Participating Contractor information, the project application, the~~and~~ Project Completion Form and supporting documentation. Once a Flex Path project completes a desktop review of the Project Completion Form and required supporting documentation, the project may be selected for an onsite post-

Formatted: Heading 2, Indent: First line: 0"

installation inspection. The sampling rate for Flex Path Quality Control post-installation inspections follows the ~~Home Performance~~Home Performance with ENERGY STAR inspection guidelines. In the ARRA Flex Path program LA County conducted 100 percent post-installation inspections for the first three months to ensure contractor compliance with terms and conditions before reducing the sampling rate, and actually achieved ~~proposes~~ and~~d~~ overall on-site post-installation inspection rate of about 15 percent. The on-site visit includes a visual inspection of the measures installed, verification that any mechanical equipment installed matches submitted specification sheets and program requirements, and a brief oral survey with the homeowner regarding overall program and contractor satisfaction. If a test-out is required for any of the installed measures, this triggers an inspection that includes a BPI certified Quality Control professional witnessing the diagnostic testing performed. Examples of Flex Path test and inspection forms are included in Attachments A through C. The REN also plans to perform field QC using a HERS/BPI certified professional in the Modified EUC Flex Path program to confirm that installed measures meet industry best practices and provide mentoring to contractors that need additional training.

The REN will work with the IOU's and CPUC staff to determine reasonable measure level savings values, QA and QC requirements, and EM&V data collection objectives. Flex Path offers an excellent opportunity to continue testing this flexible approach in the residential marketplace, refine kWh savings, kW demand reduction, and therm savings numbers by measure, vintage, and climate zone. With funding being reduced by 50% LA County is now proposing a 2,376 retrofit pilot to continue until the April 1 advice filing is approved, with estimated energy savings of 1,985,417 kWh based on savings values calculated using EnergyPro with ~~found in the~~ DEER and RASS data; a method similar to what was used to derive Basic Path measure level energy savings values. ~~base and CPUC review methodology as shown below.~~ Revised targets are shown in Figure 2~~4~~.

Figure 2~~4~~ (Subprogram A): Flex Path Proposed Net Energy Savings

Resource Acquired	2013	2014	Total
kWh Energy Savings	794,326	1,191,091	1,985,417
Peak kW Demand Reduction	912	1,367	2,279
Therm Savings	55,928	84,007	139,935

III. PROGRAM SUCCESSES THROUGH DECEMBER 2012

In nearly nine months of operation, the number of Flex Path projects ~~has~~ far exceeded the number of Advanced and Basic Path projects combined that were paid a matching incentive by~~in~~ LA County. This is

Formatted: Line spacing: 1.5 lines

Formatted: Font: 11 pt
Formatted: Line spacing: 1.5 lines
Formatted Table
Formatted: Font: 11 pt
Formatted: Line spacing: 1.5 lines
Formatted: Centered, Line spacing: 1.5 lines
Formatted: Font: 11 pt
Formatted: Line spacing: 1.5 lines
Formatted: Centered, Line spacing: 1.5 lines
Formatted: Font: 11 pt
Formatted: Line spacing: 1.5 lines
Formatted: Centered, Line spacing: 1.5 lines
Formatted: Heading 1
Formatted: Line spacing: 1.5 lines

significant because the IOU programs had been available to homeowners for 19 months at the time Flex Path ended. It should be noted that Flex Path has not been featured in the County's marketing materials or media campaigns, and promotion has been limited to training contractors and distributing flyers at community events alongside Advanced Path and Basic Path promotional materials.

Figure 3~~The table~~ presents important metrics for Advanced, Flex, and Basic Path options in LA County.

Figure ~~35 (Subprogram A)~~: Breakdown of ~~EUCLA~~ retrofit projects paid by LA County through February~~December~~ 2012

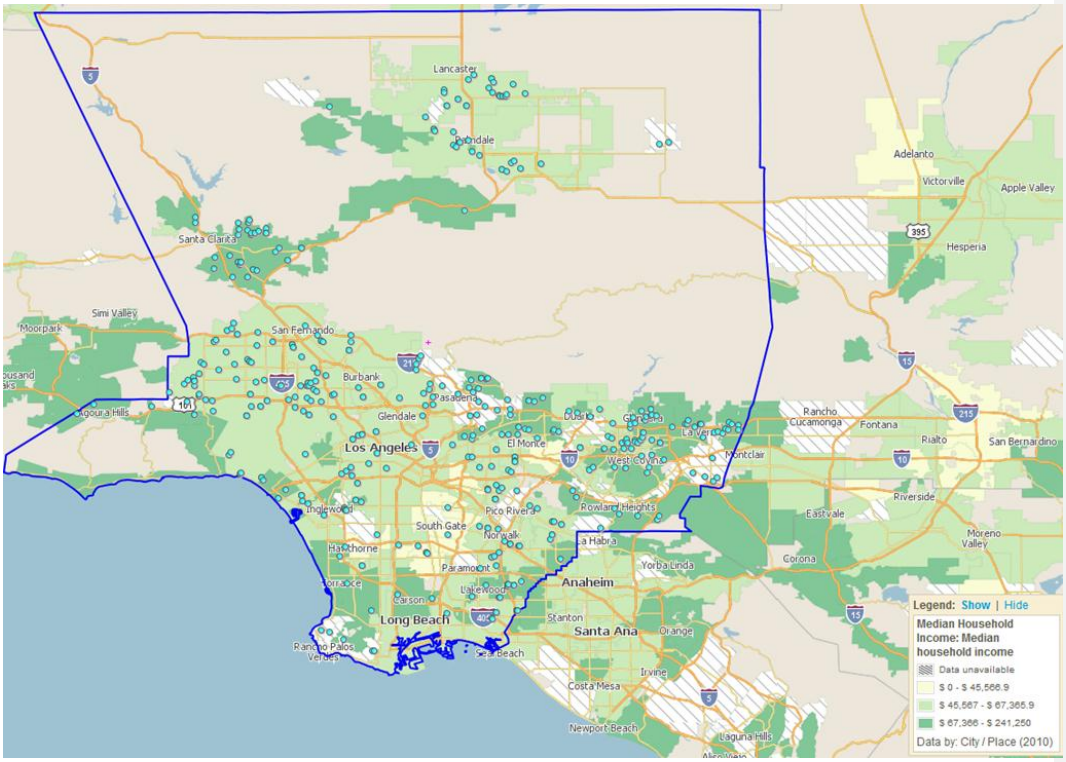
Retrofit Project Type	% of Total LA County Projects Paid	# of LA County Projects	Average Savings	Average Cost	Average Rebate (Utility + LA County)
Advanced Path	36%	1,048	31%	$12,685	$5,458
Flex Path	63%	1,793	17%	$5,875	$1,500
Basic Path	1%	21	10%	$4,202	$2,000

~~Retrofit Project Type~~	~~% of Total LA County Projects~~	~~# of LA County Projects~~	~~Average Savings~~	~~Average Cost~~	~~Rebate Amount~~
~~Advanced Path~~	~~41%~~	~~1,178~~	~~30%~~	~~$12,685~~	~~$5,458~~
~~Flex Path~~	~~55%~~	~~1,650~~	~~17%~~	~~$5,875~~	~~$1,500~~
~~Basic Path~~	~~1%~~	~~43~~	~~10%~~	~~$4,702~~	~~$2,000~~

~~O~~One of the most significant successes of Flex Path to date is the clear indication that the program is penetrating the lower-middle and middle-income homeowner markets. This is essential for scaling up EUC to achieve a much greater volume of projects. This will help to transform the market, reaching California Long Term Energy Efficiency Strategic Plan goals, and creating much needed new jobs. The map below (Figure 4) shows the distribution of Flex Path projects in LA County overlaid on median household income census data.

Formatted: Font: 11 pt
Formatted: Font: 11 pt
Formatted ...
Formatted ...
Formatted: Font: 11 pt
Formatted: Font: 11 pt, Font color: Auto
Formatted Table
Formatted: Font: 11 pt, Font color: Auto
Formatted ...
Formatted: Font: 11 pt, Font color: Auto
Formatted: Font: 11 pt
Formatted: Line spacing: 1.5 lines
Formatted: None, Space Before: 0 pt, Line spacing: 1.5 lines, Don't keep with next, Don't keep lines together
Formatted: Font: 11 pt, Not Italic, Font color: Auto
Formatted ...
Formatted ...
Formatted ...
Formatted ...
Formatted: Font: 11 pt, Not Bold
Formatted: None, Space Before: 0 pt, Line spacing: 1.5 lines, Don't keep with next, Don't keep lines together
Formatted ...
Formatted ...
Formatted ...
Formatted ...
Formatted ...
Formatted: Font: 11 pt, Not Bold
Formatted ...
Formatted ...
Formatted: Font: 11 pt
Formatted ...
Formatted ...
Formatted ...
Formatted ...
Formatted ...
Formatted ...
Formatted ...
Formatted ...

Figure ~~16~~ (Subprogram A): Flex Path Projects by Median Household Income in LA County



Contrary to the relatively narrow demographic adoption of Advanced Path, Flex Path has achieved an impressive penetration across LA County, particularly in lower-middle and middle-income communities. The REN~~LA County~~ proposes to target limited marketing and outreach to these communities and assist contractors in focusing Flex Path sales on middle-income homeowners. In expanding the Flex Path program or the Modified EUC Flex Path ~~new Home Performance Flex Path~~ program throughout the SCE/SCG service territories the REN would also propose to target inland climate zones where comprehensive energy retrofits result in greater benefits for homeowners.

Formatted: Indent: First line: 0.5", Line spacing: 1.5 lines

To determine expected energy savings for Flex Path prescriptive measures, the LA County team used EnergyPro software to model each measure individually assuming a typical Los Angeles County single family detached home configuration based on RASS data to represent the pre-retrofit baseline. The assumptions ~~and results~~ from the EnergyPro analysis are as follows:

Formatted: Line spacing: 1.5 lines

1. Climate Zone: 9 (Claremont used as base city)
2. Area: 1710 sq ft
3. Ceiling Height: 8 ft
4. House Dimensions: 38 ft x 45 ft
5. Perimeter: 166 ft
6. Winter Indoor Temp: 70
7. Summer Indoor Temp: 74
8. Infiltration: 1800 CFM50 (~0.57 ACHn)
9. Duct Insulation: R-4
10. Duct Leakage: 28%
11. Attic Insulation: R-11 (using default for pre-1978)
12. Wall Insulation: R-0
13. Crawlspace Insulation: R-0
14. Windows: Single Metal Clear
15. HVAC: Gas-fired, 0.80 AFUE, 10 SEER 6 EER
16. DHW: Gas-fired, 50 gal. 0.525 EF
17. Setback thermostat (except for thermostat measure)
18. Electric stove, washer/dryer in house

- The success of the ARRA Flex Path is the direct result of the simple, menu driven program design and simple delivery method. The REN encourages the Commission to adopt a program design that is easy for homeowners to understand and simple for contractors to deliver. Energy efficiency projects are sold at the kitchen table, and few homeowners have an understanding of how investing in energy efficiency or a whole house upgrade will benefit them. A simple program design will sell more projects, and result in more satisfied ratepayers. Market transformation is a long process that must engage all market actors with the fewest barriers to entry as possible, while still maintaining a high standard of quality and emphasis on building science principles.

Formatted: Font:

Formatted: Indent: First line: 0.25", No bullets or numbering

Formatted: Font:

Formatted: Font:

Formatted: Line spacing: 1.5 lines

~~Home Performance~~MODIFIED EUC FLEX PATH PROGRAM

IV. ~~ ~~

A. Overview

The Modified EUC Flex Path program builds on the success of the ARRA Flex Path pilot program implemented under Energy Upgrade California (EUCLA) in Los Angeles County, and expands this innovative point based prescriptive program design to accommodate and encourage more comprehensive upgrade projects. The Flex Path approach was developed as a response to poor market penetration by both the Basic Path and Advanced Path programs currently being offered as part of EUC by investor owned utilities (IOU(s)) in Los Angeles County. The Los Angeles County team first introduced a modified Flex Path program (Home Performance Flex Path) concept that included a tiered incentive structure and a calculated energy savings methodology by vintage and climate zone in July 2012. This original program concept has now become the Modified EUC Flex Path program presented in this program implementation plan.

SoCalREN and the IOU's are ~~very~~ close to reaching agreement on a single program design and delivery method for a modified basic program. Both the REN and IOU program designs have the same three envelope Base M~~m~~easures which include ~~(~~Whole House Air Sealing, Attic Insulation and Air Sealing, and Duct Sealing and Insulation or Duct Replacement~~)~~. ~~-~~The statewide IOU and REN teams agree on a program design that ~~SoCalREN~~ requires 1 of 3 Base Measures plus a minimum of 2 Flex Measures. ~~; the IOU design requires 2 of 3 Base Measures plus a minimum of 1 additional upgrade measure. The REN feels the 2 of 3 requirement is too restrictive and will limit participation in much the same way as the Basic Path. In a contractor engagement meeting with 10 Flex Path contractors the REN team was told by specialty contractors (HVAC, insulation, and plumbing) that they could not sell the 2 of 3 approach to homeowners. The IOU's have publicly stated that should the Commission accept the 1 of 3 Base Measure approach as adequately "supporting" the Loading Order they will also accept it and the REN and IOU's will be in complete agreement on a single program design.~~ The REN has provided engineering workpapers, and submitted a revised E3 Calculator supporting the 1 of 3 Base Measure design as part of the~~ir~~ir~~s~~ January 14, 2013 compliance filing. ~~, while the IOU's are expected to file an E3 Calculator supporting the 2 of 3 Base Measure approach.~~

The program supports the EE loading order with 1 of 3 envelope Base Measures and links Base and Flex Measures together to support envelope and core system upgrades.

Formatted: Heading 1

Formatted: Heading 1, Tab stops: Not at 0"

Formatted: Font: +Headings (Calibri)

Formatted: Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines, No bullets or numbering

Formatted: Font: Arial Narrow, 11 pt, Font color: Accent 3

Formatted: Font: Arial Narrow, 11 pt, Font color: Accent 3

Formatted: Font: Arial Narrow

Formatted: Font: Arial Narrow, 11 pt, Font color: Accent 3

Formatted: Font: Arial Narrow, 11 pt, Font color: Accent 3

B. Program Design~~Download of the E3 Calculator supporting the 1 of 3 Base Measure design available here: http://dl.dropbox.com/u/16342187/SoCalREN%20PIP%20Revision%20FINAL%20Files%20 %20PUBLIC/SoCalREN%20E3%20Calculators%20 %20PUBLIC/SoCalREN%202013-14%20SF%20Flexpath%20e3%201%20of%203%20calcs%202013_0105.zip~~

The ~~Home Performance~~Modified EUC Flex Path ~~(HPFP)~~ program offers a balanced approach intended to produce a high volume of retrofits while maintaining a reasonable level of technical rigor and quality assurance. The proposed program will:

- Support the energy efficiency loading order with 1 of 3 Base Measures and linking~~Link~~ Base and Flex Measures together to support ~~building shell~~envelope and core system upgrades
- Provide a tiered incentive level from $1,000 to $2,5~~3,0~~00 in $500 increments (shown in Figure 5~~the table~~ below) which still allows the contractor to upsell to the Advanced Path if desired by the homeowner
- Penetrate the lower-middle and middle-income homeowner markets with a simple, menu driven approach that will~~to~~ greatly increase the volume of projects
- Maintain high standards of Quality Control consistent with IOU and industry best practices and promote homeowner safety with pre-and-post-installation combustion appliance safety testing
- ~~Maximize~~ ratepayer benefits by creating an on-ramp for both homeowners and contractors while minimizing lost opportunities
-

Figure 5: Proposed Tiered Incentive Structure

Point Total	Incentive Amount	Estimated Site Savings
100	$1,000	10%
150	$1,500	15%
200	$2,000	20%
250	$2,500	25%
~~300~~	~~$3,000~~	~~30%~~

Many ~~HPFP~~ Flex Measures require a specific Base Measure to better support the Energy Efficiency Loading Order and Core System upgrades as shown in the examples in the Figure 6~~table~~ below. In many projects this will result in the homeowner installing two or more ~~building shell~~envelope measures. The REN

Formatted: Heading 2, Tab stops: Not at 0"
Formatted: Line spacing: 1.5 lines
Formatted: Line spacing: 1.5 lines, Outline numbered + Level: 1 + Numbering Style: Bullet + Aligned at: 0" + Tab after: 0.5" + Indent at: 0.5", Tab stops: Not at 0"
Formatted: Font: 11 pt
Formatted Table
Formatted: Font: 11 pt
Formatted: Indent: Left: 0", First line: 0", Space After: 0 pt
Formatted: Font: 11 pt
Formatted: Indent: Left: 0", First line: 0", Space After: 0 pt
Formatted: Font: 11 pt
Formatted: Indent: Left: 0", First line: 0", Space After: 0 pt
Formatted: Font: 11 pt
Formatted: Indent: Left: 0", First line: 0", Space After: 0 pt
Formatted: Indent: Left: 0", First line: 0", Space After: 0 pt
Formatted: Line spacing: 1.5 lines

feels the required Base Measure design combines complementary measures in a way that adequately supports the Loading Order without introducing unnecessary restrictions on the contractor and homeowner. This systems oriented design will help to ensure that each building system will be installed properly and provide the maximum benefit to the ratepayer.

Figure 6: Examples of Flex Measures That Require a Specific Base Measure

Flex Measures	Required Base Measure
Wall Insulation or Windows	Whole House Air Sealing
Crawlspace Insulation	Whole House Air Sealing
Attic Radiant Barrier	Attic Air Sealing and Insulation
HVAC Equipment Replacement	Duct Sealing and Insulation or Duct Replacement + one additional Base Measure or envelope Flex Measure

~~Of 1,273 homeowners participating in the Flex Path program 44% implemented one or more shell measures without being required to do so. The REN estimates that the 1 of 3 Base Measure approach will result in up to 75%.~~ The 1 of 3 envelope Base Measure approach guarantees that 100 percent of homeowners will implement~~ing~~ at least one envelope (building shell~~shell~~) measure. The Modified EUC Flex Path program will also require that HVAC equipment projects include Duct Sealing and Insulation or Duct Replacement and an additional Base Measure or envelope Flex Measure as directed by Energy Division staff.

Formatted: Font: Bold

Formatted: Font: 11 pt

Formatted Table

Formatted: Font: 11 pt

Formatted: Indent: Left: 0", First line: 0", Space After: 0 pt

Formatted: Font: 11 pt

Formatted: Space After: 0 pt

Formatted: Indent: Left: 0", Hanging: 1.75", Space After: 0 pt

Formatted: Font: 11 pt

Formatted: Space After: 0 pt

Formatted: Indent: Left: 0", Hanging: 1.75", Space After: 0 pt

Formatted: Indent: Left: 0.03", First line: 0", Space After: 0 pt

Formatted: Font: 11 pt

Formatted: Space After: 0 pt

Formatted: Font: 11 pt, Font color: Black, Kern at 12 pt

Formatted: Line spacing: 1.5 lines

This simple, flexible design is expected to ~~will also~~ greatly increase the volume of projects over the Basic Path. The Modified EUC Flex Path program is flexible enough to allow some homeowners to focus on envelope improvements while others ~~The remaining homeowners will~~ focus on completing core system upgrades. Contractors will be trained and encouraged to develop work scopes that go beyond core systems and include more ~~building shell~~envelope measures. The 2013-2014 transition period gives the Commission the opportunity to test a program design that will achieve a higher volume of retrofits and reasonably support the energy efficiency loading order.

~~In 2015 and beyond, as market transformation accelerates, it may be prudent to go to a 2 of 3 Base Measure approach and these two transition years will give contractors time to acquire additional skills to perform more comprehensive retrofits.~~ The Modified EUC Flex Path program~~HPFP~~ also introduces a bonus measure for right-sizing of HVAC equipment to support the EE loading order for core systems and test market acceptance of this approach outside a formal Quality Installation requirement. Again, the REN wishes to use the transition period to try an innovative program design to see what works and what does not, and one that does not limit participation. The challenge in any program design is finding the right balance between volume and ~~home performance~~building science priorities. Lessons learned will be few if homeowner participation is low. The Commission cannot afford another two years of learning only what does not work.

The Modified EUC Flex Path program requires that HVAC equipment projects include Duct Sealing and Insulation or Duct Replacement and one additional Base Measure or envelope Flex Measure.

The Modified EUC Flex Path program~~HPFP~~ is intended to de-mystify the whole house energy efficiency upgrade approach. The program ~~-~~offers a homeowner education component that will explain the benefits of the EE loading order and encourage homeowners to undertake a whole house energy upgrade in steps as their budget allows. Contractors will perform a walk-through audit that will ~~result~~ serve as ~~in~~ an energy efficiency roadmap for the homeowner that provides a comprehensive list of measures for future implementation. A draft of the walk-through audit form is presented in Attachment D. The ~~EE~~energy efficiency roadmap provides contractors with an expanded customer base that promotes long term job stability and repeat business.

The Modified EUC Flex Path program addresses the barriers to entry into the home performance upgrade market and is intended to facilitate driving EUC to scale statewide.

Formatted: Font: Arial Narrow, 11 pt

Formatted: Line spacing: 1.5 lines

Formatted: Font: Arial Narrow, 11 pt, Font color: Accent 3

Formatted: Line spacing: 1.5 lines

Formatted: Font: Arial Narrow, 11 pt, Font color: Accent 3

Formatted: Font: Arial Narrow, 11 pt, Font color: Accent 3

Formatted: Font: Arial Narrow, 11 pt, Font color: Accent 3

Formatted: Font: Arial Narrow, 11 pt, Font color: Accent 3

Formatted: Font: Arial Narrow, 11 pt, Font color: Accent 3

Formatted: Font: Bold

Formatted: Line spacing: 1.5 lines, Tab stops: 0.5", Left

Formatted: Line spacing: 1.5 lines

- Modified EUC Flex Path is a prescriptive incentive program that eliminates the need for energy modeling of a home, reducing the number of visits by contractors and QC inspectors to the home by at least half over the Advanced Path.
- Modified EUC Flex Path is a points-based approach that gives homeowners and contractors the flexibility they need to bundle measures as their needs and budget allow while still supporting the energy efficiency loading order.
- Homeowners are able to do several energy efficiency upgrade projects over several years and prioritize upgrades that meet their needs, thereby dramatically increasing the number of middle-income homeowners that can be engaged in the home performance upgrade path.
- Modified EUC Flex Path facilitates homeowner engagement and energy efficiency education over a longer period of time and provides contractors with a base for repeat business that creates more jobs and makes employment more sustainable.
- The streamlined, prescriptive approach allows program implementers to handle a much greater volume of home performance upgrades at a lower cost, and has proven to increase customer satisfaction.
- The Modified EUC Flex Path program will be integrated with existing financing products, and loans can be funded in weeks as opposed to months.
- Modified EUC Flex Path solves the problem of mechanical equipment replacement on burn-out and provides incentives to move homeowners up to a higher level of efficiency; and a trained contractor pool is ready with the right equipment.
- Modified EUC Flex Path will allow more contractors to get involved in the program, create more green jobs, and accelerate market transformation.

The REN has eliminated all five-point measures from the prescriptive menu and have included them as required or recommended best practices in applicable equipment measures.

Modified EUC Flex Path focuses workforce development on contractor quality installation and improving home performance best practices, not energy modeling that is controversial at best. Key design elements include the following:

- ~~**HPFP Program Eligibility & Incentive Levels**~~ Three or more qualifying measures must be installed using a combination of Base and Flex Measures as de scribed~~fined~~ in Figure 8~~the table~~ below.

Formatted: Indent: Left: 0", Hanging: 0.5", Line spacing: 1.5 lines

Formatted: Font: Arial Narrow, 11 pt, Font color: Accent 3

Formatted: Font: Arial Narrow, 11 pt, Font color: Accent 3

Formatted: Line spacing: 1.5 lines

Formatted: Font: (Default) Arial Narrow, 11 pt

Formatted: Font: Arial Narrow, 11 pt, Font color: Accent 3

Formatted: Font: Arial Narrow, 11 pt, Font color: Accent 3

Formatted: Indent: First line: 0.5", Line spacing: 1.5 lines

Formatted: Indent: First line: 0.5", Tab stops: Not at 0"

- The Modified EUC Flex Path program requires that HVAC equipment projects include Duct Sealing and Insulation or Duct Replacement and one additional Base Measure or envelope Flex Measure.
- The three selected measures must have a combined point value of 100 to meet the minimum $1,000 incentive threshold, and up to 3025~~3~~0 points for the maximum $~~3,0~~2,500 incentive.
- All five-point measures have been eliminated from the ARRA Flex Path program design.
- Work must be performed by a EUC Participating Contractor.~~allCS~~
- Projects must provide proof of~~btain~~ all applicable building permits and adhere to all local, state, and federal laws and building codes.
- All projects require 100% pre-and-post-combustion safety testing regardless of measures installed performed by a BPI certified Building Analyst (BA) as directed by Energy Division staff.
- Homeowners must be an active IOU account holder, and may choose to have the ~~HPFP~~ incentive paid directly to the Participating Contractor.
- ~~Combustion Safety testing by a BPI BA is required at completion of work for all projects.~~

Program requires 100% pre-and-post-combustion safety testing for all projects regardless of measures installed as directed by Energy Division staff.

The RENs and IOUs agree that all five-point measures offered in the ARRA Flex Path program will be eliminated. It is also agreed that the measures do offer value to homeowners as best practices and the chart below describes the proposed disposition of each five-point measure.

Figure 7: Proposed Disposition of ARRA Flex Path Five-Point Measures

Flex Path Five-Point Measures to be Removed	Flex Path Requirement	Proposed Disposition
Programmable Thermostat	Energy Efficient Programmable Thermostat(s); Serves Entire Conditioned Area	Add the following statement to all HVAC equipment measures and duct sealing and insulation measure(s): Recommend replacement of a manual thermostat with digital, setback programmable model.
Low Flow Showerheads	Low Flow Showerheads ≤ 1.5 gpm; Bathroom Faucet Aerators ≤ 1.5 gpm; Kitchen Faucet Aerators ≤ 2.2 gpm	Add the following statement to program participation requirements (1 of 3 Base Measures; minimum three measures, etc.): All Flex Path projects require installation of a thermostatic shut-off valve on all showers in the home except when installing a tankless water heating system.
Hot Water Pipe Wrap	Minimum First 5ft of Hot Water Pipe	Add the following statement to all domestic hot water

	Wrapped	measures: Must include pipe wrap for first five feet of exposed pipes.
ENERGY STAR Lighting	EnergyStar CFL or LED Fixture(s); Permanently Installed	Add the following statement to Attic Insulation and Sealing: It is highly recommended that all incandescent recessed can lighting fixtures be replaced with ENERGY STAR® CFL fixtures or ENERGY STAR® LED fixtures.

The Modified EUC Flex Path program also proposes to provide a bonus to the homeowner for installing more than one Base Measure. The first additional Base Measure (2 of 3) will receive a bonus of 15 points and the second additional Base Measure (3 of 3) will receive a bonus of 20 points. The measure point values and bonuses are cumulative. Figure 8 below summarizes how the Base Measure Bonus will add value to a project and drive more envelope measures.

Figure 8: Example of Base Measure Bonus Structure

Number of Base Measures	Base Measure Description	Base Measure Points	Bonus Points Added	Measure Points	Cumulative Total Points
1 of 3	Attic Air Sealing and Insulation	70	Base Measure Points Only	70	70
2 of 3	Duct Sealing and Insulation or Duct Replacement	70	Base Measure Points + 15 Bonus Points	70+70+15	155
3 of 3	Whole House Air Sealing	30	Base Measure Points + 20 Bonus Points	155+30+20	205

~~The HPFP measures below include existing and post-upgrade conditions, diagnostic testing (if required), and estimated point values. It should be noted that point values are based on average energy savings across SCE and SCG service territories and are preliminary pending further collaboration with the IOU's to determine final values.~~ The REN supports~~s~~ the IOU's in the development and limited piloting of a software tool that a contractor can use to calculate project points and percentage of energy savings based on basic characteristics of each home, vintage, and climate zone, provided the RENs are not required to use it. The currently proposed REN data management system will not support the use of this tool. In addition, the REN feels this approach is too complicated for homeowners to understand, as it is technically a calculated method that could result in different energy savings values and incentive amounts for each home. The REN would prefer to offer the same simple, prescriptive, points based menu approach to all homeowners and do

Formatted: Font: 10 pt
Formatted: Indent: Left: 0", First line: 0", Space After: 0 pt, Line spacing: 1.5 lines
Formatted: Line spacing: 1.5 lines
Formatted: Centered, Indent: Left: 0", First line: 0", Space After: 0 pt, Line spacing: 1.5 lines
Formatted Table
Formatted: Font: 10 pt
Formatted: Centered, Line spacing: 1.5 lines
Formatted: Font: 10 pt
Formatted: Centered, Line spacing: 1.5 lines
Formatted: Indent: Left: 0", First line: 0", Space After: 0 pt, Line spacing: 1.5 lines
Formatted: Font: 10 pt
Formatted: Font: 10 pt
Formatted: Font: 10 pt
Formatted: Indent: Left: 0", First line: 0", Space After: 0 pt, Line spacing: 1.5 lines
Formatted: Font: 10 pt
Formatted: Font: 10 pt
Formatted: Font: 10 pt
Formatted: Font: 10 pt
Formatted: Font: 10 pt
Formatted: Centered, Line spacing: 1.5 lines
Formatted: Font: 10 pt
Formatted: Centered, Line spacing: 1.5 lines
Formatted: Indent: Left: 0", First line: 0", Space After: 0 pt, Line spacing: 1.5 lines
Formatted: Font: 10 pt
Formatted: Font: 10 pt
Formatted: Line spacing: 1.5 lines

virtually the same calculated energy savings calculations on the back end for the purpose of claiming savings and providing project specific data to Energy Division staff. The reason the ARRA Flex Path program was successful is because it was very simple and easy for homeowners to understand.

The Modified EUC Flex Path measures in Figure 8 below include existing and post-upgrade conditions, diagnostic testing (if required), and estimated point values. It should be noted that point values are based on average energy savings across SCE and SCG service territories and are preliminary pending further collaboration with the IOU's and Energy Division staff to determine final values.

Formatted: Font: Not Bold

Formatted: Indent: First line: 0.5", Line spacing: 1.5 lines

Formatted: Font: Not Bold

C. Qualifying Measures

Figure 8: BASE Measures – Select ONE (1) or more Base Measures

To participate in the Modified EUC Flex Path program, homeowners must install a minimum of one Base Measure and two or more Flex Measures with a combined point value of 100 or greater using an Energy Upgrade California Participating Contractor. All Flex Path projects require installation of a thermostatic shut-off valve on all showers in the home except when installing a tankless water heating system.

Base Measure ID	Base Measure	Existing Condition	Post-Upgrade Condition	Diagnostic Testing	Point Value
		BASE Measures			
The Attic Insulation & Attic Air Sealing measure requires that HVAC ducts be sealed or separated from the insulation material. It is also highly recommended that all incandescent recessed can lighting fixtures be replaced with ENERGY STAR® CFL fixtures or ENERGY STAR® LED fixtures.					
1A	**Attic Insulation & Attic Air Sealing**	≤ R-11	≥ R-44; Sealed Attic Top Plate	BD Test-Out; CAZ Test-Out	70~~75~~
1B	**Duct Insulation & Sealing OR Duct Replacement**	Leakage ≥ 28%; Insulation ≤ R-4	Leakage ≤ 6 %; Insulation ≥ R-8 or Buried	DuctBlaster Test-In/Out; CAZ Test-Out	70~~90~~
		Leakage ≥ 15% < 28%; Insulation ≤ R-4	Leakage ≤ 6 %; Insulation ≥ R-8 or Buried		35~~45~~
1C	**Whole House Air Sealing**	ACHn ≥ 130% ASHRAE 62.2	ASHRAE 62.2 ≤ ACHn ≤ 130% ASHRAE 62.2	BD Test-In/Out; CAZ Test-Out	30

FLEX Measures – Select TWO (2) or more FLEX Measures

Note some FLEX Measures may require a specific Base Measure be implemented

Required Base Measure	FLEX Measure	Existing Condition	Post-Upgrade Condition	Diagnostic Testing	Point Value
		FLEX Measures – ~~Building Shell~~Envelope			
1C	**Floor Insulation**	No Insulation	≥ R-19		60~~70~~
1C	**Wall Insulation**	No Insulation	≥ R-13	See Base Measure 1C	90
1C	**High Performance Windows**	Single or Double Clear Pane	EnergyStar or equivalent; U-factor ≤ 0.40; SHGC ≤ 0.25	See Base Measure 1C	8~~9~~0

Formatted: Heading 2, Tab stops: Not at 0"

Formatted: No underline

Formatted: Left

Formatted: No underline

Formatted Table

Formatted: Left

Formatted Table

1A	**Attic Radiant Barrier**	No Radiant Barrier	Continuous Rolled or Prelaminated Radiant Barrier	See Base Measure 1A	40~~50~~

Required Base Measure	**FLEX Measure**	**Existing Condition**	**Post-Upgrade Condition**	**Diagnostic Testing**	**Point Value**
FLEX Measures – Heating, Ventilation, & Air Conditioning					
HVAC equipment replacement measures require Base Measure 1B, Duct Insulation & Sealing OR Duct Replacement, plus an additional Base Measure or envelope Flex Measure. The Right Sizing HVAC Bonus requires Base Measure 1B and Base Measure 1C.					
1B	**Gas Furnace**	Gas Furnace; ≤ 0.80 AFUE	Gas Furnace; ≥ 0.95 AFUE ~~Heat Pump; ≥ 8 HSPF; 15 SEER; 11 EER~~	See Base Measure 1B ~~See Base Measure 1B~~	4~~5~~0 ~~TBD~~
1B	**Electric Heat Pump**	Heat Pump; ≤ 5.6 HSPF; 8 SEER; 6 EER	Heat Pump; ≥ 8 HSPF; 15 SEER; 11 EER	See Base Measure 1B	8~~9~~0
1B	**High Efficiency Air Conditioning**	≤ 10 SEER	Central AC; ≥ 15 SEER; ≥ 11 EER	See Base Measure 1B	40
N/A	**Right Sizing HVAC Bonus**	New Air Conditioning	Downsized AC Unit	N/A	10 per 1/2 ton; 30 max
		New Heat Pump	Downsized Heat Pump	N/A	10 per 1/2 ton; 30 max
1B	**Buried Ducts Bonus**	≤ R-4	Fully Buried Ducts*	See Base Measure 1B	20
~~**N/A**~~	~~**Programmable Thermostat**~~	~~Manual Thermostat (digital or analog)~~	~~Energy Efficient Programmable Thermostat(s); Serves Entire Conditioned Area~~	~~N/A~~	~~5~~

Required Base Measure	**FLEX Measure**	**Existing Condition**	**Post-Upgrade Condition**	**Diagnostic Testing**	**Point Value**
FLEX Measures – Water Heating					

Formatted: Left

Formatted Table

			Gas Storage Heater; ≤ 0.67 EF	CAZ Test-Out	450
N/A	**Gas Water Heater**	Gas Storage Heater; ≤ 0.575 EF	Gas On-Demand Tankless Heater; ≤ 0.88 EF	CAZ Test-Out	90
			Electric Storage Water Heater; ≤ 0.93 EF	N/A	1045
N/A	**Electric Water Heater**	Electric Storage Water Heater; ≤ 0.88 EF	Electric Heat Pump Water Heater; ≥ 2.0 EF	N/A	790
~~N/A~~	~~**Low Flow Showerheads**~~	~~No Thermostatic Flow Controls~~	~~Low Flow Showerheads ≤ 1.5 gpm; Bathroom Faucet Aerators ≤ 1.5 gpm; Kitchen Faucet Aerators ≤ 2.2 gpm~~	~~N/A~~	~~5~~
~~N/A~~	~~**Hot Water Pipe Wrap**~~	~~Unwrapped Hot Water Pipe~~	~~Minimum First 5ft of Hot Water Pipe Wrapped~~	~~N/A~~	~~5~~

Formatted Table

Required Base Measure	FLEX Measure	Existing Condition	Post-Upgrade Condition	Diagnostic Testing	Point Value
Additional FLEX Measures (added as dollar rebates to total incentive amount)					
		Single-Speed Primary Pump	Title-20 Compliant Variable Speed Pump & Controller	N/A	$20090
N/A	**Variable Speed Pool Pump**	Two-Speed Primary Pump	Title-20 Compliant Variable Speed Pump & Controller	N/A	$5030
~~N/A~~	~~**EnergyStar Lighting**~~	~~Indoor or Exterior Incandescent Fixture(s)~~	~~EnergyStar CFL or LED Fixture(s); Permanently Installed~~	~~N/A~~	~~2 per Fixture; 10 Max~~

~~The REN plans to continue offering five points for a setback programmable thermostat to encourage the best practice of replacing a manual thermostat. The REN acknowledges that there will be no energy savings claimed for the thermostat measure based on DEER, but feels that a core system upgrade is incomplete without this important component.~~ The ~~HPFP~~Modified EUC Flex Path program includes innovative measures like a Right Sizing HVAC Bonus incentive; Fully Buried HVAC Ducts Bonus incentive; and Electric Heat Pump Water Heater incentive. Both the REN and IOU programs require 100% pre-and-post-combustion safety testing ~~out~~ for all projects regardless of measures installed as directed by Energy Division staff.

IOU/REN collaboration has resulted in a number of agreements that will allow the partners to move quickly to implement a single Basic Path replacement program and other vital EUC support services in SCE and SCG service territories. ~~The REN and IOU's are coming together in support of the 1 of 3 program design and, should the Commission support this approach, intend to complete an advice filing as early as January 2013 and not wait until April. The IOUs and REN will jointly support the 1 of 3 approach at the Commission and in the public stakeholder process. Assuming a January 2013 advice filing and expedited approval by the Commission, the REN will not reintroduce the ARRA Flex Path design in LA County and the IOU's would not implement their modified Basic Path program other than a small pilot to test the software application for calculating project points and percentage savings. Upon approval of the 1 of 3 Base Measure approach by the Commission the REN/IOU team will negotiate geographic territories for program implementation that do not overlap or result in duplicate efforts, and does not cause customer confusion. All of the back office work in SoCalREN agreed upon territory would be run by the REN. The "soft" programs (contractor related, green building, audit subsidies, vouchers, marketing/outreach) are assumed to be IOU territory wide. The REN will work with the IOU's to eliminate duplication and provide REN services where they provide the greatest ratepayer benefit.~~

Should the Commission approve the Modified EUC Flex Path~~HPFP 1 of 3~~ program design ~~as a pilot program~~, and restore the proposed full REN budget of $9,228,614, the REN estimates that a total of 3,750 retrofits can be achieved at an average incentive of $2,000. Figure 9~~The table~~ below shows the estimated energy savings to be acquired under the Modified EUC Flex Path program ~~HPFP program~~with full funding. ~~.~~ The REN and IOU's will work together with the Commission to establish measure level energy savings using the IOU's ~~s~~ and REN engineering work papers currently under review by Energy Division staff~~software application to calculate energy savings~~.

Formatted: Line spacing: 1.5 lines

Formatted: Font: Not Bold

Formatted: Indent: First line: 0.5", Line spacing: 1.5 lines

Figure 9: ~~Home Performance~~Modified EUC Flex Path Proposed Net Energy Savings

Resource Acquired	2013	2014	Total
kWh Energy Savings	1,761,000	2,642,000	4,403,000
Peak kW Demand Reduction	1,950	2,930	4,880
Therm Savings	143,000	214,000	357,000

SoCalREN has worked closely with SCE and SCG to reach an unprecedented level of cooperation that serves to leverage the substantial investment made by LA County in Energy Upgrade California. SoCal REN respectfully requests approval of the ~~Home Performance~~Modified EUC Flex Path program with its 1 of 3 Base Measure approach in order to continue piloting a simple, flexible program design that will provide invaluable market penetration data to inform the next generation of whole house upgrade programs and move the statewide team closer to sustainable market transformation.

D. Geographic Territory

In recognition of the final decision which states that, "we would like to see the REN proponents and the IOUs work together to design a programmatic approach that covers all of the geographic areas of the IOU service territories with a seamless set of offerings. This means that the RENs would implement the modified EUC Flex Path (or a new program name, if one is agreed upon) in the geographic areas that they cover, while the IOUs would implement the program in the rest of their territory," SoCalREN proposes to eventually operate the modified EUC Flex Path program in all the geographic areas it serves. The final decision goes on to explain that, "The vision for RENs is that they are *regional,* which, in the context of defining a REN, means that they represent several local government entities and not just one or two. For example, BayREN and SoCalREN represent two of the most populous regions of the state, encompassing multiple city and county governments within their structures."

SoCalREN has clearly established its territory as being that of the joint service territories of SCE and SCG for all of the SoCalREN services; however, for the Modified EUC Flex Path program, the REN will start by implementing the program only within L.A. County and will expand into other counties within the SoCalREN

Formatted: Indent: First line: 0.5", Line spacing: 1.5 lines

Formatted Table

Formatted: Line spacing: 1.5 lines

Formatted: Heading 2, Indent: First line: 0"

territory as the program shows success. Future REN expansion will be negotiated with SCE and SCG based on program performance metrics to be jointly determined. SCG will administer Flex Path in municipal electric utility territories; SCE will administer Flex Path in municipal gas territories. SCE and SCG will administer Flex Path in territories that are shared with PG&E and SDG&E. Non-resource programs (contractor related outreach, green building labeling, audit subsidies, vouchers, marketing/outreach, etc.) are assumed to be IOU territory-wide. The REN will work with the IOU's to eliminate duplication and provide REN services where they provide the greatest ratepayer benefit.

E. Marketing and Outreach

As demonstrated on the ARRA funded Flex Path program, very few specific marketing activities will be required to engage homeowners in the program. A program brochure will be produced for the contractor that explains the importance of the EE loading order, the benefits of a whole house energy upgrade, and the terms of participation in the program. Modified EUC Flex Path program messaging will be added to existing planned marketing and outreach activities and media promotions. A program specific web URL will be established to engage homeowners and contractors in participation in the program using Frequently Asked Questions, a Qualifying Measures list, an Online Application, and the Project Completion Form. The REN will work with contractors directly to promote and deliver the program.

The REN proposes an email campaign to follow up with homeowners on recommended additional measures based on their energy efficiency roadmap.

F. Data Processing

EnergyOrbit is a cloud-based energy efficiency program management solution. Built on the Force.com platform, energyOrbit allows Demand Side Management (DSM) programs to be set up quickly and be managed with little overhead, while maintaining maximum flexibility. With both the broad functionality of the Salesforce platform and the industry-specific customization of energyOrbit, the full life cycle of a program can be managed from online, portal-based application entry to post-retrofit communications. EnergyOrbit has been deployed by dozens of POUs, IOUs, cooperatives, and program implementation firms, including ComEd, PG&E and Santee Cooper.

The REN has proposed using energyOrbit to manage and track all REN programs. Previously used in Los Angeles County to administer the Flex Path program, the energyOrbit solution contains a number of turn-key features that facilitate fast program set-up and comprehensive program tracking. These features support customers and program administrators while satisfying program funding requirements and other stakeholder

Formatted: Font: (Default) Arial Narrow
Formatted: Indent: First line: 0.5"
Formatted: Font: Arial Narrow, 11 pt, Font color: Accent 3
Formatted: Font: Arial Narrow, 11 pt, Font color: Accent 3
Formatted: Font: Arial Narrow, 11 pt, Font color: Accent 3
Formatted: Font: Arial Narrow, 11 pt, Font color: Accent 3
Formatted: Font: Arial Narrow, 11 pt, Font color: Accent 3
Formatted: Font: Arial Narrow, 11 pt, Font color: Accent 3
Formatted: Font: Not Bold, No underline
Formatted: Font: (Default) +Headings (Calibri)
Formatted: Font: (Default) +Headings (Calibri), Not Italic
Formatted: Indent: First line: 0.5"
Formatted: Font: Not Bold
Formatted: Font: Not Bold
Formatted: Font: Not Bold
Formatted: Font: Not Bold
Formatted: Font: Not Bold
Formatted: Font: Not Bold
Formatted: Font: Not Bold
Formatted: Font: Not Bold
Formatted: Font: Not Bold
Formatted: Font: Not Bold
Formatted: Font: Not Bold

interests through comprehensive customer relationship management (CRM), automated work processes, and standardized energy calculation and analysis. EnergyOrbit supports the full life-cycle of a program with robust tracking and reporting capabilities. Examples of what energyOrbit supports include:

- Full spectrum of efficiency technology measures
- Equipment management
- Contractor management
- Customer management
- Audit and work-order management
- Energy savings, installation costs and rebate savings for prescriptive and calculated measures
- Detailed reporting of program performance

In conjunction with energyOrbit's exclusive features, the tool is bundled with Salesforce CRM Enterprise Edition. Salesforce is the most comprehensive cloud-based CRM tool available, managing not only sales, but also marketing and customer service. Examples of how the REN will take advantage of these capabilities include:

- Call center management for contractor and homeowner support
- Automated status update emails based on event triggers
- Customized fields to support a walk-through audit
- Post-retrofit email campaign to follow up with homeowners on recommended additional measures based on their walk through audit and resulting energy efficiency roadmap

EnergyOrbit is a closed-loop system with extensive security features. Data can be locked down in a number of ways based on a broad data access model. At the baseline, organization-wide defaults restrict access to the bare minimum needed by all users. Salesforce also provides system security for physical, network, transmission, and application mechanisms, resulting in an ISO27001 security certification.

Based on the prior successful use of energyOrbit in Los Angeles County and the robust functionality of the system, the REN proposes to use this tool for the 2013-14 portfolio of programs. EnergyOrbit would support Energy Upgrade California (EUC) and financing programs including:

- Modified EUC Flex Path
- Multifamily
- HVAC
- Energy Champions
- CoOp Marketing

Formatted: Font: Not Bold

Formatted: Font: Not Bold

Formatted: Font: Not Bold

Formatted: Outline numbered + Level: 1 + Numbering Style: Bullet + Aligned at: 0" + Tab after: 0.5" + Indent at: 0.5"

Formatted: Indent: First line: 0.5"

Formatted: Font: Not Bold

Formatted: Font: Not Bold

Formatted: Font: Not Bold

Formatted: Font: Not Bold

Formatted: Font: Not Bold

Formatted: Font: Not Bold

Formatted: Font: Not Bold

Formatted: Outline numbered + Level: 1 + Numbering Style: Bullet + Aligned at: 0" + Tab after: 0.5" + Indent at: 0.5"

Formatted: Font: Not Bold

Formatted: Indent: First line: 0.5"

Formatted: Font: Not Bold

Formatted: Font: Not Bold

Formatted: Font: Not Bold

Formatted: Font: Not Bold

Formatted: Font: Not Bold, Not Italic, No underline

Formatted: Font: Not Bold

Formatted: Font: Not Bold

Formatted: Font: Not Bold

Formatted: Font: Not Bold

- Assessment vouchers
- Commercial PACE
- Single family LLR
- Multifamily LLR

Each program would be developed according to both program designs and relationships between programs to accurately report on both unique projects and connections between them. Projects in each program would be tracked seamlessly throughout their life-cycle, from application to incentive payment and post-payment follow-up.

While each program will utilize different functionality, it may be illustrative to describe the process of how a project moves through the energyOrbit system. Figure 10 provides an example of this flow that is based on a hypothetical project in the Modified EUC Flex Path program.

Figure 10: Example of energyOrbit Process Flow

Formatted: Indent: First line: 0.5"

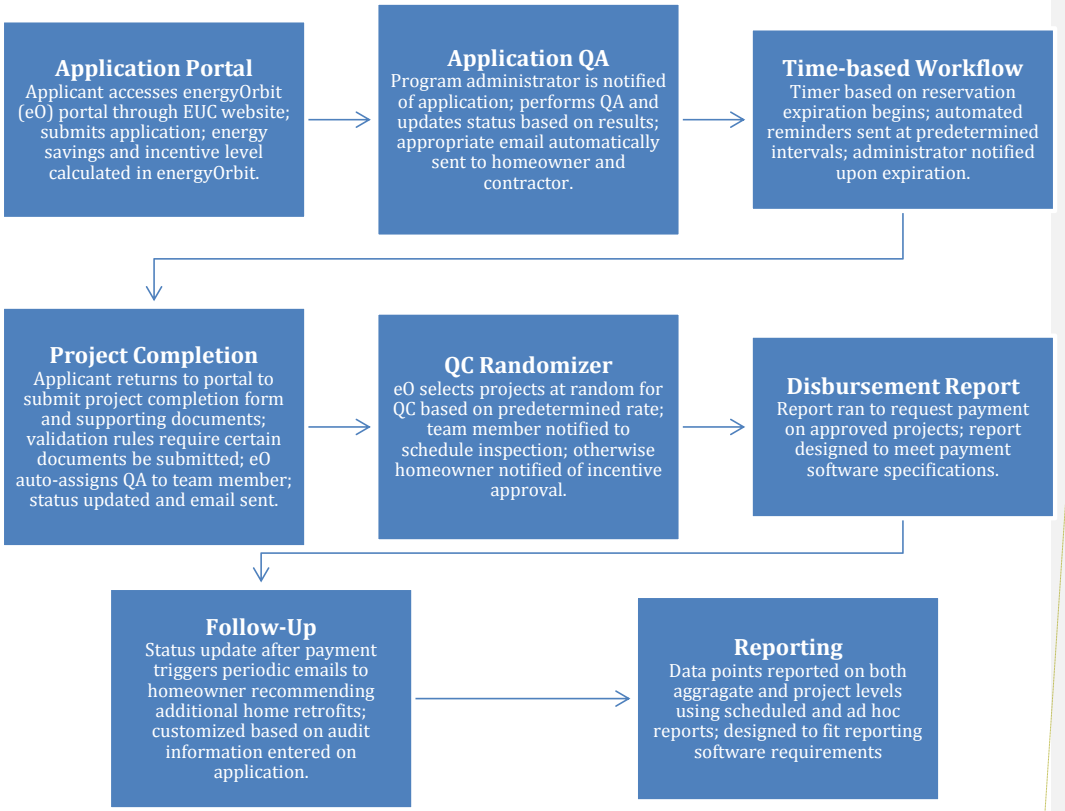
Formatted: Font: Not Bold

Formatted: Font: Not Bold

Formatted: Font: Not Bold

Formatted: Font: Not Bold

Formatted: Font: Not Bold



Formatted: Font: (Default) Arial Narrow, Bold

G. Application Processing and Quality Assurance

A comprehensive Quality Assurance (QA) Plan is an integral part of the Modified EUC Flex Path program. Quality assurance protects participants by providing an independent review of the work performed by the participating contractor to ensure that the installation meets industry best practices and program standards. The REN Quality Assurance Plan includes strategies to ensure that participating contractors are competent and that completed energy efficiency improvements meet program standards as follows:

- **Project Completion Form review process** that ensures compliance and provides follow up with the Participating Contractor where necessary.
- **Customer feedback mechanism** which allows the customer to provide program and contractor feedback directly to the Program Administrator.
- **In-field inspection protocols** including a sampling rate that is aligned with Home Performance with ENERGY STAR standards at a minimum.
- **Conflict Resolution Protocols** for responding to contractors' disputes with QA reports.
- **Record keeping and tracking** of results from in-field inspections, customer feedback and any corrective actions undertaken.

1. Flex Path Process

The Modified EUC Flex Path program will manage program participation in the following sequence:

- Contractor (or homeowner) completes project Application Form.
- Review of project Application Form. Submission of Application Form is necessary for 60 day reservation date to be issued by Program Administrator.
- Walk through audit and project work scope initiated and completed by participating contractor.
- Quality Control (witness of test-out results may be required for some measures).
- Contractor submits Project Completion Form (with required supporting documentation).
- 100% Desktop Quality Assurance Review of Project Completion Form and Supporting Documentation.
- Quality Control (In-field inspection).

Figure 11 outlines the 12-step desktop quality assurance review that will be undertaken for every Flex Path Application Form received.

Formatted: Font: (Default) +Headings (Calibri)
Formatted: Heading 2, Indent: First line: 0"
Formatted: Line spacing: 1.5 lines
Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines
Formatted: Small caps
Formatted: Small caps
Formatted: Heading 3, No bullets or numbering
Formatted: Line spacing: 1.5 lines
Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines
Formatted: Indent: First line: 0.5", Line spacing: 1.5 lines
Formatted: Line spacing: 1.5 lines

Figure 11: Quality assurance procedure for desktop review of Application Form

Step	Review	Action
1	Alert created if Utility Service Account number is the same as another EUCLA project	The program administrator will check the Utility Service Account number provided against all other EUCLA projects. If an application is found with the same Utility Service Account, then the program administrator will review the scope of work for each application and confirm that they are different.
2	Utility Service Account Holder address is within Los Angeles County	The program administrator verifies that address provided is within Los Angeles County and is a single family detached home.
3	Utility Service Account Holder has not received an incentive for the same measure(s) in the past five years	The REN will work with the IOUs to share data regarding previous participation in IOU programs. Every application will be checked for previous participation at the measure level.
4	Contractor has valid contractor's license	Program administrator confirms that contractor is on the Participating Contractor list. A valid contractor's license is confirmed during the Participating Contractor application process in the Energy Upgrade California Program.
5	Contractor has performed walk through audit	Program administrator confirms that Contractor has submitted a completed walk through audit form.
6	Utility Service Account Holder's email address functions	Upon application submittal, a manual email will be generated to the Utility Service Account Holder's email address. Program administrator will see if the email is undeliverable.
7	Utility Service Account number is in correct format for electric utility selected	The program administrator will verify the account number provided against the known number of digits for selected utility provider.
8	Utility Service Account number is in correct format for gas utility selected	The program administrator will verify the account number provided against the known number of digits for selected utility provider. If it is not in the correct format, and the homeowner or contractor informs the program administrator that there is no gas utility service to the property, then this is acceptable.

Formatted: Line spacing: 1.5 lines
Formatted: Centered, Line spacing: 1.5 lines
Formatted Table
Formatted: Line spacing: 1.5 lines
Formatted: Centered, Line spacing: 1.5 lines
Formatted: Line spacing: 1.5 lines
Formatted: Centered, Line spacing: 1.5 lines
Formatted: Centered, Line spacing: 1.5 lines
Formatted: Line spacing: 1.5 lines
Formatted: Line spacing: 1.5 lines
Formatted: Centered, Line spacing: 1.5 lines
Formatted: Line spacing: 1.5 lines
Formatted: Centered, Line spacing: 1.5 lines
Formatted: Line spacing: 1.5 lines
Formatted: Centered, Line spacing: 1.5 lines

Step	Review	Action
9	Utility Service Account address is within electric utility territory selected	Confirm that the city is listed within Los Angeles County, and not served by Los Angeles Department of Water and Power or other municipal utility provider.
10	Utility Service Account address is within gas utility territory selected	Confirm that the city is listed within Los Angeles County, and is not served by a municipal utility.
11	Measures selected in application are deemed qualifying measures	The program administrator will verify that at least one Base Measure is selected and a total of three or more retrofit measures have been selected and that their combined point value is 100 or greater.
12	Electronic signature matches utility service account holder's name	The program administrator will verify that the Utility Service Account holder name matches the electronic signature on the application.

2. Other Eligibility Requirements

Another eligibility requirement that is included in the program design, website, and marketing material: new construction and major (gut) rehabilitation cannot apply for the Modified EUC Flex Path program.

3. Review of Project Completion Form

After installation of the Qualifying Measures agreed to in the Application Form is complete, the participant will be required to close out their application by completing a Project Completion Form. The purpose of this form is to ensure that program requirements for pre-and-post-retrofit conditions have been met, an itemized invoice has been paid in full, proof of pre-and-post combustion appliance safety testing, and all additional supporting documentation required for each measure has been submitted. In the case of a homeowner not being able to pay the full amount at the time of project completion, proof of financing is acceptable in lieu of a paid invoice. To satisfy the invoice requirements, a written copy of the financing agreement, signed by both parties, must be submitted to the Program Administrator as part of the supporting documentation package.

Once a Project Completion Form is submitted through the EUCLA website, an application processor will review all supporting documentation to verify the required documents have been submitted in compliance with pre-and-post-retrofit conditions.

Formatted: Line spacing: 1.5 lines
Formatted: Centered, Line spacing: 1.5 lines
Formatted: Line spacing: 1.5 lines
Formatted: Centered, Line spacing: 1.5 lines
Formatted: Line spacing: 1.5 lines
Formatted: Centered, Line spacing: 1.5 lines
Formatted: Line spacing: 1.5 lines
Formatted: Centered, Line spacing: 1.5 lines
Formatted: Indent: Left: 0.5", No bullets or numbering
Formatted: Heading 3, No bullets or numbering
Formatted: Indent: First line: 0.5", Line spacing: 1.5 lines
Formatted: Heading 3, No bullets or numbering
Formatted: Indent: First line: 0.5", Line spacing: 1.5 lines

At the point of downloading the Project Completion Form information from the website, the application processor will ensure that a note is made in the file if the project cost does not equal or exceed the total amount of the Flex Path incentive. The processor will also verify that regularly-permitted measures have a permit number included, and if not a note is made in the file and the contractor is contacted.

For air sealing and duct insulation and sealing, the Participating Contractor will submit test-in and test-out results using a downloadable Excel file located in the Project Completion Form section of the website. After filling in the appropriate information into the Excel document entitled Flex Path Test-In and Test-Out Templates, the contractor will upload the file into the Project Completion Form. Flex Path Test-In and Test-Out Templates will be the file that the quality assurance professional will use to review Combustion Safety Test-In and Test-Out results, Duct Blaster Test-In and Test-Out results, and Blower Door Test-In and Test-Out results.

Attachment A provides examples of existing Flex Path Test-In and Test-Out Templates which are provided in Excel format for participating contractors to complete and submit, and are available for use on the Modified EUC Flex Path program. Attachment B describes the process related to the review of test-In and test-Out documents. The in-field quality control selection protocol is described in Attachment C. Attachment D presents a draft of the proposed walk through audit template.

Formatted: Line spacing: 1.5 lines

Formatted: Indent: First line: 0.5", Line spacing: 1.5 lines

Formatted: Font: Not Bold

Formatted: Font: Not Bold

Attachment A: TEST FORMS

Figure 1: Combustion Safety Tests (CST) – Pre-Retrofit

COMBUSTION APPLIANCE SAFETY / COMBUSTION APPLIANCE ZONE TESTING	
PRE-RETROFIT	
In each box, please enter "PASS", "FAIL," the value requested or "N/A" (i.e. no blank boxes). N/A is the appropriate response only if there is no such combustion appliance to test. Explain all responses of "N/A" in the NOTES section. Any combustion device that is not on this form (e.g. fireplace insert) should be listed under "other" as necessary and explained in NOTES.	
Date of Combustion Safety Test-Out:	
BPI Building Analyst Performing Test-Out:	
Phone Number of BPI Professional:	
Outside Temperature at Time of Testing (in degrees F):	

	Worst Case Depressurization Test Results			Natural Conditions Test Results (if failed Worst Case)				
	Spillage	Draft (Pa)	CO (ppm)	Spillage	Draft (Pa)	CO (ppm)	Flue Inspection	Action Required*
Heating System 1								
Heating System 2*								
DHW System 1								
DHW System 2*								
Other*								

	location of testing	CO Ambient (ppm)	Base Pressure (Pa)	Worst Case pressure (Pa)	Final Net CAZ Depressurization	Limit for CAZ	Result	Action Required*
CAZ 1								
	list of CAZ 1 appliances:							
CAZ 2*								
	list of CAZ 2 appliances:							

Gas Leak Testing:		Leakage Notes:	

	Kitchen	Other*	Action Required
Ambient CO (ppm)			

	Fuel*	CO (ppm)	Vent Out?	Action Required
Oven				
Range				
Other Appliance				

	Fuel*	Gas Properly Vented	Action Required
Dryer Vent			

NOTES:	

***As needed, list additional systems/zones/actions in the notes section; identify other system/fuel types in the notes section**

Formatted: Heading 1, Centered, Indent: Left: 0.5"

Formatted: Font: (Default) Arial Narrow

Figure 2: Combustion Safety Tests (CST) – Post-Retrofit

COMBUSTION APPLIANCE SAFETY / COMBUSTION APPLIANCE ZONE TESTING
POST-RETROFIT
In each box, please enter "PASS", "FAIL," the value requested or "N/A" (i.e. no blank boxes). N/A is the appropriate response only if there is no such combustion appliance to test. Explain all responses of "N/A" in the NOTES section. Any combustion device that is not on this form (e.g. fireplace insert) should be listed under "other" as necessary and explained in NOTES.

Date of Combustion Safety Test-Out:	
BPI Building Analyst Performing Test-Out:	
Phone Number of BPI Professional:	
Outside Temperature at Time of Testing (in degrees F):	

	Worst Case Depressurization			Natural Conditions Test Results (if				
	Spillage	Draft (Pa)	CO (ppm)	Spillage	Draft (Pa)	CO (ppm)	Flue Inspection	Action Required*
Heating System 1								
Heating System 2*								
DHW System 1								
DHW System 2*								
Other*								

	location of testing	CO Ambient (ppm)	Base Pressure (Pa)	Worst Case pressure (Pa)	Final Net CAZ Depressurization	Limit for CAZ	Result	Action Required*
CAZ 1								
	list of CAZ 1 appliances:							
CAZ 2*								
	list of CAZ 2 appliances:							

Gas Leak Testing:		Leakage Notes:	

	Kitchen	Other*	Action Required
Ambient CO (ppm)			

	Fuel*	CO (ppm)	Vent Out?	Action Required
Oven				
Range				
Other Appliance				

	Fuel*	Gas Properly Vented	Action Required
Dryer Vent			

NOTES:	

***As needed, list additional systems/zones/actions in the notes section; identify other system/fuel types in the notes section**

Formatted: Font: (Default) Arial Narrow

Formatted: Font: Not Bold

Figure 3: Blower Door Tests – Pre-Retrofit

Blower Door Test-In	
PRE-RETROFIT	
Date of Blower Door Test-In:	
BPI Building Analyst Performing Test-In:	
Phone Number of BPI Professional:	
AIR INFILTRATION RESULTS	
House Infiltration (at 50Pa):	
For house infiltration testing, with method did you use?	
Below please paste a photo of the manometer results of this test:	

Formatted: Font: (Default) Arial Narrow

Figure 4: Blower Door Tests – Post-Retrofit

Blower Door Test-Out	
POST-RETROFIT	
Date of Blower Door Test-Out:	
BPI Building Analyst Performing Test-Out:	
Phone Number of BPI Professional:	
AIR INFILTRATION RESULTS	
House Infiltration (at 50Pa):	
For house infiltration testing, with method did you use?	
Below please paste a photo of the manometer results of this test:	

Formatted: Font: (Default) Arial Narrow

Figure 5: Duct Blaster Tests – Pre-Retrofit

Duct Blaster Test-In	
PRE-RETROFIT	
Date of Duct Blaster Test-In:	
BPI Building Analyst Performing Test-In:	
Phone Number of BPI Professional:	
DUCT LEAKAGE RESULTS	
How many HVAC duct systems were tested? For each one, submit this form separately.	
Calculated air flow from HVAC fan unit (CFM):	
For the duct pressurization test, how did you determine the full air flow from the fan unit? Write the equation you used and the numbers you inputted into the equation.	
Duct pressurization results (at 25Pa):	
Total duct leakage at start of job (supply + return), percentage of full flow (i.e. row 13 divided by row 11):	
Below please paste a photo of the manometer results of this test with the setting at 25Pa. If you are running a blower door test simultaneously, so you are pressurizing the whole house, please submit a photo of that manometer's reading as well to show that the ducts were pressurized to 25Pa.	

Figure 6: Duct Blaster Tests – Post-Retrofit

Duct Blaster Test-Out	
POST-RETROFIT	
Date of Duct Blaster Test-Out:	
BPI Building Analyst Performing Test-Out:	
Phone Number of BPI Professional:	
DUCT LEAKAGE RESULTS	
How many HVAC duct systems were tested? For each one, submit this form separately.	
Calculated air flow from HVAC fan unit (CFM):	
For the duct pressurization test, how did you determine the full air flow from the fan unit? Write the equation you used and the numbers you inputted into the equation.	
Duct pressurization results (at 25Pa):	
Total duct leakage at end of job (supply + return), percentage of full flow (i.e. row 13 divided by row 11):	
Below please paste a photo of the manometer results of this test with the setting at 25Pa. If you are running a blower door test simultaneously, so you are pressurizing the whole house, please submit a photo of that manometer's reading as well to show that the ducts were pressurized to 25Pa.	

Formatted: Font: (Default) Arial Narrow

Attachment B: Review of Test-In and Test-Out Documents

The review of the test-in and test-out documents will be done in the following order:

- Based on the measures selected, the quality assurance professional will ensure that the correct tabs have been completed according to the chart on Page 1 of the template document.
- Review Combustion Safety / Combustion Appliance Zone Testing Pre-Retrofit and Post-Retrofit.
  1. Ensure that all of the notes under "Action Required" are the appropriate responses to the results listed in the previous columns according to BPI Standards:

Combustion Safety Test Action Levels

CO Test Result*	And/ Or	Spillage and Draft Test Results	Retrofit Action
0 – 25 ppm	*And*	**Passes**	Proceed with work
26 – 100 ppm	*And*	**Passes**	Recommend that the CO problem be fixed
26 – 100 ppm	*And*	**Fails at worst case only**	Recommend a service call for the appliance and/or repairs to the home to correct the problem
100 - 400 ppm	*Or*	**Fails under natural conditions**	Stop Work: Work may not proceed until the system is serviced and the problem is corrected
> 400 ppm	*And*	**Passes**	Stop Work: Work may not proceed until the system is serviced and the problem is corrected
> 400 ppm	*And*	**Fails under any condition**	Emergency: Shut off fuel to the appliance and have the homeowner to call for service immediately

**CO measurements for undiluted flue gases at steady state*

- Review Blower Door Test-In (if applicable)
  1. Ensure that infiltration is at CFM50 ≥ 1900
  2. Ensure that result and CFM50 setting matches photo of manometer
- Review Blower Door Test-Out (if applicable)
  1. Ensure that infiltration at CFM50 ≤ 1100
  2. Ensure that result and CFM50 setting matches photo of manometer
- Review Duct Blaster Test-In
  1. Ensure that percent leakage ≥ 28%
  2. Ensure that result and CFM25 settings match photo of manometer

Formatted: Heading 1, Centered, Indent: Left: 0.5"

Formatted: Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines, Outline numbered + Level: 1 + Numbering Style: Bullet + Aligned at: 0" + Tab after: 0.5" + Indent at: 0.5"

Formatted: Line spacing: 1.5 lines, Outline numbered + Level: 2 + Numbering Style: 1, 2, 3, … + Aligned at: 0.5" + Tab after: 1" + Indent at: 1"

Formatted: Line spacing: 1.5 lines, Outline numbered + Level: 1 + Numbering Style: Bullet + Aligned at: 0" + Tab after: 0.5" + Indent at: 0.5"

Formatted: Line spacing: 1.5 lines, Outline numbered + Level: 2 + Numbering Style: 1, 2, 3, … + Aligned at: 0.5" + Tab after: 1" + Indent at: 1"

Formatted: Line spacing: 1.5 lines, Outline numbered + Level: 1 + Numbering Style: Bullet + Aligned at: 0" + Tab after: 0.5" + Indent at: 0.5"

Formatted: Line spacing: 1.5 lines, Outline numbered + Level: 2 + Numbering Style: 1, 2, 3, … + Aligned at: 0.5" + Tab after: 1" + Indent at: 1"

Formatted: Line spacing: 1.5 lines, Outline numbered + Level: 1 + Numbering Style: Bullet + Aligned at: 0" + Tab after: 0.5" + Indent at: 0.5"

Formatted: Line spacing: 1.5 lines, Outline numbered + Level: 2 + Numbering Style: 1, 2, 3, … + Aligned at: 0.5" + Tab after: 1" + Indent at: 1"

- Review Duct Blaster Test-Out

    1. Ensure that percent leakage ≤ 15%
    2. Ensure calculations have been done correctly
    3. Ensure that CFM and CFM25 numbers coincide
    4. Ensure that result and CFM25 settings match photo of manometer

If a Project Completion Form is found to be incomplete or missing supporting documentation, an email and phone call will be made to both the participant and the Participating Contractor three times.

In-field Inspection Protocols

The Flex Path Pilot in-field inspections will be conducted by a quality control professional that holds a Building Analyst certification from the Building Performance Institute as a minimum. The quality control professional will not have existing business ties with any of the Participating Contractor's conducting retrofits in the Flex Path pilot. If such as relationship existed in the past, a minimum of a twelve month period is required between terminating the business relationship and performing any quality control procedures in the Flex Path Pilot program.

Formatted: Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines, Outline numbered + Level: 1 + Numbering Style: Bullet + Aligned at: 0" + Tab after: 0.5" + Indent at: 0.5"

Formatted: Line spacing: 1.5 lines, Outline numbered + Level: 2 + Numbering Style: 1, 2, 3, … + Aligned at: 0.5" + Tab after: 1" + Indent at: 1"

Formatted: Indent: First line: 0.5", Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines, No bullets or numbering

Formatted: Indent: First line: 0.5", Line spacing: 1.5 lines

Formatted: Heading 1, Centered, Indent: Left: 0.5"

Attachment C: In-Field Quality Control Selection Protocol

The program administrator will ensure in-field inspections are performed at a sampling rate minimum of 5 percent (1 in every 20) for each Participating Contractor that has completed jobs under the SCE/SCG Energy Upgrade California Program. Randomly-chosen in-field inspections will target the incentive recipient and contractor to be notified after the Project Completion Form has been submitted. Notification will be sent via email and phone.

The national Home Performance with ENERGY STAR (HPwES) Program guidelines for a phased approach to sampling rates for in-field inspections will be applied to Participating Contractors that have not yet submitted jobs through the SCE/SCG Energy Upgrade California Program.

Phase 1: In-field inspection with a passing score on 3 of the first 5 jobs completed by a new Participating Contractor.

Phase 2: After the first 5 jobs are completed, 20 percent of the next 20 jobs would receive in-field inspections.

Phase 3: After completion of the Participating Contractor's first 25 jobs, the program administrator will lower sampling rate to 5 percent or greater of completed jobs.

It is important to note that the in-field inspections are at Participating Contractor level and not 5 percent of total program jobs. All in-field job inspections will occur after improvements have been installed. An in-field inspection may be scheduled during the contractor's test-out and prior to job completion (see Air Sealing/Duct Sealing below).

If a Participating Contractor is part of Southern California Edison's Quality Installation (QI) program, a site inspection may be waived if the documentation submitted to Edison's Quality Control division is submitted to the Flex Path Quality Control Professional as well.

Random Sample

Jobs will be selected through a random sample in order to maintain a representative sample of each Participating Contractor's work. However, a sample may not be purely random as some customers may not be willing to schedule an inspection or may schedule an inspection based on concerns with the work undertaken.

Air Sealing/Duct Sealing

Participants that plan to undertake air sealing and duct sealing in the Flex Path Pilot will be flagged in the Application Form desktop review for 5 percent minimum in-field inspection during the contractor's test-out procedure, to be conducted at a rate commensurate with the sampling rate of the contractor's in-field

Formatted: Indent: First line: 0.5", Line spacing: 1.5 lines

Formatted: Small caps

Formatted: Line spacing: 1.5 lines

Formatted: Indent: First line: 0.5", Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines, No bullets or numbering

Formatted: Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines, No bullets or numbering

Formatted: Indent: First line: 0.5", Line spacing: 1.5 lines

inspections. By signaling that these measures are being installed, the quality control professional can arrange to witness the performance of the duct and/or blower door test-outs. In this case, the Participating Contractor may be asked to submit all supporting documentation prior to this meeting (with the exception of test out results and an itemized paid invoice). In this case, the QA professional will notify the incentive recipient and participating contractor within ten business days of receiving the application. This notification ensures the QA professional will be kept abreast of scheduled test-out dates and times.

The QC Professional will verify the system tonnage by inspecting the condenser nameplate. This number, multiplied by 400CFM, will equal the total nominal system airflow. This will be the denominator when dividing the CFM result of the Duct Blaster test to calculate the leakage percentage.

Pre-Installation Inspection

The program administrator reserves the right to perform a pre-installation inspection on all jobs in the Flex Path Pilot. Flex Path applications submitted for a property with multiple HVAC systems will trigger a mandatory post-installation inspection.

Scheduling Inspections

The Flex Path administrator will identify the random sampling of projects to be inspected weekly and forward them to the Quality Control Professional. Once received, this person will use a Route Planner function to identify the most efficient order in which the sites should be inspected on a given day.

Calls are then made to each homeowner. The call script is as follows:

"Hello, my name is _____, and I'm calling from LA County's Flex Path program. I wanted to let you know that we received all the supporting documentation we need to close out the project and issue your incentive. The last step is to schedule an on-site inspection, and I was wondering if you were available on _____."

The Route Planner will be used to calculate what amount of time to leave between inspections for travel. The amount of time it takes in current traffic should influence this determination. If any measure may be located in the attic, the homeowner will be asked if they can have a ladder readily available. Such measures include:

- Attic insulation & sealing
- Attic radiant barrier
- Furnace replacement
- A/C replacement (coil)

After the day and time have been agreed upon, the following information is included in the calendar event:

- SUBJECT: On-site Inspection: Last Name, First Name: Project Number
- LOCATION: Address

Formatted: Line spacing: 1.5 lines, No bullets or numbering

Formatted: Indent: First line: 0.5", Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines, No bullets or numbering

Formatted: Indent: First line: 0.5", Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines

Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines

Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines

- NOTES: Phone number, email address, measures in application

Preparing for Inspections

Before going out in the field, each inspection will be prepped with the information necessary to verify what was installed matches the supporting documentation that was submitted. This includes, but is not limited to:

- Manufacturer and model numbers (A/C, furnace, DHW tank/tankless, heat pump, thermostat)
- Photos of installation (light fixtures, water fixtures, whole house fan, windows, cool roof)
- R value of insulation (attic insulation & sealing, crawlspace insulation)

This information can be included in the notes section of the calendar event and pulled up on a smart phone or other computer in the field to match all information with what is present in the home.

What to Bring to the Field

The Quality Control Professional will be responsible for bringing with him/her all the necessary information to check that the submitted supporting documentation matches that which is found in the house. This includes:

- Furnace specifications
- A/C specifications
- Heat pump specifications
- Thermostat specifications
- Hot water heater specifications
- Tankless hot water specifications
- Light fixtures specifications

On-site Inspection Procedures

When arriving at the site, the Quality Control Professional will ask to inspect anything that may be outside first. This may include the A/C condenser, cool roof, windows, crawlspace insulation, DHW tank/tankless, lighting fixtures, and pipe wrap.

When entering the home, the Quality Control Professional will ask the homeowner if he/she prefers that booties be worn around work boots. All measures that are inside the home will then be inspected. The Flex Path representative should be courteous and polite. This person will not touch anything in the home that is not necessary for inspection purposes. Ask the homeowner to turn off the A/C or heating system if inspecting any part of this core system.

General guidelines for what to complete during the visit include:

- A visual survey

Formatted: Line spacing: 1.5 lines, No bullets or numbering

Formatted: Indent: First line: 0.25", Line spacing: 1.5 lines

Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines

Formatted: Indent: First line: 0.25", Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines, No bullets or numbering

Formatted: Indent: First line: 0.25", Line spacing: 1.5 lines

Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines, No bullets or numbering

Formatted: Indent: First line: 0.5", Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines

Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines

- Review the measures selected on the application and determine whether each is new to the home.
- Note obvious missed opportunities for improving home performance that could have driven the scope to an Advanced Path project.
- Evaluate each measure against Flex Path's Qualifying Measures post-retrofit conditions.
- Witness the test-out performed by the contractor (in the case of duct insulation & sealing or air sealing)

For each measure below, the following information is verified in the field:

- Crawlspace insulation: Verify that it has been installed by looking in at least one entry point. If there are multiple, enter or look through them all. It is not necessary to get completely under if a vision inspection can be made by only inserting one's head. Look at the quality of the installation.
- Wall insulation: If there are patches or paint marks in outside walls, look to see that they are spaced about 3' from each other and that there are at least two points vertically at which the insulation was drilled and filled. Ensure that the wall insulation is in every exterior wall around the conditioned space.
- Air sealing: The QC professional will be at the Blower Door test-out to verify that the manometer reading matches Flex Path requirements. If not present for this, check that weather stripping and caulking were installed at any easy-to-access points (doors, windows, walls, etc.)
- Attic insulation & sealing: Verify that the thickness installed matches the thickness that the specification sheet indicates is necessary to reach the required R-value. Look at the quality of the installation.
- Attic radiant barrier: Ensure that the radiant barrier is continuous throughout the entire attic roof. Look at the quality of the installation.
- Furnace: Verify that model number match the specification sheets or AHRI certificate submitted as supporting documentation. This may require removing the cover of the furnace.
- A/C: Verify that condenser model number and coil model number match the specification sheets or AHRI certificate submitted as supporting documentation. If the condenser is on the roof, do not inspect it.
- Heat pump: Verify that model number match the specification sheets or AHRI certificate submitted as supporting documentation
- Whole house fan: Look to see that one was installed and ask if it vented out of the roof or just into the attic.
- Thermostat: Verify that it is programmable and that it is the same manufacturer and model number as the specification sheet submitted as supporting documentation

Formatted: Line spacing: 1.5 lines

Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines

Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines

- Duct work: Ideally, the professional is present during test-out. If not, check to make sure that insulation is R-8. Look to see how the ductwork was laid out to see if it can be improved.
- Windows: From outside the house (or inside when necessary), go around the house to verify that all the windows are new and double-pane.
- Hot water heater (tank or tankless): Verify that model number match the specification sheet submitted as supporting documentation.
- Pipe wrap: Look at the DHW heater to see that pipes have been wrapped. Ensure that the insulation is not within 5" on the unit or a wall entry point. If you can also see exposed hot water piping in the crawlspace, basement, or attic, look to see that it is wrapped there are well.
- Water fixtures: Verify that the thermostatic shut off valve (i.e. the Evolve ShowerStart Roadrunner) was installed on all showers. Look underneath all faucets in all bathrooms and kitchen to see that aerators were installed.
- Lighting fixtures: Verify that the photos submitted as supporting documentation match those that are encountered in the home. The QC professional must ask the homeowner which of the light fixtures have been retrofitted.
- Cool roof: Look from the ground to see that shingles match the specification sheet submitted as supporting documentation. Verify that the entire roof has been re-shingled. Do not go up to the roof.

After all measures have been inspected, the QC professional will ask the homeowner where a good place to sit to fill out his/her paperwork would be. Then he/she will complete the in-field inspection form. After that, the customer discussion will begin. For details, see the section below by the same name.

Formatted: Indent: First line: 0.25", Line spacing: 1.5 lines

Utility Service Account Number Conflict

Formatted: Line spacing: 1.5 lines, No bullets or numbering

During the review of the Application there will be a check to see whether the applicant has already participated in the EUCLA Basic or Advanced Package by a cross reference of the Utility Service Account Number. If the participant has previously had retrofits installed under the Energy Upgrade program, they will be flagged for an in-field inspection to ensure that the qualifying measures installed in the Flex Path Pilot were not already installed in the Basic or Advanced Package.

Formatted: Indent: First line: 0.25", Line spacing: 1.5 lines

Contractor Performance

Formatted: Line spacing: 1.5 lines, No bullets or numbering

In-field inspection rates may be increased for a Participating Contractor whose score at a previous inspection is below 3 (See In-field Inspection Score Template). A contractor who receives a score below 3 will receive a mandatory in-field inspection for his/her next project.

Formatted: Indent: First line: 0.5", Line spacing: 1.5 lines

Customer Discussion

The in-field inspection will begin with the quality control professional (acting on behalf of the program administrator) introducing themselves, their organizational affiliation, and the purpose of the visit; to verify that the work conducted by the Participating Contractor meets program guidelines.

The quality control professional must maintain a positive and objective attitude during all conversation with the participant, address any specific questions that they may have about the inspection and determine any concerns about the installed work. (See Figure 1 for possible talking points).

After the measures have been verified, the homeowner will be asked if he/she does not mind answering a few questions. The following questions will include:

Figure 1: Optional customer discussion items

- Confirm that the customer received correct information regarding what to expect from the program.
- Verify that the applicable test-in was performed and that the customer received a copy of all results from any test.
- Verify that any applicable test-outs were completed prior to submittal of the Project Completion Form (except in the case of air sealing/duct sealing in which the QA professional will be present during the test-out procedures).
- Confirm that the pre-retrofit requirements as described in the Qualifying Measures document were in place before the installation.
- Enquire if the customer has and is willing to share utility bill data, whether the utility bills were requested by the contractor, and whether or not the customer provided them to the contractor upon request.
- Confer with the customer regarding his/her satisfaction with the contractor's assessment, installation and overall experience with EUCLA.
- If customer displays positive attitude with regard to overall satisfaction, recommend that he/she share the experience with friends and family to encourage their participation in Energy Upgrade California.
- Encourage the customer to enroll in other Energy Upgrade California Programs.
- Ask the customer how he/she heard about the program.

Formatted: Line spacing: 1.5 lines

Formatted: Indent: First line: 0.5", Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines

Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines

In-field Inspection Scoring Protocol

Figure 2: The protocol described below will be used during in-field inspections

Score	Performance	Overall Comment
FAIL		
0	• Combustion appliance testing results do not meet BPI Technical Standards or relevant program standards. • Measures in contracted scope of work not installed. • Minimum standards for building ventilation are not being met. • Unsafe conditions resulting from installed work and posing immediate health/safety threat to occupants are found.	Contractor's performance does not meet technical standards, program requirements and/or the home needs immediate corrective action.
1	• Health and safety issues are present, but do not pose an immediate threat to the occupants. Measures were installed but not correctly to meet program requirements and standards. • Measures were not installed correctly.	Contractor's performance does not meet technical standards or program requirements and the home requires non-immediate corrective action.
2	• Below standards/incorrect installation of required measures.	Several technical deficiencies were observed that require corrective action.
PASS		

Formatted: Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines

Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines

Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines

Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines

Score	Performance	Overall Comment
3	• Installed measures did not meet all technical installation standards, but no serious deficiencies were found. • Some incorrect data gathered and provided to customer without any significant impacts on work completed or effectiveness of job.	Contractor's performance meets all technical standards and program requirements but some areas of technical performance need improvement and may require corrective action.
4	• All technical standards of installation have been met (e.g. BPI Technical Standards) • Work is comprehensive in nature. • Recommended and installed measures were consistent with Application Form. • Test-out reporting was accurate.	Contractor's performance meets all technical standards and program requirements.

- **Contractor Performance Record**

Customer Feedback

If positive or negative feedback is received from the customer about the Participating Contractor, this will be stored in the contractor's performance history file. An in-field inspection will be promoted if the customer feedback warrants additional investigation to ascertain that the contractor has abided by all program policies and procedures.

Contractor Feedback and Corrective Action

If corrective action is indicated on the quality control professional's in-field inspection report, this will trigger the program administrator to contact the Participating Contractor. The contractor will be contacted within ten business days from when the in-field inspection report was filed via phone and email.

The contractor must correct the problem that has been identified and submit documentation regarding the corrections made to the program administrator immediately after the issue has been resolved.

If the quality control professional notes small errors at an in-field inspection, this will be recorded into the contractor's performance file. Feedback will be provided to the contractor in a constructive manner that

Formatted: Line spacing: 1.5 lines
Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines
Formatted: Line spacing: 1.5 lines
Formatted: Line spacing: 1.5 lines
Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines
Formatted: Line spacing: 1.5 lines
Formatted: Line spacing: 1.5 lines
Formatted: Indent: Left: 0", First line: 0", Line spacing: 1.5 lines, Outline numbered + Level: 1 + Numbering Style: Bullet + Aligned at: 0" + Tab after: 0.5" + Indent at: 0.5"
Formatted: Line spacing: 1.5 lines
Formatted: Indent: First line: 0.5", Line spacing: 1.5 lines
Formatted: Line spacing: 1.5 lines
Formatted: Indent: First line: 0.5", Line spacing: 1.5 lines
Formatted: Line spacing: 1.5 lines
Formatted: Indent: First line: 0.5", Line spacing: 1.5 lines

includes instructions on how to prevent making such mistakes on future projects. If the same errors are found multiple times for the same contractor, a higher sampling rate for in-field inspections may be established.

If significant errors are found (i.e. the contractor receives a score of 0 or 1), the quality control professional will perform a phone consultation with the contractor to discuss pertinent issues. After this, the quality control professional will send the contractor a document that outlines corrective action scope of work that is required within 30 days, or an appropriate amount of time consistent with the construction work included. Documentation, both in written and photographic form (as applicable), must be submitted by the contractor as a record that the remediated action has been completed.

Formatted: Line spacing: 1.5 lines

If an in-field inspection determines a severe situation is present within the house (i.e. one threatening the health and safety of occupants), the customer will be notified, and the quality control professional will decide an appropriate course of action. This may consist of informing the Utility Service Account Holder, contacting the fire department, or turning off equipment. The quality control professional will contact program administration to inform them of the situation. The quality control professional will immediately address the situation and provide the contractor instructions for necessary corrective actions to take as soon as possible. Documentation, both in written and photographic form (as applicable), must be submitted by the contractor as a record that the remediated action has been completed.

Formatted: Indent: First line: 0.5", Line spacing: 1.5 lines

If acceptable for health and safety standards, the quality control professional will rely solely on the contractor to inform the customer about any deficiencies in the installation and any necessary corrective action.

Conflict Resolution Procedure

Formatted: Line spacing: 1.5 lines

Situations may arise in which a contractor disputes a low in-field inspection score or disagrees with the QA professional's assessment of the Completion form with backup documentation. Some potential conflict resolution scenarios include:

Formatted: Indent: First line: 0.25", Line spacing: 1.5 lines

- The measures installed were not the same as those selected in the Application Form. In this case a new application may be submitted if the point values of the installed measures meet the minimum required.
- The property is not located in Los Angeles County.
- The measures were not properly installed.
- The photographs or cut sheets are missing pertinent information.

Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines

In order to obtain resolution, the contractor can call the EUCLA call center (877-785-2237) and ask to receive the Program Administrator's contact information. The Administrator will then review with the Participating

Formatted: Line spacing: 1.5 lines

Contractor's QA in-field report. The following process will be used by the Program Administrator to resolve any contractor disputes:

- Review Application Form and Project Completion Form for the project.
- Review the content of In-field Quality Assurance Report.
- Discuss the results of the In-field Quality Assurance Report with the contractor.
- Review all relevant information and make a decision whether or not to revise the In-field Quality Assurance Report score. If appeal is denied, go to the next step. If the appeal is approved, skip to step 7.
- Recommend that contractor seek additional training and/or mentoring.
- Increase the sampling rate the of the contractor's next five projects.
- Report all Conflict Resolution proceedings and outcomes to the Los Angeles County.

Inputting Scores

Once the QC professional returns to the office, he/she must notify the Flex Path administrator of the scores for all inspections. The in-field reports must be scanned and saved into the supporting documentation files for the inspections. If a site has more than one project number (i.e. Flex Path application), the report should be saved to each supporting documentation folder. Additionally, the inspection scores must be uploaded to each project via EnergyOrbit.

- **Program Data Reporting Requirements**

The following will be compiled and maintained for all applications received through the Flex Path Pilot program:

- Database of Application Forms
- W-9 Forms (if applicable)
- Project Completion Form
- Copy of Itemized Paid Invoice
- Supporting Documentation (e.g.: specification sheets, before and after photos, test-in and test-out results)
- In-field inspection results (if performed)
- Corrective action documentation (if in-field inspection performed and corrective action prescribed)

Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines, No bullets or numbering

Formatted: Line spacing: 1.5 lines

Formatted: Indent: Left: 0", First line: 0", Line spacing: 1.5 lines, Outline numbered + Level: 1 + Numbering Style: Bullet + Aligned at: 0" + Tab after: 0.5" + Indent at: 0.5"

Formatted: Line spacing: 1.5 lines

Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines, Outline numbered + Level: 1 + Numbering Style: Bullet + Aligned at: 0" + Tab after: 0.5" + Indent at: 0.5"

Figure 2: In-field Quality Assurance Report

	Verification Date
Customer Address	
Customer Phone	Customer Email
Customer Name	Verifier Name

Instructions to the Verifier

Answer the questions below using observation and the information provided by the program administrator. In completing the forms include comments on the quality of the work performed. Feedback helps contractors improve the quality of their work, so be as specific as possible.

Meeting Program Requirements and Technical Standards

- Does the work scope in the Application Form match the work actually done in the home? If no, include explanation.
- Were any BPI standards or installation standards *not* satisfied? If yes, explain.
- Did any of the selected Qualifying Measures not meet the required post-retrofit conditions? If yes, explain.
- Do any of the products installed *not* match the product details on the specification sheets? If yes,

Formatted: Font: (Default) Arial Narrow, Bold
Formatted: Line spacing: 1.5 lines, Tab stops: 0.63", Left + 1", Left
Formatted: Line spacing: 1.5 lines, No bullets or numbering
Formatted: Line spacing: 1.5 lines
Formatted: Line spacing: 1.5 lines
Formatted: Line spacing: 1.5 lines
Formatted: Line spacing: 1.5 lines
Formatted: Line spacing: 1.5 lines
Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines
Formatted: Line spacing: 1.5 lines
Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines
Formatted: Line spacing: 1.5 lines
Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines
Formatted: Line spacing: 1.5 lines
Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines

provide details.

- If applicable, do the nameplates in the photos match the nameplates present on the installed equipment? If no, explain.

- Describe any items overlooked or done poorly.

- Describe items done particularly well.

In-Field Inspection Procedures

- Combustion safety test (CST)
  1. Be present when the contractor is performing the CST.
  2. Does CST meet BPI technical standards? **YES** or **NO** or **N/A**
  3. Do CST results show everything passes? **YES** or **NO** or **N/A**

- Blower door test in and test out
  1. Be present when the contractor is performing the blower door test out.
  2. Does blower door test out meet BPI technical standards? **YES** or **NO** or **N/A**
  3. Does the blower door test out results meet program requirements? **YES** or **NO** or **N/A**

- Duct test in and test out
  1. Be present when the contractor is performing the test out.
  2. Does duct test out meet BPI technical standards? **YES** or **NO** or **N/A**
  3. Does the duct test out results meet program requirements? **YES** or **NO** or **N/A**

Formatted: Line spacing: 1.5 lines

Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines

Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines

Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines

Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines

Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines

Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines

Post Retrofit QA Verification

Fail – Score 0

Contractor's performance does not meet technical standards, program requirements and/or the home needs immediate corrective action.

- Combustion appliance testing results do not meet BPI Technical Standards or relevant program standards.
- Measures in contracted scope of work not installed.
- Minimum standards for building ventilation are not being met.
- Unsafe conditions resulting from installed work and posing immediate health/safety threat to occupants are found.

Fail – Score 1

Contractor's performance does not meet technical standards or program requirements and the home requires non-immediate corrective action.

- Health and safety issues are present, but do not pose an immediate threat to the occupants. Measures were installed but not correctly to meet program requirements and standards.
- Measures were not installed correctly.

Fail – Score 2

Several technical deficiencies were observed that require corrective action.

- Below standards/incorrect installation of required measures.

Pass – Score 3

Contractor's performance meets all technical standards and program requirements but some areas of technical performance need improvement and may require corrective action.

- Installed measures did not meet all technical installation standards, but no serious deficiencies were found.
- Some incorrect data gathered and provided to customer without any significant impacts on work

Formatted: Line spacing: 1.5 lines

Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines

Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines

Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines

Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines

completed or effectiveness of job.

Pass – Score 4

Contractor's performance meets all technical standards and program requirements.

- All technical standards of installation have been met (e.g. BPI Technical Standards)
- Work is comprehensive in nature.
- Recommended and installed measures were consistent with Application Form.
- Test-out reporting was accurate.

Overall Inspection Score for this Project _____

Verifier Signature _____ Date _____

Formatted: Line spacing: 1.5 lines

Formatted: Indent: Hanging: 0.5", Line spacing: 1.5 lines

Formatted: Line spacing: 1.5 lines

Formatted: Heading 1, Centered, Indent: First line: 0"

Attachment D: Draft Walk-through Audit Form

Walk-Through Whole House Assessment

Account Holder/Property Owner Information					
First Name:					
Last Name:					
Street Address:		City:		Zip Code:	
Full Mailing Address (if different):		City:		Zip Code:	
Email address:					
Phone number:					

Contractor Information					
EUC ID#					
Company:					
Street Address:		City:		Zip Code:	
First Name:					
Last Name:					
Email address:					
Phone number:					

Visual Inspection from the Street	
Type of landscaping (circle one):	DROUGHT-RESISTANT & NATIVE SPECIES / SPRINKLER-DEPENDENT
Moisture damage to side of home (circle)?	YES / NO
Any visible safety hazards? List here:	

Attic Insulation	
R-value:	
Radiant barrier (circle)?	YES / NO

Wall Insulation	
R-value*:	
*If infrared scan is not used, this value will most likely be based on the year the home was buil.	

Crawlspace Insulation		
R-value:		
Vapor barrier (circle)?	YES / NO	
Check here if slab on grade:		

Whole House Fan	
Is one installed in the home (circle)?	

Windows	
Majority are (circle one):	
SINGLE PANE / DOUBLE PANE	

Domestic Hot Water Heater / Plumbing			
Type (circle one):	TANK / TANKLESS		
Model Number:			
Nameplate Efficiency:			
If tank, size (gal):			
If tank, fuel source (circle one):	ELECTRIC / GAS		
Number of Bathroom Faucets:		Pipes wrapped?	YES / NO
Number of Showerheads:			
Number of Kitchen Faucets:			
Any thermostatic shut-off valves installed (circle)?	YES / NO		

Page 1

Lighting	
Number of Incandsecent Bulbs in Home:	
Number of Light Fixtures in Home:	

Cool Roof
Was a cool roof previously installed (circle)?
YES / NO

Heating, Ventilation, and Cooling Equipment			
Does the house have central A/C (circle)?	YES / NO	Number of Ceiling Fans:	
Number of systems:		Number of Electric Heaters:	
System #1			
Does the A/C system function properly (circle)?		NEVER / SOMETIMES / ALWAYS	
Does the furnace function properly (circle)?		NEVER / SOMETIMES / ALWAYS	
Condenser Model Number:			
Coil Model Number:			
SEER Rating:			
EER Rating:			
Furnace Type:			
Furnace Model Number:			
AFUE Rating:			
Type of Ducting:			
R-value of Ducting:			
Condition of Ducting (circle):		POOR / FAIR / GOOD	
System #2			
Does the A/C system function properly (circle)?		NEVER / SOMETIMES / ALWAYS	
Does the furnace function properly (circle)?		NEVER / SOMETIMES / ALWAYS	
Condenser Model Number:			
Coil Model Number:			
SEER Rating:			
EER Rating:			
Furnace Type:			
Furnace Model Number:			
AFUE Rating:			
Type of Ducting:			
R-value of Ducting:			
Condition of Ducting (circle):		POOR / FAIR / GOOD	
Notes on number and location or return/intake registers and homeowner's comfort in the house (Any drafts? Usually cold/hot rooms?):			
Is asbestos present in the house (circle)?	YES / NO		

Attachment A5.2: SoCalREN EUC Enhanced Basic/Modified Flex Path PIP
(Clean)

SoCalREN

ENERGY UPGRADE CALIFORNIA

FLEX PATH
PROGRAM IMPLEMENTATION PLAN

APRIL 4, 2013

TABLE OF CONTENTS

A3: Continue, enhance and expand EUCLA "Flex Path" Incentive Program which supplements the under-performing EUC Basic Package and is more attainable for most low-moderate income households and for EUC contractors. - $4,614,308

The Existing ARRA Flex Path Program

(Modified EUC Flex Path Program Implementation Plan begins on page 10)

I. INTRODUCTION

Flex Path is a new and innovative Energy Upgrade option developed and administered by the LA County team using American Recovery and Reinvestment Act (ARRA) funding. This pilot program provides more flexibility than the Basic Path, and uses the same list of eligible Basic and Advanced Path measures in a user-friendly, prescriptive, point value menu format. The program is intended to test market acceptance of a simple, flexible, prescriptive approach in terms of engaging both homeowners and contractors. EUCLA provides a $1,500 incentive for a Flex Path project, and homeowners may also qualify for individual IOU measure incentives. The ARRA funded Flex Path program was fully subscribed with 1,650 approved projects and a wait list of 187 project applications on October 19, 2012, just nine months after program launch. LA County is now confident that all wait list applications will be processed and paid early in 2013 using remaining ARRA funds for a total of more than 1,800 projects.

SoCal REN has been authorized to continue the current Flex Path pilot design in LA County until the April 1, 2013 Advice Filing is approved. The program could be re-launched within three weeks; however, this is not the REN's preferred course of action. The REN proposes a Modified EUC Flex Path Program (page 11) that is fully compliant with the final decision. The final decision has mandated that the following design elements be incorporated into a Basic Path replacement program:

1. Require that each project include at least three qualifying energy efficiency measures;
2. Include scaled or tiered incentives;
3. Support the energy efficiency loading order that provides that envelope improvements generally occur first; and
4. Support appropriate combustion safety testing protocols.

II. SoCalREN ARRA FLEX PATH PROGRAM OVERVIEW

In discussions with the IOU's, SCE and SCG have made it clear that they intend to pilot an enhanced Basic Path pilot program immediately after the April 1 advice filing date. The REN requests the same

consideration to implement the ARRA Flex Path program design using ratepayer funds with slight improvements immediately upon approval by Commission staff. The minor modifications are intended to mitigate Commission concerns about overpaying for energy savings and include the following:

1. Eliminate all five-point measures and require or recommend them as best practices in appropriate equipment replacement or system upgrade measures.
2. Require thermal control valves be installed on all showers in the home with no points added.
3. Reduce the program incentive from $1,500 to $1,000.

This will serve to extend what is a successful pilot, enhanced to provide a bridge to the Modified EUC Flex Path program design being proposed in this advice filing. In addition, continuing with a slightly modified Flex Path pilot, with the same name, will provide significant, additional data for evaluation and program design going forward. While the REN's and IOU's did not come to complete agreement on a single program design statewide, substantial progress has been made on coming to agreement on major program design elements.

A. Tracking Energy Usage

With the help of the IOU's, the REN hopes to track actual energy usage of Flex Path participants. The success of Flex Path and its approval by the U.S. Department of Energy and the California Energy Commission regarding design and achievement of program savings objectives, clearly demonstrates that a government entity is perfectly capable of designing, developing, and implementing a successful community scale energy efficiency incentive based program.

B. Moving Homeowners To Action

Flex Path, in its current format, has served to augment the under-utilized Basic Path to put homeowners on the path toward a whole house energy upgrade and provides contractors with a simple introductory offer that can be used to upsell a homeowner to a more comprehensive, Advanced Path retrofit. This feature will continue to be tested during 2013-14. The program also encourages more contractors to become active in EUC with the goal of expanding their participation over time and bringing the EUC program to scale. Flex Path is a contractor delivered program and therefore does not require a large marketing and outreach budget.

C. Qualifying Measures

To participate in the current Flex Path, two or more qualifying retrofit measures with a combined point total of one hundred or more must be installed using a EUC participating contractor. Flex Path motivates contractors and homeowners to consider higher levels of efficiency (beyond code) when selecting new

equipment or upgrading envelope systems. Under the proposed Modified EUC Flex Path program the REN proposes to add a walk-through energy audit component (draft audit form displayed in Attachment D) to the program delivery, creating a roadmap and priority of Flex Path projects that can be done over time or providing the justification for moving up to an Advanced Path project. The ARRA Flex Path program includes the measures listed in Figure 1, edited for five-point measures requested to be removed, along with pre-and-post retrofit requirements and point values.

Figure 1: ARRA Flex Path Measure List

To participate in the Flex Path, homeowners must install two or more qualifying measures with a combined point value of 100 or greater using an Energy Upgrade California Participating Contractor. All Flex Path projects require installation of a thermostatic shut-off valve on all showers in the home except when installing a tankless water heating system. Limit two Flex Path applications per household.

I. Insulation & Air Sealing

Retrofit Measure	Pre-Retrofit Condition	Post-Retrofit Condition	Point Value
Crawlspace insulation	No insulation	≥ R-11 Supporting documentation required for close out: specification sheet, before & after photos	55
Wall insulation	No insulation	≥ R-13 Supporting documentation required for close out: specification sheet	90
Air sealing	CFM50 ≥ 1900	CFM50 ≤ 1100 Supporting documentation required for close out: blower door test-in results, blower door test-out results, combustion safety test results	30
Attic insulation & sealing	≤ R-11	≥ R-38 Supporting documentation required for close out: specification sheet, before & after photos. It is highly recommended that all incandescent recessed can lighting fixtures be replaced with ENERGY STAR® CFL fixtures or ENERGY STAR® LED fixtures.	45
Attic radiant barrier	No radiant barrier	Continuous rolled or pre-laminated Supporting documentation required for close out: specification sheet, before & after photos	50

II. Heating, Ventilation, & Air Conditioning

Retrofit Measure	Pre-Retrofit Condition	Post-Retrofit Condition	Point Value
Replace existing central forced air furnace with new ENERGY STAR® central forced air furnace	Gas-fired; AFUE ≤ 0.80	ENERGY STAR®; Gas-fired; AFUE ≥ 0.95 Supporting documentation required for close out: specification sheet, before & after photos including nameplate. Recommend replacement of a manual thermostat with digital, setback programmable model.	90
Replace existing central AC with new central AC	≤ 10 SEER	≥ 15 SEER 11 EER Supporting documentation required for close out: specification sheet, before & after photos including nameplate. Recommend replacement of a manual thermostat with digital, setback programmable model.	90

Replace existing heat pump with new heat pump	≤ 5.6 HSPF, 8 SEER 6 EER	≥ 8 HSPF, 15 SEER 11 EER Supporting documentation required for close out: specification sheet, before & after photos including nameplate. Recommend replacement of a manual thermostat with digital, setback programmable model.	90
Duct insulation & sealing OR Duct replacement with insulation	Leakage ≥ 28% ≤ R-4	Leakage ≤ 15%; ≥ R-8 Supporting documentation required for close out: Duct Blaster® test-in results and test-out results, specification sheet, before and after photos. Recommend replacement of a manual thermostat with digital, setback programmable model.	95
III. Windows			
Retrofit Measure	**Pre-Retrofit Condition**	**Post-Retrofit Condition**	**Point Value**
Replace all windows to be ENERGY STAR®	Single metal clear pane (U-factor ≥ 1.19; SHGC ≥ .83)	ENERGY STAR®; U-Factor ≤ 0.40; SHGC ≤ 0.30 Supporting documentation required for close out: specification sheet, before & after photos	65
IV. Domestic Hot Water			
Retrofit Measure	**Pre-Retrofit Condition**	**Post-Retrofit Condition**	**Point Value**
Domestic hot water heater (gas)	Gas-fired tank heater; EF ≤ 0.525	Gas-fired; EF ≥ 0.62 Supporting documentation required for close out: specification sheet, before & after photos including nameplate. Must include pipe wrap for first five feet of exposed pipes.	45
Domestic hot water heater (electric)	Electric tank heater; ≥ 40 gallons; EF ≤ 0.88	EF ≥ 0.93; ≥ 30 gallons Supporting documentation required for close out: specification sheet, before & after photos including nameplate. Must include pipe wrap for first five feet of exposed pipes.	90
ENERGY STAR® whole house tankless hot water heater (gas)	Gas-fired tank heater; EF ≤ 0.525	ENERGY STAR®; gas-fired; EF ≥ 0.82 Supporting documentation required for close out: specification sheet, before & after photos including nameplate. Must include pipe wrap for first five feet of exposed pipes.	90
V. Lighting			
Retrofit Measure	**Pre-Retrofit Condition**	**Post-Retrofit Condition**	**Point Value**

VI. Cool Roof			
Retrofit Measure	**Pre-Retrofit Condition**	**Post-Retrofit Condition**	**Point Value**
Cool roof	≤ R-11	All of the following requirements must be met for ≥ 75% of the roof over conditioned space: ≥ R-38; Low slope (≤ 2:12): SRI≥ 70, Thermal Emittance Factor ≥ 0.85; Steep slope (> 2:12): SRI ≥ 40; Thermal Emittance Factor ≥ 0.85 Supporting documentation required for close out: specification sheet, before & after photos	40

Flex Path is marketed to homeowners primarily through contact with EUC participating contractors. By educating EUC participating contractors and targeting specialty building service companies, the workforce is able to sell the program directly to homeowners. When the program ended in October, 2012 there were 57 contractors actively participating in the Flex Path pilot. The fact that only 15 of these contractors have delivered an Advanced or Basic Path project demonstrates that Flex Path is getting idle contractors off the sideline and into the game. Since there are many different combinations of retrofit measures that can make up a Flex Path project, the program structure allows specialty contractors to develop a business model that works for them, or partner with other specialty contractors to provide more comprehensive upgrade options. Another delivery channel is the Flex Path webpage, www.energyupgradeca.org/LAflex on the EUC Los Angeles web site. This webpage encourages contractors and homeowners to participate in the program using Frequently Asked Questions, a Qualifying Measures list, information about Supplemental Utility Rebates, an Online Application, and the Project Completion Form.

D. INCENTIVE STRUCTURE

In the current design, Flex Path projects receive an incentive of $1,500. SoCalREN would like to reduce the incentive amount to $1,000 should the program be reinstated until such time as a Basic Path replacement program is approved by the Commission. The incentive amount cannot exceed project cost. The average cost of a Flex Path project is about $5,800. Modeled energy savings predict an average energy savings of 15 percent for a typical home in a typical LA County climate zone. This level of energy savings, along with an estimation of average project cost, was used to determine the incentive amount of $1,500. Once a completed application is received, the incentive funds are reserved for 60 days. When installation is complete, the contractor must submit an online Project Completion Form that includes uploading required supporting documentation. Required supporting documentation includes an itemized paid invoice and, if

applicable, before and after photos, specification sheets, diagnostic test-in/test-out results and proof of a post-installation combustion appliance safety test conducted by a BPI certified building analyst.

E. Project Tracking

The program administrator uploads customer and project data into a secure, closed-loop, secure program tracking database (energyOrbit) and monitors progress throughout the application process. When any of five status codes changes on a Flex Path project, the tracking system automatically sends an email status notification to both the homeowner and contractor. If all program requirements have been met after a review of the Project Completion Form, required supporting documentation, and Quality Control on-site inspection, a Flex Path project is approved and a check request is processed with LA County. Checks are routinely paid by LA County within two weeks of project completion approval.

F. Quality Assurance

Flex Path Quality Assurance includes one hundred percent desktop review of the Utility Service Account Holder and Participating Contractor information, the project application, the Project Completion Form and supporting documentation. Once a Flex Path project completes a desktop review of the Project Completion Form and required supporting documentation, the project may be selected for an onsite post-installation inspection. The sampling rate for Flex Path Quality Control post-installation inspections follows the Home Performance with ENERGY STAR inspection guidelines. In the ARRA Flex Path program LA County conducted 100 percent post-installation inspections for the first three months to ensure contractor compliance with terms and conditions before reducing the sampling rate, and actually achieved an overall on-site post-installation inspection rate of about 15 percent. The on-site visit includes a visual inspection of the measures installed, verification that any mechanical equipment installed matches submitted specification sheets and program requirements, and a brief oral survey with the homeowner regarding overall program and contractor satisfaction. If a test-out is required for any of the installed measures, this triggers an inspection that includes a BPI certified Quality Control professional witnessing the diagnostic testing performed. Examples of Flex Path test and inspection forms are included in Attachments A through C. The REN also plans to perform field QC using a HERS/BPI certified professional in the Modified EUC Flex Path program to confirm that installed measures meet industry best practices and provide mentoring to contractors that need additional training.

The REN will work with the IOU's and CPUC staff to determine reasonable measure level savings values, QA and QC requirements, and EM&V data collection objectives. Flex Path offers an excellent opportunity to continue testing this flexible approach in the residential marketplace, refine kWh savings, kW demand reduction, and therm savings numbers by measure, vintage, and climate zone. With funding being

reduced by 50% LA County is now proposing a 2,376 retrofit pilot to continue until the April 1 advice filing is approved, with estimated energy savings of 1,985,417 kWh based on savings values calculated using EnergyPro with DEER and RASS data; a method similar to what was used to derive Basic Path measure level energy savings values. Revised targets are shown in Figure 2.

Figure 2 (Subprogram A): Flex Path Proposed Net Energy Savings

Resource Acquired	2013	2014	Total
kWh Energy Savings	794,326	1,191,091	1,985,417
Peak kW Demand Reduction	912	1,367	2,279
Therm Savings	55,928	84,007	139,935

III. PROGRAM SUCCESSES THROUGH DECEMBER 2012

In nearly nine months of operation, the number of Flex Path projects far exceeded the number of Advanced and Basic Path projects combined that were paid a matching incentive by LA County. This is significant because the IOU programs had been available to homeowners for 19 months at the time Flex Path ended. It should be noted that Flex Path has not been featured in the County's marketing materials or media campaigns, and promotion has been limited to training contractors and distributing flyers at community events alongside Advanced Path and Basic Path promotional materials.

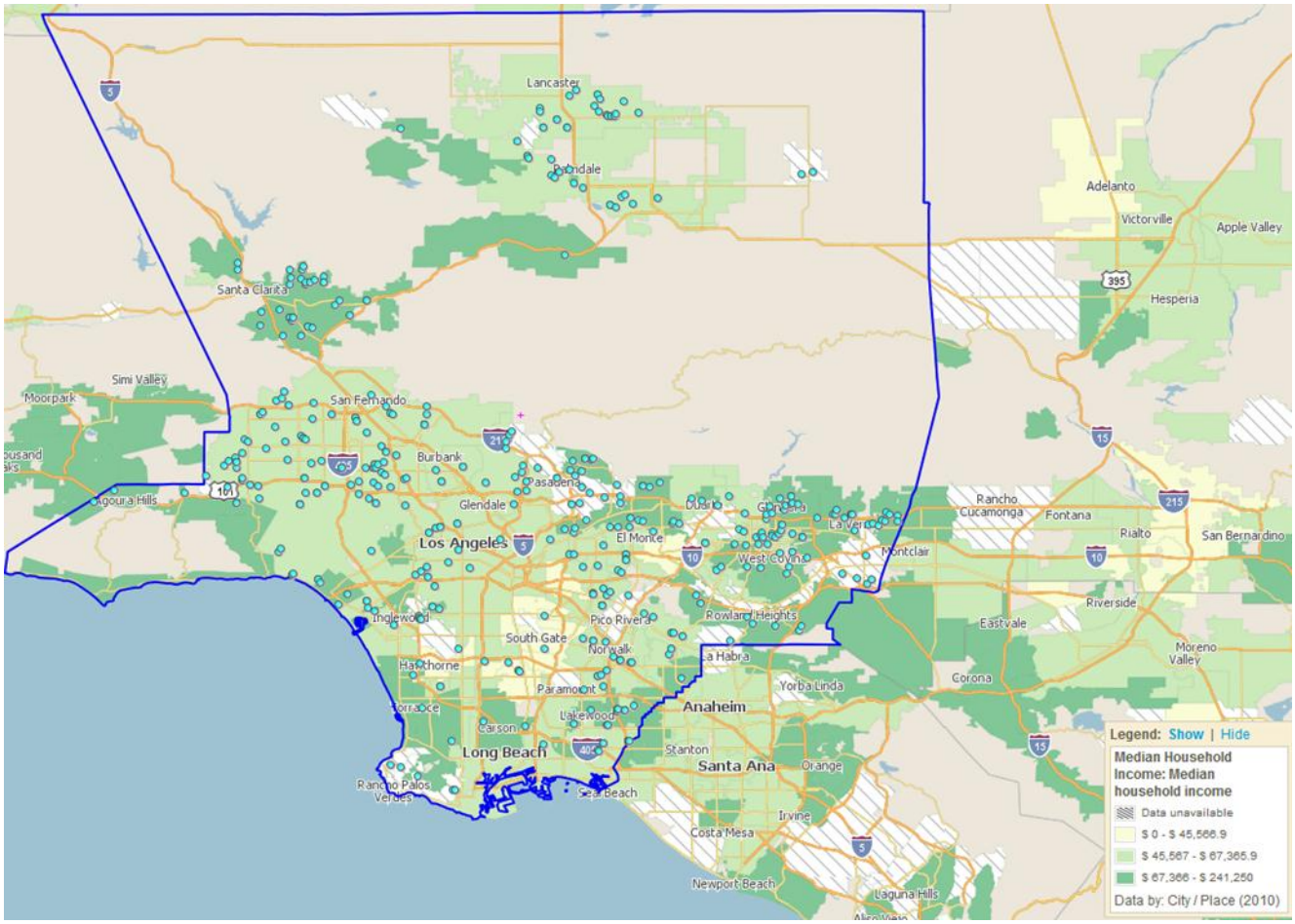
Figure 3 presents important metrics for Advanced, Flex, and Basic Path options in LA County.

Figure 3: Breakdown of retrofit projects paid by LA County through February 2012

Retrofit Project Type	% of Total LA County Projects Paid	# of LA County Projects	Average Savings	Average Cost	Average Rebate (Utility + LA County)
Advanced Path	36%	1,048	31%	$12,685	$5,458
Flex Path	63%	1,793	17%	$5,875	$1,500
Basic Path	1%	21	10%	$4,202	$2,000

One of the most significant successes of Flex Path to date is the clear indication that the program is penetrating the lower-middle and middle-income homeowner markets. This is essential for scaling up EUC to achieve a much greater volume of projects. This will help to transform the market, reaching California Long Term Energy Efficiency Strategic Plan goals, and creating much needed new jobs. The map below (Figure 4) shows the distribution of Flex Path projects in LA County overlaid on median household income census data.

Figure 4 (Subprogram A): Flex Path Projects by Median Household Income in LA County



Contrary to the relatively narrow demographic adoption of Advanced Path, Flex Path has achieved an impressive penetration across LA County, particularly in lower-middle and middle-income communities. The REN proposes to target limited marketing and outreach to these communities and assist contractors in focusing Flex Path sales on middle-income homeowners. In expanding the Flex Path program or the Modified EUC Flex Path program throughout the SCE/SCG service territories the REN would also propose to target inland climate zones where comprehensive energy retrofits result in greater benefits for homeowners.

To determine expected energy savings for Flex Path prescriptive measures, the LA County team used EnergyPro software to model each measure individually assuming a typical Los Angeles County single family detached home configuration based on RASS data to represent the pre-retrofit baseline. The assumptions from the EnergyPro analysis are as follows:

1. Climate Zone: 9 (Claremont used as base city)
2. Area: 1710 sq ft

3. Ceiling Height: 8 ft
4. House Dimensions: 38 ft x 45 ft
5. Perimeter: 166 ft
6. Winter Indoor Temp: 70
7. Summer Indoor Temp: 74
8. Infiltration: 1800 CFM50 (~0.57 ACHn)
9. Duct Insulation: R-4
10. Duct Leakage: 28%
11. Attic Insulation: R-11 (using default for pre-1978)
12. Wall Insulation: R-0
13. Crawlspace Insulation: R-0
14. Windows: Single Metal Clear
15. HVAC: Gas-fired, 0.80 AFUE, 10 SEER 6 EER
16. DHW: Gas-fired, 50 gal. 0.525 EF
17. Setback thermostat (except for thermostat measure)
18. Electric stove, washer/dryer in house

The success of the ARRA Flex Path is the direct result of the simple, menu driven program design and simple delivery method. The REN encourages the Commission to adopt a program design that is easy for homeowners to understand and simple for contractors to deliver. Energy efficiency projects are sold at the kitchen table, and few homeowners have an understanding of how investing in energy efficiency or a whole house upgrade will benefit them. A simple program design will sell more projects, and result in more satisfied ratepayers. Market transformation is a long process that must engage all market actors with the fewest barriers to entry as possible, while still maintaining a high standard of quality and emphasis on building science principles.

IV. MODIFIED EUC FLEX PATH PROGRAM

A. Overview

The Modified EUC Flex Path program builds on the success of the ARRA Flex Path pilot program implemented under Energy Upgrade California (EUCLA) in Los Angeles County, and expands this innovative point based prescriptive program design to accommodate and encourage more comprehensive upgrade projects. The Flex Path approach was developed as a response to poor market penetration by both the Basic Path and Advanced Path programs currently being offered as part of EUC by investor owned utilities (IOU(s)) in Los Angeles County. The Los Angeles County team first introduced a modified Flex Path program (Home Performance Flex Path) concept that included a tiered incentive structure and a calculated energy savings methodology by vintage and climate zone in July 2012. This original program concept has now become the Modified EUC Flex Path program presented in this program implementation plan.

SoCalREN and the IOU's are close to reaching agreement on a single program design and delivery method for a modified basic program. Both the REN and IOU program designs have the same three envelope Base Measures which include Whole House Air Sealing, Attic Insulation and Air Sealing, and Duct Sealing and Insulation or Duct Replacement. The statewide IOU and REN teams agree on a program design that requires 1 of 3 Base Measures plus a minimum of 2 Flex Measures. The REN has provided engineering workpapers, and submitted a revised E3 Calculator supporting the 1 of 3 Base Measure design as part of their January 14, 2013 compliance filing.

> The program supports the EE loading order with 1 of 3 envelope Base Measures and links Base and Flex Measures together to support envelope and core system upgrades.

B. Program Design

The Modified EUC Flex Path program offers a balanced approach intended to produce a high volume of retrofits while maintaining a reasonable level of technical rigor and quality assurance. The proposed program will:

- Support the energy efficiency loading order with 1 of 3 Base Measures and linking Base and Flex Measures together to support envelope and core system upgrades
- Provide a tiered incentive level from $1,000 to $2,500 in $500 increments (shown in Figure 5 below) which still allows the contractor to upsell to the Advanced Path if desired by the homeowner
- Penetrate the lower-middle and middle-income homeowner markets with a simple, menu driven approach that will greatly increase the volume of projects

- Maintain high standards of Quality Control consistent with IOU and industry best practices and promote homeowner safety with pre-and-post-installation combustion appliance safety testing
- Maximize ratepayer benefits by creating an on-ramp for both homeowners and contractors while minimizing lost opportunities

Figure 5: Proposed Tiered Incentive Structure

Point Total	Incentive Amount	Estimated Site Savings
100	$1,000	10%
150	$1,500	15%
200	$2,000	20%
250	$2,500	25%

Many Flex Measures require a specific Base Measure to better support the Energy Efficiency Loading Order and Core System upgrades as shown in the examples in the Figure 6 below. In many projects this will result in the homeowner installing two or more envelope measures. The REN feels the required Base Measure design combines complementary measures in a way that adequately supports the Loading Order without introducing unnecessary restrictions on the contractor and homeowner. This systems oriented design will help to ensure that each building system will be installed properly and provide the maximum benefit to the ratepayer.

Figure 6: Examples of Flex Measures That Require a Specific Base Measure

Flex Measures	Required Base Measure
Wall Insulation or Windows	Whole House Air Sealing
Crawlspace Insulation	Whole House Air Sealing
Attic Radiant Barrier	Attic Air Sealing and Insulation
HVAC Equipment Replacement	Duct Sealing and Insulation or Duct Replacement + one additional Base Measure or envelope Flex Measure

The 1 of 3 envelope Base Measure approach guarantees that 100 percent of homeowners will implement at least one envelope (building shell) measure. The Modified EUC Flex Path program will also

require that HVAC equipment projects include Duct Sealing and Insulation or Duct Replacement and an additional Base Measure or envelope Flex Measure as directed by Energy Division staff.

This simple, flexible design is expected to greatly increase the volume of projects over the Basic Path. The Modified EUC Flex Path program is flexible enough to allow some homeowners to focus on envelope improvements while others focus on completing core system upgrades. Contractors will be trained and encouraged to develop work scopes that go beyond core systems and include more envelope measures. The 2013-2014 transition period gives the Commission the opportunity to test a program design that will achieve a higher volume of retrofits and reasonably support the energy efficiency loading order.

The Modified EUC Flex Path program also introduces a bonus measure for right-sizing of HVAC equipment to support the EE loading order for core systems and test market acceptance of this approach outside a formal Quality Installation requirement. Again, the REN wishes to use the transition period to try an innovative program design to see what works and what does not, and one that does not limit participation. The challenge in any program design is finding the right balance between volume and building science priorities. Lessons learned will be few if homeowner participation is low. The Commission cannot afford another two years of learning only what does not work.

The Modified EUC Flex Path program requires that HVAC equipment projects include Duct Sealing and Insulation or Duct Replacement and one additional Base Measure or envelope Flex Measure.

The Modified EUC Flex Path program is intended to de-mystify the whole house energy efficiency upgrade approach. The program offers a homeowner education component that will explain the benefits of the EE loading order and encourage homeowners to undertake a whole house energy upgrade in steps as their budget allows. Contractors will perform a walk-through audit that will serve as an energy efficiency roadmap for the homeowner that provides a comprehensive list of measures for future implementation. A draft of the walk-through audit form is presented in Attachment D. The energy efficiency roadmap provides contractors with an expanded customer base that promotes long term job stability and repeat business.

The Modified EUC Flex Path program addresses the barriers to entry into the home performance upgrade market and is intended to facilitate driving EUC to scale statewide.

- Modified EUC Flex Path is a prescriptive incentive program that eliminates the need for energy modeling of a home, reducing the number of visits by contractors and QC inspectors to the home by at least half over the Advanced Path.

- Modified EUC Flex Path is a points-based approach that gives homeowners and contractors the flexibility they need to bundle measures as their needs and budget allow while still supporting the energy efficiency loading order.
- Homeowners are able to do several energy efficiency upgrade projects over several years and prioritize upgrades that meet their needs, thereby dramatically increasing the number of middle-income homeowners that can be engaged in the home performance upgrade path.
- Modified EUC Flex Path facilitates homeowner engagement and energy efficiency education over a longer period of time and provides contractors with a base for repeat business that creates more jobs and makes employment more sustainable.
- The streamlined, prescriptive approach allows program implementers to handle a much greater volume of home performance upgrades at a lower cost, and has proven to increase customer satisfaction.
- The Modified EUC Flex Path program will be integrated with existing financing products, and loans can be funded in weeks as opposed to months.
- Modified EUC Flex Path solves the problem of mechanical equipment replacement on burn-out and provides incentives to move homeowners up to a higher level of efficiency; and a trained contractor pool is ready with the right equipment.
- Modified EUC Flex Path will allow more contractors to get involved in the program, create more green jobs, and accelerate market transformation.

The REN has eliminated all five-point measures from the prescriptive menu and have included them as required or recommended best practices in applicable equipment measures.

Modified EUC Flex Path focuses workforce development on contractor quality installation and improving home performance best practices, not energy modeling that is controversial at best. Key design elements include the following:

- Three or more qualifying measures must be installed using a combination of Base and Flex Measures as described in Figure 8 below.
- The Modified EUC Flex Path program requires that HVAC equipment projects include Duct Sealing and Insulation or Duct Replacement and one additional Base Measure or envelope Flex Measure.
- The three selected measures must have a combined point value of 100 to meet the minimum $1,000 incentive threshold, and up to 250 points for the maximum $2,500 incentive.
- All five-point measures have been eliminated from the ARRA Flex Path program design.

- Work must be performed by a EUC Participating Contractor.
- Projects must provide proof of all applicable building permits and adhere to all local, state, and federal laws and building codes.
- All projects require 100% pre-and-post-combustion safety testing regardless of measures installed performed by a BPI certified Building Analyst (BA) as directed by Energy Division staff.
- Homeowners must be an active IOU account holder, and may choose to have the incentive paid directly to the Participating Contractor.

Program requires 100% pre-and-post-combustion safety testing for all projects regardless of measures installed as directed by Energy Division staff.

The RENs and IOUs agree that all five-point measures offered in the ARRA Flex Path program will be eliminated. It is also agreed that the measures do offer value to homeowners as best practices and the chart below describes the proposed disposition of each five-point measure.

Figure 7: Proposed Disposition of ARRA Flex Path Five-Point Measures

Flex Path Five-Point Measures to be Removed	Flex Path Requirement	Proposed Disposition
Programmable Thermostat	Energy Efficient Programmable Thermostat(s); Serves Entire Conditioned Area	Add the following statement to all HVAC equipment measures and duct sealing and insulation measure(s): Recommend replacement of a manual thermostat with digital, setback programmable model.
Low Flow Showerheads	Low Flow Showerheads ≤ 1.5 gpm; Bathroom Faucet Aerators ≤ 1.5 gpm; Kitchen Faucet Aerators ≤ 2.2 gpm	Add the following statement to program participation requirements (1 of 3 Base Measures; minimum three measures, etc.): All Flex Path projects require installation of a thermostatic shut-off valve on all showers in the home except when installing a tankless water heating system.
Hot Water Pipe Wrap	Minimum First 5ft of Hot Water Pipe Wrapped	Add the following statement to all domestic hot water measures: Must include pipe wrap for first five feet of exposed pipes.
ENERGY STAR Lighting	EnergyStar CFL or LED Fixture(s); Permanently Installed	Add the following statement to Attic Insulation and Sealing: It is highly recommended that all incandescent recessed can lighting fixtures be replaced with ENERGY STAR® CFL fixtures or ENERGY STAR® LED fixtures.

The Modified EUC Flex Path program also proposes to provide a bonus to the homeowner for installing more than one Base Measure. The first additional Base Measure (2 of 3) will receive a bonus of 15 points and the second additional Base Measure (3 of 3) will receive a bonus of 20 points. The measure point values and bonuses are cumulative. Figure 8 below summarizes how the Base Measure Bonus will add value to a project and drive more envelope measures.

Figure 8: Example of Base Measure Bonus Structure

Number of Base Measures	Base Measure Description	Base Measure Points	Bonus Points Added	Measure Points	Cumulative Total Points
1 of 3	Attic Air Sealing and Insulation	70	Base Measure Points Only	70	70
2 of 3	Duct Sealing and Insulation or Duct Replacement	70	Base Measure Points + 15 Bonus Points	70+70+15	155
3 of 3	Whole House Air Sealing	30	Base Measure Points + 20 Bonus Points	155+30+20	205

The REN supports the IOU's in the development and limited piloting of a software tool that a contractor can use to calculate project points and percentage of energy savings based on basic characteristics of each home, vintage, and climate zone, provided the RENs are not required to use it. The currently proposed REN data management system will not support the use of this tool. In addition, the REN feels this approach is too complicated for homeowners to understand, as it is technically a calculated method that could result in different energy savings values and incentive amounts for each home. The REN would prefer to offer the same simple, prescriptive, points based menu approach to all homeowners and do virtually the same calculated energy savings calculations on the back end for the purpose of claiming savings and providing project specific data to Energy Division staff. The reason the ARRA Flex Path program was successful is because it was very simple and easy for homeowners to understand. The Modified EUC Flex Path measures in Figure 8 below include existing and post-upgrade conditions, diagnostic testing (if required), and estimated point values. It should be noted that point values are based on average energy savings across SCE and SCG service territories and are preliminary pending further collaboration with the IOU's and Energy Division staff to determine final values.

C. Qualifying Measures

Figure 8: BASE Measures – Select ONE (1) or more Base Measures

To participate in the Modified EUC Flex Path program, homeowners must install a minimum of one Base Measure and two or more Flex Measures with a combined point value of 100 or greater using an Energy Upgrade California Participating Contractor. All Flex Path projects require installation of a thermostatic shut-off valve on all showers in the home except when installing a tankless water heating system.					
Base Measure ID	**Base Measure**	**Existing Condition**	**Post-Upgrade Condition**	**Diagnostic Testing**	**Point Value**
BASE Measures					
The Attic Insulation & Attic Air Sealing measure requires that HVAC ducts be sealed or separated from the insulation material. It is also highly recommended that all incandescent recessed can lighting fixtures be replaced with ENERGY STAR® CFL fixtures or ENERGY STAR® LED fixtures.					
1A	**Attic Insulation & Attic Air Sealing**	≤ R-11	≥ R-44; Sealed Attic Top Plate	BD Test-Out; CAZ Test-Out	70
		Leakage ≥ 28%; Insulation ≤ R-4	Leakage ≤ 6 %; Insulation ≥ R-8 or Buried		70
1B	**Duct Insulation & Sealing OR Duct Replacement**	Leakage ≥ 15% < 28%; Insulation ≤ R-4	Leakage ≤ 6 %; Insulation ≥ R-8 or Buried	DuctBlaster Test-In/Out; CAZ Test-Out	35
1C	**Whole House Air Sealing**	ACHn ≥ 130% ASHRAE 62.2	ASHRAE 62.2 ≤ ACHn ≤ 130% ASHRAE 62.2	BD Test-In/Out; CAZ Test-Out	30

FLEX Measures – Select TWO (2) or more FLEX Measures

Note some FLEX Measures may require a specific Base Measure be implemented

Required Base Measure	**FLEX Measure**	**Existing Condition**	**Post-Upgrade Condition**	**Diagnostic Testing**	**Point Value**
FLEX Measures – Envelope					
1C	**Floor Insulation**	No Insulation	≥ R-19		60
1C	**Wall Insulation**	No Insulation	≥ R-13	See Base Measure 1C	90
1C	**High Performance Windows**	Single or Double Clear Pane	EnergyStar or equivalent; U-factor ≤ 0.40; SHGC ≤ 0.25	See Base Measure 1C	80

1A	**Attic Radiant Barrier**	No Radiant Barrier	Continuous Rolled or Prelaminated Radiant Barrier	See Base Measure 1A	40
Required Base Measure	**FLEX Measure**	**Existing Condition**	**Post-Upgrade Condition**	**Diagnostic Testing**	**Point Value**
FLEX Measures – Heating, Ventilation, & Air Conditioning					
HVAC equipment replacement measures require Base Measure 1B, Duct Insulation & Sealing OR Duct Replacement, plus an additional Base Measure or envelope Flex Measure. The Right Sizing HVAC Bonus requires Base Measure 1B and Base Measure 1C.					
1B	**Gas Furnace**	Gas Furnace; ≤ 0.80 AFUE	Gas Furnace; ≥ 0.95 AFUE	See Base Measure 1B	40
1B	**Electric Heat Pump**	Heat Pump; ≤ 5.6 HSPF; 8 SEER; 6 EER	Heat Pump; ≥ 8 HSPF; 15 SEER; 11 EER	See Base Measure 1B	80
1B	**High Efficiency Air Conditioning**	≤ 10 SEER	Central AC; ≥ 15 SEER; ≥ 11 EER	See Base Measure 1B	40
		New Air Conditioning	Downsized AC Unit	N/A	10 per 1/2 ton; 30 max
N/A	**Right Sizing HVAC Bonus**	New Heat Pump	Downsized Heat Pump	N/A	10 per 1/2 ton; 30 max
1B	**Buried Ducts Bonus**	≤ R-4	Fully Buried Ducts*	See Base Measure 1B	20

Required Base Measure	**FLEX Measure**	**Existing Condition**	**Post-Upgrade Condition**	**Diagnostic Testing**	**Point Value**
FLEX Measures – Water Heating					
			Gas Storage Heater; ≤ 0.67 EF	CAZ Test-Out	40
N/A	**Gas Water Heater**	Gas Storage Heater; ≤ 0.575 EF	Gas On-Demand Tankless Heater; ≤ 0.88 EF	CAZ Test-Out	90

			Electric Storage Water Heater; ≤ 0.93 EF	N/A	10
N/A	**Electric Water Heater**	Electric Storage Water Heater; ≤ 0.88 EF	Electric Heat Pump Water Heater; ≥ 2.0 EF	N/A	70
Required Base Measure	**FLEX Measure**	**Existing Condition**	**Post-Upgrade Condition**	**Diagnostic Testing**	**Point Value**
Additional FLEX Measures (added as dollar rebates to total incentive amount)					
		Single-Speed Primary Pump	Title-20 Compliant Variable Speed Pump & Controller	N/A	$200
N/A	**Variable Speed Pool Pump**	Two-Speed Primary Pump	Title-20 Compliant Variable Speed Pump & Controller	N/A	$50

The Modified EUC Flex Path program includes innovative measures like a Right Sizing HVAC Bonus incentive; Fully Buried HVAC Ducts Bonus incentive; and Electric Heat Pump Water Heater incentive. Both the REN and IOU programs require 100% pre-and-post-combustion safety testing for all projects regardless of measures installed as directed by Energy Division staff.

IOU/REN collaboration has resulted in a number of agreements that will allow the partners to move quickly to implement a single Basic Path replacement program and other vital EUC support services in SCE and SCG service territories. Should the Commission approve the Modified EUC Flex Path program design, and restore the proposed full REN budget of $9,228,614, the REN estimates that a total of 3,750 retrofits can be achieved at an average incentive of $2,000. Figure 9 below shows the estimated energy savings to be acquired under the Modified EUC Flex Path program with full funding. The REN and IOU's will work together with the Commission to establish measure level energy savings using the IOU and REN engineering work papers currently under review by Energy Division staff.

Figure 9: Modified EUC Flex Path Proposed Net Energy Savings

Resource Acquired	2013	2014	Total
kWh Energy Savings	1,761,000	2,642,000	4,403,000
Peak kW Demand Reduction	1,950	2,930	4,880
Therm Savings	143,000	214,000	357,000

SoCalREN has worked closely with SCE and SCG to reach an unprecedented level of cooperation that serves to leverage the substantial investment made by LA County in Energy Upgrade California. SoCal REN respectfully requests approval of the Modified EUC Flex Path program with its 1 of 3 Base Measure approach in order to continue piloting a simple, flexible program design that will provide invaluable market penetration data to inform the next generation of whole house upgrade programs and move the statewide team closer to sustainable market transformation.

D. Geographic Territory

In recognition of the final decision which states that, "we would like to see the REN proponents and the IOUs work together to design a programmatic approach that covers all of the geographic areas of the IOU service territories with a seamless set of offerings. This means that the RENs would implement the modified EUC Flex Path (or a new program name, if one is agreed upon) in the geographic areas that they cover, while the IOUs would implement the program in the rest of their territory," SoCalREN proposes to eventually operate the modified EUC Flex Path program in all the geographic areas it serves. The final decision goes on to explain that, "The vision for RENs is that they are *regional,* which, in the context of defining a REN, means that they represent several local government entities and not just one or two. For example, BayREN and SoCalREN represent two of the most populous regions of the state, encompassing multiple city and county governments within their structures."

SoCalREN has clearly established its territory as being that of the joint service territories of SCE and SCG for all of the SoCalREN services; however, for the Modified EUC Flex Path program, the REN will start by implementing the program only within L.A. County and will expand into other counties within the SoCalREN territory as the program shows success. Future REN expansion will be negotiated with SCE and SCG based on program performance metrics to be jointly determined. SCG will administer Flex Path in municipal electric utility territories; SCE will administer Flex Path in municipal gas territories. SCE and SCG will administer Flex Path in territories that are shared with PG&E and SDG&E. Non-resource programs (contractor related

outreach, green building labeling, audit subsidies, vouchers, marketing/outreach, etc.) are assumed to be IOU territory-wide. The REN will work with the IOU's to eliminate duplication and provide REN services where they provide the greatest ratepayer benefit.

E. Marketing and Outreach

As demonstrated on the ARRA funded Flex Path program, very few specific marketing activities will be required to engage homeowners in the program. A program brochure will be produced for the contractor that explains the importance of the EE loading order, the benefits of a whole house energy upgrade, and the terms of participation in the program. Modified EUC Flex Path program messaging will be added to existing planned marketing and outreach activities and media promotions. A program specific web URL will be established to engage homeowners and contractors in participation in the program using Frequently Asked Questions, a Qualifying Measures list, an Online Application, and the Project Completion Form. The REN will work with contractors directly to promote and deliver the program.

The REN proposes an email campaign to follow up with homeowners on recommended additional measures based on their energy efficiency roadmap.

F. Data Processing

EnergyOrbit is a cloud-based energy efficiency program management solution. Built on the Force.com platform, energyOrbit allows Demand Side Management (DSM) programs to be set up quickly and be managed with little overhead, while maintaining maximum flexibility. With both the broad functionality of the Salesforce platform and the industry-specific customization of energyOrbit, the full life cycle of a program can be managed from online, portal-based application entry to post-retrofit communications. EnergyOrbit has been deployed by dozens of POUs, IOUs, cooperatives, and program implementation firms, including ComEd, PG&E and Santee Cooper.

The REN has proposed using energyOrbit to manage and track all REN programs. Previously used in Los Angeles County to administer the Flex Path program, the energyOrbit solution contains a number of turn-key features that facilitate fast program set-up and comprehensive program tracking. These features support customers and program administrators while satisfying program funding requirements and other stakeholder interests through comprehensive customer relationship management (CRM), automated work processes, and standardized energy calculation and analysis. EnergyOrbit supports the full life-cycle of a program with robust tracking and reporting capabilities. Examples of what energyOrbit supports include:

- Full spectrum of efficiency technology measures

- Equipment management
- Contractor management
- Customer management
- Audit and work-order management
- Energy savings, installation costs and rebate savings for prescriptive and calculated measures
- Detailed reporting of program performance

In conjunction with energyOrbit's exclusive features, the tool is bundled with Salesforce CRM Enterprise Edition. Salesforce is the most comprehensive cloud-based CRM tool available, managing not only sales, but also marketing and customer service. Examples of how the REN will take advantage of these capabilities include:

- Call center management for contractor and homeowner support
- Automated status update emails based on event triggers
- Customized fields to support a walk-through audit
- Post-retrofit email campaign to follow up with homeowners on recommended additional measures based on their walk through audit and resulting energy efficiency roadmap

EnergyOrbit is a closed-loop system with extensive security features. Data can be locked down in a number of ways based on a broad data access model. At the baseline, organization-wide defaults restrict access to the bare minimum needed by all users. Salesforce also provides system security for physical, network, transmission, and application mechanisms, resulting in an ISO27001 security certification.

Based on the prior successful use of energyOrbit in Los Angeles County and the robust functionality of the system, the REN proposes to use this tool for the 2013-14 portfolio of programs. EnergyOrbit would support Energy Upgrade California (EUC) and financing programs including:

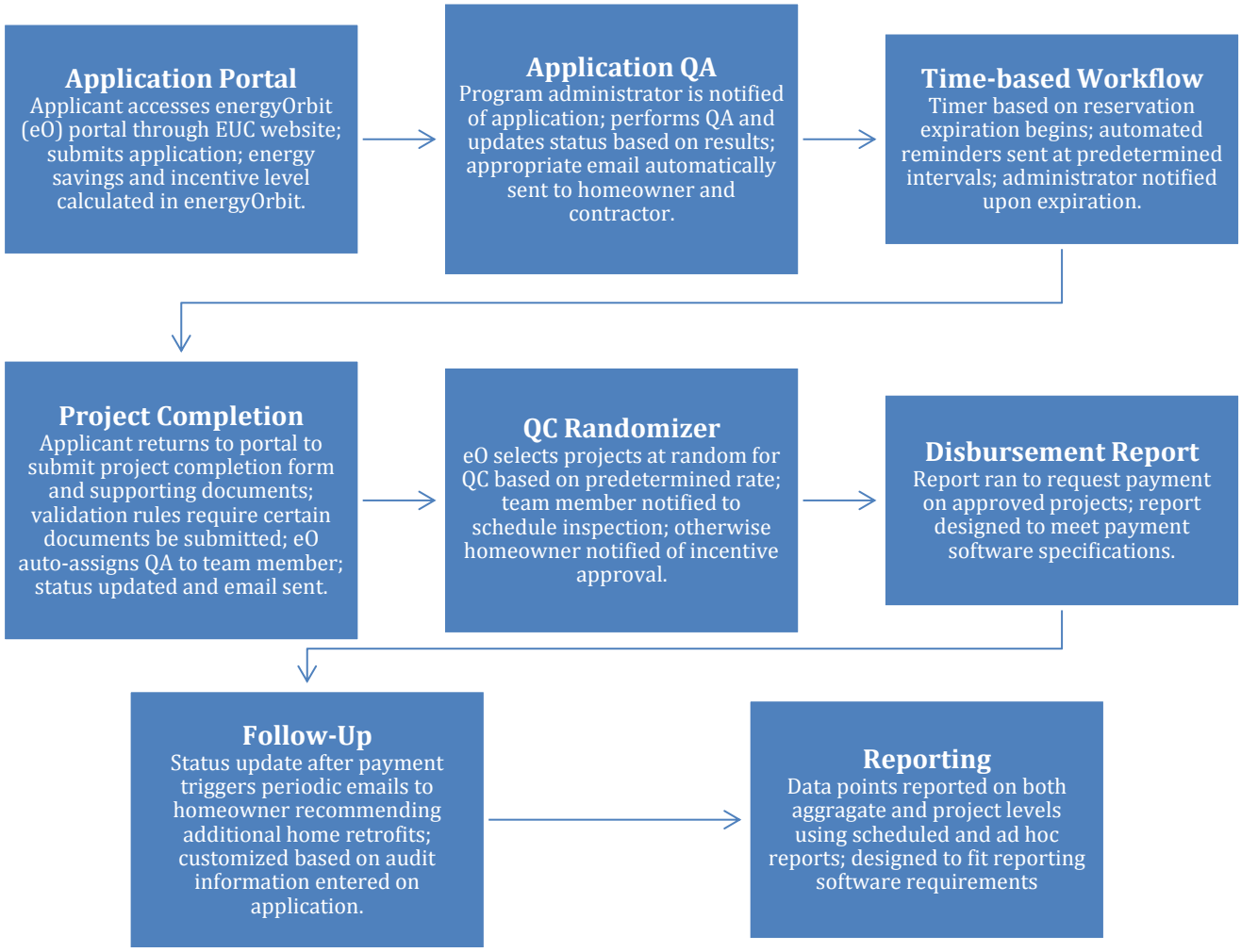
- Modified EUC Flex Path
- Multifamily
- HVAC
- Energy Champions
- CoOp Marketing
- Assessment vouchers
- Commercial PACE
- Single family LLR

- Multifamily LLR

Each program would be developed according to both program designs and relationships between programs to accurately report on both unique projects and connections between them. Projects in each program would be tracked seamlessly throughout their life-cycle, from application to incentive payment and post-payment follow-up.

While each program will utilize different functionality, it may be illustrative to describe the process of how a project moves through the energyOrbit system. Figure 10 provides an example of this flow that is based on a hypothetical project in the Modified EUC Flex Path program.

Figure 10: Example of energyOrbit Process Flow



G. Application Processing and Quality Assurance

A comprehensive Quality Assurance (QA) Plan is an integral part of the Modified EUC Flex Path program. Quality assurance protects participants by providing an independent review of the work performed by the participating contractor to ensure that the installation meets industry best practices and program standards. The REN Quality Assurance Plan includes strategies to ensure that participating contractors are competent and that completed energy efficiency improvements meet program standards as follows:

- **Project Completion Form review process** that ensures compliance and provides follow up with the Participating Contractor where necessary.
- **Customer feedback mechanism** which allows the customer to provide program and contractor feedback directly to the Program Administrator.
- **In-field inspection protocols** including a sampling rate that is aligned with Home Performance with ENERGY STAR standards at a minimum.
- **Conflict Resolution Protocols** for responding to contractors' disputes with QA reports.
- **Record keeping and tracking** of results from in-field inspections, customer feedback and any corrective actions undertaken.

1. Flex Path Process

The Modified EUC Flex Path program will manage program participation in the following sequence:

- Contractor (or homeowner) completes project Application Form.
- Review of project Application Form. Submission of Application Form is necessary for 60 day reservation date to be issued by Program Administrator.
- Walk through audit and project work scope initiated and completed by participating contractor.
- Quality Control (witness of test-out results may be required for some measures).
- Contractor submits Project Completion Form (with required supporting documentation).
- 100% Desktop Quality Assurance Review of Project Completion Form and Supporting Documentation.
- Quality Control (In-field inspection).

Figure 11 outlines the 12-step desktop quality assurance review that will be undertaken for every Flex Path Application Form received.

Figure 11: Quality assurance procedure for desktop review of Application Form

Step	Review	Action
1	Alert created if Utility Service Account number is the same as another EUCLA project	The program administrator will check the Utility Service Account number provided against all other EUCLA projects. If an application is found with the same Utility Service Account, then the program administrator will review the scope of work for each application and confirm that they are different.
2	Utility Service Account Holder address is within Los Angeles County	The program administrator verifies that address provided is within Los Angeles County and is a single family detached home.
3	Utility Service Account Holder has not received an incentive for the same measure(s) in the past five years	The REN will work with the IOUs to share data regarding previous participation in IOU programs. Every application will be checked for previous participation at the measure level.
4	Contractor has valid contractor's license	Program administrator confirms that contractor is on the Participating Contractor list. A valid contractor's license is confirmed during the Participating Contractor application process in the Energy Upgrade California Program.
5	Contractor has performed walk through audit	Program administrator confirms that Contractor has submitted a completed walk through audit form.
6	Utility Service Account Holder's email address functions	Upon application submittal, a manual email will be generated to the Utility Service Account Holder's email address. Program administrator will see if the email is undeliverable.
7	Utility Service Account number is in correct format for electric utility selected	The program administrator will verify the account number provided against the known number of digits for selected utility provider.
8	Utility Service Account number is in correct format for gas utility selected	The program administrator will verify the account number provided against the known number of digits for selected utility provider. If it is not in the correct format, and the homeowner or contractor informs the program administrator that there is no gas utility service to the property, then this is acceptable.

Step	Review	Action
9	Utility Service Account address is within electric utility territory selected	Confirm that the city is listed within Los Angeles County, and not served by Los Angeles Department of Water and Power or other municipal utility provider.
10	Utility Service Account address is within gas utility territory selected	Confirm that the city is listed within Los Angeles County, and is not served by a municipal utility.
11	Measures selected in application are deemed qualifying measures	The program administrator will verify that at least one Base Measure is selected and a total of three or more retrofit measures have been selected and that their combined point value is 100 or greater.
12	Electronic signature matches utility service account holder's name	The program administrator will verify that the Utility Service Account holder name matches the electronic signature on the application.

2. Other Eligibility Requirements

Another eligibility requirement that is included in the program design, website, and marketing material: new construction and major (gut) rehabilitation cannot apply for the Modified EUC Flex Path program.

3. Review of Project Completion Form

After installation of the Qualifying Measures agreed to in the Application Form is complete, the participant will be required to close out their application by completing a Project Completion Form. The purpose of this form is to ensure that program requirements for pre-and-post-retrofit conditions have been met, an itemized invoice has been paid in full, proof of pre-and-post combustion appliance safety testing, and all additional supporting documentation required for each measure has been submitted. In the case of a homeowner not being able to pay the full amount at the time of project completion, proof of financing is acceptable in lieu of a paid invoice. To satisfy the invoice requirements, a written copy of the financing agreement, signed by both parties, must be submitted to the Program Administrator as part of the supporting documentation package.

Once a Project Completion Form is submitted through the EUCLA website, an application processor will review all supporting documentation to verify the required documents have been submitted in compliance with pre-and-post-retrofit conditions.

At the point of downloading the Project Completion Form information from the website, the application processor will ensure that a note is made in the file if the project cost does not equal or exceed the total amount of the Flex Path incentive. The processor will also verify that regularly-permitted measures have a permit number included, and if not a note is made in the file and the contractor is contacted.

For air sealing and duct insulation and sealing, the Participating Contractor will submit test-in and test-out results using a downloadable Excel file located in the Project Completion Form section of the website. After filling in the appropriate information into the Excel document entitled Flex Path Test-In and Test-Out Templates, the contractor will upload the file into the Project Completion Form. Flex Path Test-In and Test-Out Templates will be the file that the quality assurance professional will use to review Combustion Safety Test-In and Test-Out results, Duct Blaster Test-In and Test-Out results, and Blower Door Test-In and Test-Out results.

Attachment A provides examples of existing Flex Path Test-In and Test-Out Templates which are provided in Excel format for participating contractors to complete and submit, and are available for use on the Modified EUC Flex Path program. Attachment B describes the process related to the review of test-In and test-Out documents. The in-field quality control selection protocol is described in Attachment C. Attachment D presents a draft of the proposed walk through audit template.

Attachment A: TEST FORMS

Figure 1: Combustion Safety Tests (CST) – Pre-Retrofit

COMBUSTION APPLIANCE SAFETY / COMBUSTION APPLIANCE ZONE TESTING

PRE-RETROFIT

In each box, please enter "PASS", "FAIL," the value requested or "N/A" (i.e. no blank boxes). N/A is the appropriate response only if there is no such combustion appliance to test. Explain all responses of "N/A" in the NOTES section. Any combustion device that is not on this form (e.g. fireplace insert) should be listed under "other" as necessary and explained in NOTES.

Date of Combustion Safety Test-Out:	
BPI Building Analyst Performing Test-Out:	
Phone Number of BPI Professional:	
Outside Temperature at Time of Testing (in degrees F):	

	Worst Case Depressurization Test Results			Natural Conditions Test Results (if failed Worst Case)				
	Spillage	Draft (Pa)	CO (ppm)	Spillage	Draft (Pa)	CO (ppm)	Flue Inspection	Action Required*
Heating System 1								
Heating System 2*								
DHW System 1								
DHW System 2*								
Other*								

	location of testing	CO Ambient (ppm)	Base Pressure (Pa)	Worst Case pressure (Pa)	Final Net CAZ Depressurization	Limit for CAZ	Result	Action Required*
CAZ 1								
	list of CAZ 1 appliances:							
CAZ 2*								
	list of CAZ 2 appliances:							

Gas Leak Testing:		Leakage Notes:	

	Kitchen	Other*	Action Required
Ambient CO (ppm)			

	Fuel*	CO (ppm)	Vent Out?	Action Required
Oven				
Range				
Other Appliance				

	Fuel*	Gas Properly Vented	Action Required
Dryer Vent			

NOTES:	

***As needed, list additional systems/zones/actions in the notes section; identify other system/fuel types in the notes section**

Figure 2: Combustion Safety Tests (CST) – Post-Retrofit

COMBUSTION APPLIANCE SAFETY / COMBUSTION APPLIANCE ZONE TESTING
POST-RETROFIT
In each box, please enter "PASS", "FAIL," the value requested or "N/A" (i.e. no blank boxes). N/A is the appropriate response only if there is no such combustion appliance to test. Explain all responses of "N/A" in the NOTES section. Any combustion device that is not on this form (e.g. fireplace insert) should be listed under "other" as necessary and explained in NOTES.

Date of Combustion Safety Test-Out:	
BPI Building Analyst Performing Test-Out:	
Phone Number of BPI Professional:	
Outside Temperature at Time of Testing (in degrees F):	

	Worst Case Depressurization			Natural Conditions Test Results (if				
	Spillage	Draft (Pa)	CO (ppm)	Spillage	Draft (Pa)	CO (ppm)	Flue Inspection	Action Required*
Heating System 1								
Heating System 2*								
DHW System 1								
DHW System 2*								
Other*								

	location of testing	CO Ambient (ppm)	Base Pressure (Pa)	Worst Case pressure (Pa)	Final Net CAZ Depressurization	Limit for CAZ	Result	Action Required*
CAZ 1								
	list of CAZ 1 appliances:							
CAZ 2*								
	list of CAZ 2 appliances:							

Gas Leak Testing:		Leakage Notes:	

	Kitchen	Other*	Action Required
Ambient CO (ppm)			

	Fuel*	CO (ppm)	Vent Out?	Action Required
Oven				
Range				
Other Appliance				

	Fuel*	Gas Properly Vented	Action Required
Dryer Vent			

NOTES:	

***As needed, list additional systems/zones/actions in the notes section; identify other system/fuel types in the notes section**

Figure 3: Blower Door Tests – Pre-Retrofit

Blower Door Test-In	
PRE-RETROFIT	
Date of Blower Door Test-In:	
BPI Building Analyst Performing Test-In:	
Phone Number of BPI Professional:	
AIR INFILTRATION RESULTS	
House Infiltration (at 50Pa):	
For house infiltration testing, with method did you use?	
Below please paste a photo of the manometer results of this test:	

Figure 4: Blower Door Tests – Post-Retrofit

Blower Door Test-Out	
POST-RETROFIT	
Date of Blower Door Test-Out:	
BPI Building Analyst Performing Test-Out:	
Phone Number of BPI Professional:	
AIR INFILTRATION RESULTS	
House Infiltration (at 50Pa):	
For house infiltration testing, with method did you use?	
Below please paste a photo of the manometer results of this test:	

Figure 5: Duct Blaster Tests – Pre-Retrofit

Duct Blaster Test-In	
PRE-RETROFIT	
Date of Duct Blaster Test-In:	
BPI Building Analyst Performing Test-In:	
Phone Number of BPI Professional:	
DUCT LEAKAGE RESULTS	
How many HVAC duct systems were tested? For each one, submit this form separately.	
Calculated air flow from HVAC fan unit (CFM):	
For the duct pressurization test, how did you determine the full air flow from the fan unit? Write the equation you used and the numbers you inputted into the equation.	
Duct pressurization results (at 25Pa):	
Total duct leakage at start of job (supply + return), percentage of full flow (i.e. row 13 divided by row 11):	
Below please paste a photo of the manometer results of this test with the setting at 25Pa. If you are running a blower door test simultaneously, so you are pressurizing the whole house, please submit a photo of that manometer's reading as well to show that the ducts were pressurized to 25Pa.	

Figure 6: Duct Blaster Tests – Post-Retrofit

Duct Blaster Test-Out	
POST-RETROFIT	
Date of Duct Blaster Test-Out:	
BPI Building Analyst Performing Test-Out:	
Phone Number of BPI Professional:	

DUCT LEAKAGE RESULTS	
How many HVAC duct systems were tested? For each one, submit this form separately.	
Calculated air flow from HVAC fan unit (CFM):	
For the duct pressurization test, how did you determine the full air flow from the fan unit? Write the equation you used and the numbers you inputted into the equation.	
Duct pressurization results (at 25Pa):	
Total duct leakage at end of job (supply + return), percentage of full flow (i.e. row 13 divided by row 11):	

Below please paste a photo of the manometer results of this test with the setting at 25Pa. If you are running a blower door test simultaneously, so you are pressurizing the whole house, please submit a photo of that manometer's reading as well to show that the ducts were pressurized to 25Pa.

Attachment B: Review of Test-In and Test-Out Documents

The review of the test-in and test-out documents will be done in the following order:

- Based on the measures selected, the quality assurance professional will ensure that the correct tabs have been completed according to the chart on Page 1 of the template document.
- Review Combustion Safety / Combustion Appliance Zone Testing Pre-Retrofit and Post-Retrofit.
    1. Ensure that all of the notes under "Action Required" are the appropriate responses to the results listed in the previous columns according to BPI Standards:

Combustion Safety Test Action Levels

CO Test Result*	And/ Or	Spillage and Draft Test Results	Retrofit Action
0 – 25 ppm	*And*	**Passes**	Proceed with work
26 – 100 ppm	*And*	**Passes**	Recommend that the CO problem be fixed
26 – 100 ppm	*And*	**Fails at worst case only**	Recommend a service call for the appliance and/or repairs to the home to correct the problem
100 - 400 ppm	*Or*	**Fails under natural conditions**	Stop Work: Work may not proceed until the system is serviced and the problem is corrected
> 400 ppm	*And*	**Passes**	Stop Work: Work may not proceed until the system is serviced and the problem is corrected
> 400 ppm	*And*	**Fails under any condition**	Emergency: Shut off fuel to the appliance and have the homeowner to call for service immediately

**CO measurements for undiluted flue gases at steady state*

- Review Blower Door Test-In (if applicable)
    1. Ensure that infiltration is at CFM50 ≥ 1900
    2. Ensure that result and CFM50 setting matches photo of manometer
- Review Blower Door Test-Out (if applicable)
    1. Ensure that infiltration at CFM50 ≤ 1100
    2. Ensure that result and CFM50 setting matches photo of manometer
- Review Duct Blaster Test-In
    1. Ensure that percent leakage ≥ 28%
    2. Ensure that result and CFM25 settings match photo of manometer

- Review Duct Blaster Test-Out
    1. Ensure that percent leakage ≤ 15%
    2. Ensure calculations have been done correctly
    3. Ensure that CFM and CFM25 numbers coincide
    4. Ensure that result and CFM25 settings match photo of manometer

If a Project Completion Form is found to be incomplete or missing supporting documentation, an email and phone call will be made to both the participant and the Participating Contractor three times.

In-field Inspection Protocols

The Flex Path Pilot in-field inspections will be conducted by a quality control professional that holds a Building Analyst certification from the Building Performance Institute as a minimum. The quality control professional will not have existing business ties with any of the Participating Contractor's conducting retrofits in the Flex Path pilot. If such as relationship existed in the past, a minimum of a twelve month period is required between terminating the business relationship and performing any quality control procedures in the Flex Path Pilot program.

Attachment C: In-Field Quality Control Selection Protocol

The program administrator will ensure in-field inspections are performed at a sampling rate minimum of 5 percent (1 in every 20) for each Participating Contractor that has completed jobs under the SCE/SCG Energy Upgrade California Program. Randomly-chosen in-field inspections will target the incentive recipient and contractor to be notified after the Project Completion Form has been submitted. Notification will be sent via email and phone.

The national Home Performance with ENERGY STAR (HPwES) Program guidelines for a phased approach to sampling rates for in-field inspections will be applied to Participating Contractors that have not yet submitted jobs through the SCE/SCG Energy Upgrade California Program.

Phase 1: In-field inspection with a passing score on 3 of the first 5 jobs completed by a new Participating Contractor.

Phase 2: After the first 5 jobs are completed, 20 percent of the next 20 jobs would receive in-field inspections.

Phase 3: After completion of the Participating Contractor's first 25 jobs, the program administrator will lower sampling rate to 5 percent or greater of completed jobs.

It is important to note that the in-field inspections are at Participating Contractor level and not 5 percent of total program jobs. All in-field job inspections will occur after improvements have been installed. An in-field inspection may be scheduled during the contractor's test-out and prior to job completion (see Air Sealing/Duct Sealing below).

If a Participating Contractor is part of Southern California Edison's Quality Installation (QI) program, a site inspection may be waived if the documentation submitted to Edison's Quality Control division is submitted to the Flex Path Quality Control Professional as well.

Random Sample

Jobs will be selected through a random sample in order to maintain a representative sample of each Participating Contractor's work. However, a sample may not be purely random as some customers may not be willing to schedule an inspection or may schedule an inspection based on concerns with the work undertaken.

Air Sealing/Duct Sealing

Participants that plan to undertake air sealing and duct sealing in the Flex Path Pilot will be flagged in the Application Form desktop review for 5 percent minimum in-field inspection during the contractor's test-out procedure, to be conducted at a rate commensurate with the sampling rate of the contractor's in-field

inspections. By signaling that these measures are being installed, the quality control professional can arrange to witness the performance of the duct and/or blower door test-outs. In this case, the Participating Contractor may be asked to submit all supporting documentation prior to this meeting (with the exception of test out results and an itemized paid invoice). In this case, the QA professional will notify the incentive recipient and participating contractor within ten business days of receiving the application. This notification ensures the QA professional will be kept abreast of scheduled test-out dates and times.

The QC Professional will verify the system tonnage by inspecting the condenser nameplate. This number, multiplied by 400CFM, will equal the total nominal system airflow. This will be the denominator when dividing the CFM result of the Duct Blaster test to calculate the leakage percentage.

Pre-Installation Inspection

The program administrator reserves the right to perform a pre-installation inspection on all jobs in the Flex Path Pilot. Flex Path applications submitted for a property with multiple HVAC systems will trigger a mandatory post-installation inspection.

Scheduling Inspections

The Flex Path administrator will identify the random sampling of projects to be inspected weekly and forward them to the Quality Control Professional. Once received, this person will use a Route Planner function to identify the most efficient order in which the sites should be inspected on a given day.

Calls are then made to each homeowner. The call script is as follows:

"Hello, my name is _____, and I'm calling from LA County's Flex Path program. I wanted to let you know that we received all the supporting documentation we need to close out the project and issue your incentive. The last step is to schedule an on-site inspection, and I was wondering if you were available on _____."

The Route Planner will be used to calculate what amount of time to leave between inspections for travel. The amount of time it takes in current traffic should influence this determination. If any measure may be located in the attic, the homeowner will be asked if they can have a ladder readily available. Such measures include:

- Attic insulation & sealing
- Attic radiant barrier
- Furnace replacement
- A/C replacement (coil)

After the day and time have been agreed upon, the following information is included in the calendar event:

- SUBJECT: On-site Inspection: Last Name, First Name: Project Number
- LOCATION: Address

- NOTES: Phone number, email address, measures in application

Preparing for Inspections

Before going out in the field, each inspection will be prepped with the information necessary to verify what was installed matches the supporting documentation that was submitted. This includes, but is not limited to:

- Manufacturer and model numbers (A/C, furnace, DHW tank/tankless, heat pump, thermostat)
- Photos of installation (light fixtures, water fixtures, whole house fan, windows, cool roof)
- R value of insulation (attic insulation & sealing, crawlspace insulation)

This information can be included in the notes section of the calendar event and pulled up on a smart phone or other computer in the field to match all information with what is present in the home.

What to Bring to the Field

The Quality Control Professional will be responsible for bringing with him/her all the necessary information to check that the submitted supporting documentation matches that which is found in the house. This includes:

- Furnace specifications
- A/C specifications
- Heat pump specifications
- Thermostat specifications
- Hot water heater specifications
- Tankless hot water specifications
- Light fixtures specifications

On-site Inspection Procedures

When arriving at the site, the Quality Control Professional will ask to inspect anything that may be outside first. This may include the A/C condenser, cool roof, windows, crawlspace insulation, DHW tank/tankless, lighting fixtures, and pipe wrap.

When entering the home, the Quality Control Professional will ask the homeowner if he/she prefers that booties be worn around work boots. All measures that are inside the home will then be inspected. The Flex Path representative should be courteous and polite. This person will not touch anything in the home that is not necessary for inspection purposes. Ask the homeowner to turn off the A/C or heating system if inspecting any part of this core system.

General guidelines for what to complete during the visit include:

- A visual survey

- Review the measures selected on the application and determine whether each is new to the home.
- Note obvious missed opportunities for improving home performance that could have driven the scope to an Advanced Path project.
- Evaluate each measure against Flex Path's Qualifying Measures post-retrofit conditions.
- Witness the test-out performed by the contractor (in the case of duct insulation & sealing or air sealing)

For each measure below, the following information is verified in the field:

- Crawlspace insulation: Verify that it has been installed by looking in at least one entry point. If there are multiple, enter or look through them all. It is not necessary to get completely under if a vision inspection can be made by only inserting one's head. Look at the quality of the installation.
- Wall insulation: If there are patches or paint marks in outside walls, look to see that they are spaced about 3' from each other and that there are at least two points vertically at which the insulation was drilled and filled. Ensure that the wall insulation is in every exterior wall around the conditioned space.
- Air sealing: The QC professional will be at the Blower Door test-out to verify that the manometer reading matches Flex Path requirements. If not present for this, check that weather stripping and caulking were installed at any easy-to-access points (doors, windows, walls, etc.)
- Attic insulation & sealing: Verify that the thickness installed matches the thickness that the specification sheet indicates is necessary to reach the required R-value. Look at the quality of the installation.
- Attic radiant barrier: Ensure that the radiant barrier is continuous throughout the entire attic roof. Look at the quality of the installation.
- Furnace: Verify that model number match the specification sheets or AHRI certificate submitted as supporting documentation. This may require removing the cover of the furnace.
- A/C: Verify that condenser model number and coil model number match the specification sheets or AHRI certificate submitted as supporting documentation. If the condenser is on the roof, do not inspect it.
- Heat pump: Verify that model number match the specification sheets or AHRI certificate submitted as supporting documentation
- Whole house fan: Look to see that one was installed and ask if it vented out of the roof or just into the attic.
- Thermostat: Verify that it is programmable and that it is the same manufacturer and model number as the specification sheet submitted as supporting documentation

- Duct work: Ideally, the professional is present during test-out. If not, check to make sure that insulation is R-8. Look to see how the ductwork was laid out to see if it can be improved.
- Windows: From outside the house (or inside when necessary), go around the house to verify that all the windows are new and double-pane.
- Hot water heater (tank or tankless): Verify that model number match the specification sheet submitted as supporting documentation.
- Pipe wrap: Look at the DHW heater to see that pipes have been wrapped. Ensure that the insulation is not within 5" on the unit or a wall entry point. If you can also see exposed hot water piping in the crawlspace, basement, or attic, look to see that it is wrapped there are well.
- Water fixtures: Verify that the thermostatic shut off valve (i.e. the Evolve ShowerStart Roadrunner) was installed on all showers. Look underneath all faucets in all bathrooms and kitchen to see that aerators were installed.
- Lighting fixtures: Verify that the photos submitted as supporting documentation match those that are encountered in the home. The QC professional must ask the homeowner which of the light fixtures have been retrofitted.
- Cool roof: Look from the ground to see that shingles match the specification sheet submitted as supporting documentation. Verify that the entire roof has been re-shingled. Do not go up to the roof.

After all measures have been inspected, the QC professional will ask the homeowner where a good place to sit to fill out his/her paperwork would be. Then he/she will complete the in-field inspection form. After that, the customer discussion will begin. For details, see the section below by the same name.

Utility Service Account Number Conflict

During the review of the Application there will be a check to see whether the applicant has already participated in the EUCLA Basic or Advanced Package by a cross reference of the Utility Service Account Number. If the participant has previously had retrofits installed under the Energy Upgrade program, they will be flagged for an in-field inspection to ensure that the qualifying measures installed in the Flex Path Pilot were not already installed in the Basic or Advanced Package.

Contractor Performance

In-field inspection rates may be increased for a Participating Contractor whose score at a previous inspection is below 3 (See In-field Inspection Score Template). A contractor who receives a score below 3 will receive a mandatory in-field inspection for his/her next project.

Customer Discussion

The in-field inspection will begin with the quality control professional (acting on behalf of the program administrator) introducing themselves, their organizational affiliation, and the purpose of the visit; to verify that the work conducted by the Participating Contractor meets program guidelines.

The quality control professional must maintain a positive and objective attitude during all conversation with the participant, address any specific questions that they may have about the inspection and determine any concerns about the installed work. (See Figure 1 for possible talking points).

After the measures have been verified, the homeowner will be asked if he/she does not mind answering a few questions. The following questions will include:

Figure 1: Optional customer discussion items

- Confirm that the customer received correct information regarding what to expect from the program.
- Verify that the applicable test-in was performed and that the customer received a copy of all results from any test.
- Verify that any applicable test-outs were completed prior to submittal of the Project Completion Form (except in the case of air sealing/duct sealing in which the QA professional will be present during the test-out procedures).
- Confirm that the pre-retrofit requirements as described in the Qualifying Measures document were in place before the installation.
- Enquire if the customer has and is willing to share utility bill data, whether the utility bills were requested by the contractor, and whether or not the customer provided them to the contractor upon request.
- Confer with the customer regarding his/her satisfaction with the contractor's assessment, installation and overall experience with EUCLA.
- If customer displays positive attitude with regard to overall satisfaction, recommend that he/she share the experience with friends and family to encourage their participation in Energy Upgrade California.
- Encourage the customer to enroll in other Energy Upgrade California Programs.
- Ask the customer how he/she heard about the program.

In-field Inspection Scoring Protocol

Figure 2: The protocol described below will be used during in-field inspections

Score	Performance	Overall Comment
FAIL		
0	• Combustion appliance testing results do not meet BPI Technical Standards or relevant program standards. • Measures in contracted scope of work not installed. • Minimum standards for building ventilation are not being met. • Unsafe conditions resulting from installed work and posing immediate health/safety threat to occupants are found.	Contractor's performance does not meet technical standards, program requirements and/or the home needs immediate corrective action.
1	• Health and safety issues are present, but do not pose an immediate threat to the occupants. Measures were installed but not correctly to meet program requirements and standards. • Measures were not installed correctly.	Contractor's performance does not meet technical standards or program requirements and the home requires non-immediate corrective action.
2	• Below standards/incorrect installation of required measures.	Several technical deficiencies were observed that require corrective action.
PASS		

Score	Performance	Overall Comment
3	• Installed measures did not meet all technical installation standards, but no serious deficiencies were found. • Some incorrect data gathered and provided to customer without any significant impacts on work completed or effectiveness of job.	Contractor's performance meets all technical standards and program requirements but some areas of technical performance need improvement and may require corrective action.
4	• All technical standards of installation have been met (e.g. BPI Technical Standards) • Work is comprehensive in nature. • Recommended and installed measures were consistent with Application Form. • Test-out reporting was accurate.	Contractor's performance meets all technical standards and program requirements.

- **Contractor Performance Record**

Customer Feedback

If positive or negative feedback is received from the customer about the Participating Contractor, this will be stored in the contractor's performance history file. An in-field inspection will be promoted if the customer feedback warrants additional investigation to ascertain that the contractor has abided by all program policies and procedures.

Contractor Feedback and Corrective Action

If corrective action is indicated on the quality control professional's in-field inspection report, this will trigger the program administrator to contact the Participating Contractor. The contractor will be contacted within ten business days from when the in-field inspection report was filed via phone and email.
The contractor must correct the problem that has been identified and submit documentation regarding the corrections made to the program administrator immediately after the issue has been resolved.

If the quality control professional notes small errors at an in-field inspection, this will be recorded into the contractor's performance file. Feedback will be provided to the contractor in a constructive manner that

includes instructions on how to prevent making such mistakes on future projects. If the same errors are found multiple times for the same contractor, a higher sampling rate for in-field inspections may be established. If significant errors are found (i.e. the contractor receives a score of 0 or 1), the quality control professional will perform a phone consultation with the contractor to discuss pertinent issues. After this, the quality control professional will send the contractor a document that outlines corrective action scope of work that is required within 30 days, or an appropriate amount of time consistent with the construction work included. Documentation, both in written and photographic form (as applicable), must be submitted by the contractor as a record that the remediated action has been completed.

If an in-field inspection determines a severe situation is present within the house (i.e. one threatening the health and safety of occupants), the customer will be notified, and the quality control professional will decide an appropriate course of action. This may consist of informing the Utility Service Account Holder, contacting the fire department, or turning off equipment. The quality control professional will contact program administration to inform them of the situation. The quality control professional will immediately address the situation and provide the contractor instructions for necessary corrective actions to take as soon as possible. Documentation, both in written and photographic form (as applicable), must be submitted by the contractor as a record that the remediated action has been completed.

If acceptable for health and safety standards, the quality control professional will rely solely on the contractor to inform the customer about any deficiencies in the installation and any necessary corrective action.

Conflict Resolution Procedure

Situations may arise in which a contractor disputes a low in-field inspection score or disagrees with the QA professional's assessment of the Completion form with backup documentation. Some potential conflict resolution scenarios include:

- The measures installed were not the same as those selected in the Application Form. In this case a new application may be submitted if the point values of the installed measures meet the minimum required.
- The property is not located in Los Angeles County.
- The measures were not properly installed.
- The photographs or cut sheets are missing pertinent information.

In order to obtain resolution, the contractor can call the EUCLA call center (877-785-2237) and ask to receive the Program Administrator's contact information. The Administrator will then review with the Participating

Contractor's QA in-field report. The following process will be used by the Program Administrator to resolve any contractor disputes:

- Review Application Form and Project Completion Form for the project.
- Review the content of In-field Quality Assurance Report.
- Discuss the results of the In-field Quality Assurance Report with the contractor.
- Review all relevant information and make a decision whether or not to revise the In-field Quality Assurance Report score. If appeal is denied, go to the next step. If the appeal is approved, skip to step 7.
- Recommend that contractor seek additional training and/or mentoring.
- Increase the sampling rate the of the contractor's next five projects.
- Report all Conflict Resolution proceedings and outcomes to the Los Angeles County.

Inputting Scores

Once the QC professional returns to the office, he/she must notify the Flex Path administrator of the scores for all inspections. The in-field reports must be scanned and saved into the supporting documentation files for the inspections. If a site has more than one project number (i.e. Flex Path application), the report should be saved to each supporting documentation folder. Additionally, the inspection scores must be uploaded to each project via EnergyOrbit.

- **Program Data Reporting Requirements**

The following will be compiled and maintained for all applications received through the Flex Path Pilot program:

- Database of Application Forms
- W-9 Forms (if applicable)
- Project Completion Form
- Copy of Itemized Paid Invoice
- Supporting Documentation (e.g.: specification sheets, before and after photos, test-in and test-out results)
- In-field inspection results (if performed)
- Corrective action documentation (if in-field inspection performed and corrective action prescribed)

Figure 2: In-field Quality Assurance Report

	Verification Date
Customer Address	
Customer Phone	Customer Email
Customer Name	Verifier Name

Instructions to the Verifier

Answer the questions below using observation and the information provided by the program administrator. In completing the forms include comments on the quality of the work performed. Feedback helps contractors improve the quality of their work, so be as specific as possible.

Meeting Program Requirements and Technical Standards

- Does the work scope in the Application Form match the work actually done in the home? If no, include explanation.
- Were any BPI standards or installation standards *not* satisfied? If yes, explain.
- Did any of the selected Qualifying Measures not meet the required post-retrofit conditions? If yes, explain.
- Do any of the products installed *not* match the product details on the specification sheets? If yes,

provide details.

- If applicable, do the nameplates in the photos match the nameplates present on the installed equipment? If no, explain.

- Describe any items overlooked or done poorly.

- Describe items done particularly well.

In-Field Inspection Procedures

- Combustion safety test (CST)
  1. Be present when the contractor is performing the CST.
  2. Does CST meet BPI technical standards? **YES** or **NO** or **N/A**
  3. Do CST results show everything passes? **YES** or **NO** or **N/A**

- Blower door test in and test out
  1. Be present when the contractor is performing the blower door test out.
  2. Does blower door test out meet BPI technical standards? **YES** or **NO** or **N/A**
  3. Does the blower door test out results meet program requirements? **YES** or **NO** or **N/A**

- Duct test in and test out
  1. Be present when the contractor is performing the test out.
  2. Does duct test out meet BPI technical standards? **YES** or **NO** or **N/A**
  3. Does the duct test out results meet program requirements? **YES** or **NO** or **N/A**

Post Retrofit QA Verification

Fail – Score 0

Contractor's performance does not meet technical standards, program requirements and/or the home needs immediate corrective action.

- Combustion appliance testing results do not meet BPI Technical Standards or relevant program standards.
- Measures in contracted scope of work not installed.
- Minimum standards for building ventilation are not being met.
- Unsafe conditions resulting from installed work and posing immediate health/safety threat to occupants are found.

Fail – Score 1

Contractor's performance does not meet technical standards or program requirements and the home requires non-immediate corrective action.

- Health and safety issues are present, but do not pose an immediate threat to the occupants. Measures were installed but not correctly to meet program requirements and standards.
- Measures were not installed correctly.

Fail – Score 2

Several technical deficiencies were observed that require corrective action.

- Below standards/incorrect installation of required measures.

Pass – Score 3

Contractor's performance meets all technical standards and program requirements but some areas of technical performance need improvement and may require corrective action.

- Installed measures did not meet all technical installation standards, but no serious deficiencies were found.
- Some incorrect data gathered and provided to customer without any significant impacts on work

completed or effectiveness of job.

Pass – Score 4

Contractor's performance meets all technical standards and program requirements.

- All technical standards of installation have been met (e.g. BPI Technical Standards)
- Work is comprehensive in nature.
- Recommended and installed measures were consistent with Application Form.
- Test-out reporting was accurate.

Overall Inspection Score for this Project _____

Verifier Signature _____ **Date** _____

Attachment D: Draft Walk-through Audit Form

energy upgrade CALIFORNIA IN LOS ANGELES COUNTY

Improve your home. Get rebates. Save money.

FLEX PATH

Walk-Through Whole House Assessment

Account Holder/Property Owner Information					
First Name:					
Last Name:					
Street Address:		City:		Zip Code:	
Full Mailing Address (if different):		City:		Zip Code:	
Email address:					
Phone number:					

Contractor Information					
EUC ID#					
Company:					
Street Address:		City:		Zip Code:	
First Name:					
Last Name:					
Email address:					
Phone number:					

Visual Inspection from the Street	
Type of landscaping (circle one):	DROUGHT-RESISTANT & NATIVE SPECIES / SPRINKLER-DEPENDENT
Moisture damage to side of home (circle)?	YES / NO
Any visible safety hazards? List here:	

Attic Insulation	
R-value:	
Radiant barrier (circle)?	YES / NO

Wall Insulation	
R-value*:	
**If infrared scan is not used, this value will most likely be based on the year the home was buil.*	

Crawlspace Insulation	
R-value:	
Vapor barrier (circle)?	YES / NO
Check here if slab on grade:	

Whole House Fan	
Is one installed in the home (circle)?	

Windows	
Majority are (circle one):	
SINGLE PANE / DOUBLE PANE	

Domestic Hot Water Heater / Plumbing			
Type (circle one):	TANK / TANKLESS		
Model Number:			
Nameplate Efficiency:			
If tank, size (gal):			
If tank, fuel source (circle one):		ELECTRIC / GAS	
Number of Bathroom Faucets:		Pipes wrapped?	YES / NO
Number of Showerheads:			
Number of Kitchen Faucets:			
Any thermostatic shut-off valves installed (circle)?		YES / NO	

Page 1

Lighting	
Number of Incandsecent Bulbs in Home:	
Number of Light Fixtures in Home:	

Cool Roof
Was a cool roof previously installed (circle)?
YES / NO

Heating, Ventilation, and Cooling Equipment			
Does the house have central A/C (circle)?	YES / NO	Number of Ceiling Fans:	
Number of systems:		Number of Electric Heaters:	
System #1			
Does the A/C system function properly (circle)?		NEVER / SOMETIMES / ALWAYS	
Does the furnace function properly (circle)?		NEVER / SOMETIMES / ALWAYS	
Condenser Model Number:			
Coil Model Number:			
SEER Rating:			
EER Rating:			
Furnace Type:			
Furnace Model Number:			
AFUE Rating:			
Type of Ducting:			
R-value of Ducting:			
Condition of Ducting (circle):		POOR / FAIR / GOOD	
System #2			
Does the A/C system function properly (circle)?		NEVER / SOMETIMES / ALWAYS	
Does the furnace function properly (circle)?		NEVER / SOMETIMES / ALWAYS	
Condenser Model Number:			
Coil Model Number:			
SEER Rating:			
EER Rating:			
Furnace Type:			
Furnace Model Number:			
AFUE Rating:			
Type of Ducting:			
R-value of Ducting:			
Condition of Ducting (circle):		POOR / FAIR / GOOD	
Notes on number and location or return/intake registers and homeowner's comfort in the house (Any drafts? Usually cold/hot rooms?):			
Is asbestos present in the house (circle)?	YES / NO		

Attachment A6.1: BayREN EUC Enhanced Basic/Modified Flex Path PIP
(Redline)

~~Application of PACIFIC GAS AND ELECTRIC COMPANY for Approval of 2013-2014 Energy Efficiency Programs and Budget~~

~~Application No. A1207001~~

~~(Filed July 2, 2012; Revised January 14, 2013)~~

~~MOTION FOR CONSIDERATION OF THE SAN FRANCISCO BAY AREA REGIONAL ENERGY NETWORK~~

~~Appendix A~~

San Francisco Bay Area Regional Energy Network (BayREN) Program Implementation Plan

Revised ~~January~~ April 2~~14~~, 2013

This page intentionally left blank.

I. SAN FRANCISCO BAY AREA REGIONAL ENERGY NETWORK (BayREN)

1. Program Description

To meet the aggressive goals set by the California Public Utilities Commission (Commission) as part of the Long Term Energy Efficiency Strategic Plan, the Commission has recognized the need for expanded collaboration with and participation by local governments to achieve market transformation toward energy efficiency. In Decision 12-05-015, the Commission recognized the role of Regional Energy Networks (RENs) in achieving the following goals:

- Provide missing technical resources that will get more projects implemented
- Include more public agencies in project implementation
- Leverage existing local government partnerships to implement these resources
- Provide centralized, regional program management and administration by local governments

Additionally, it is the opinion of the BayREN that local governments can play key roles in the market penetration of energy efficiency programs through the following activities:

- Identifying market barriers that are only evident through local and grassroots program implementation; and mitigation or preemption of those barriers
- Increasing the cost-effectiveness of market transformation programs (such as Energy Upgrade California™) in the long term by identifying and testing pilots that address market barriers
- Integration of energy efficiency goals and outreach in to existing and future local government initiatives for sustainability, adaptation, climate response, resource conservation, and public health (for repetitive, consistent, and continuous messaging, branding and education of the public and government agencies)
- Broader and deeper saturation of energy experience and expertise in energy efficiency program design, implementation and assessment among local governments statewide
- Partnering with IOUs for program implementation, especially on outreach and education activities

The proposed BayREN Subprograms are designed to address key cost, process, workforce, and other market barriers that adversely affected the market penetration of the Energy Upgrade California Programs in 2010–2012.[1] These activities include:

[1] Pursuant to Ordering Paragraph No. 5, BayREN is submitting herewith a revised implementation plan for BayREN01 – Single Family Energy Upgrade California subprogram only. The other subprograms within BayREN are not part of this Advice Letter process and therefore will not be discussed.

- Enhance the Investor Owned Utility (IOU) Energy Upgrade California for single-family (EUC-SF) properties through marketing efforts, incentives, alternative upgrade packages, increased homeowner decision making support, and options for greater saturation across socio-economic consumer bases

- Enhance IOU-offered single-measure rebates programs and Energy Upgrade California for multi-family properties through targeted outreach and technical support to multi-family property owners, offering new incentives to support deeper multi-measure upgrades, and provide technical assistance to address the split-incentive divide that currently exists between property owners and renters

- Leverage local governments' unique position to influence adoption and enforcement of local codes and standards to ensure upgrades comply with existing energy efficiency codes, as well as providing "reach codes" to increase energy savings

- Standardize training and enhance enforcement skills for intra- and inter-government agency personnel

- Provide implementation of statewide and local financing programs to ensure that upgrades are financially accessible to more homeowners. The BayREN Financing Subprogram will not only provide a variety of financing mechanisms but will reach across various consumer bases and allow for inter-option leveraging to promote competitive consumer options.

- Create regionalized energy efficiency programs for ready recognition among the public, consistency of major programs that avoid public and contractor confusion associated with discrete programs from jurisdiction-to-jurisdiction, and uniform access to and responsiveness of EE programs (regional-facing programs, to complement existing Local Government Partnerships that are commonly IOU-facing and designed pursuant to specific and differing community priorities)

- Enhanced implementation of energy efficiency objectives, policies, and programs across all sectors, including neighborhood, commercial, academic, agricultural, municipal and county government agencies,

The members in the BayREN are well positioned to deliver on these subprograms. Through the management of American Recovery and Reinvestment Act (ARRA) programs, including Energy Efficiency Block Grant (EECBG) and State Energy Program (SEP) grants through the California Energy Commission (CEC) and Department of Energy (DOE), the BayREN members have already taken the initial steps to effectively develop and deliver energy efficiency programs to support the Commission's long-term strategic goals through a San Francisco Bay Area REN. These steps include:

- Developed and refined the governance structure to manage a regional energy program

- Gained experience managing a variety of energy efficiency incentive programs and pilots

- Established models for successful programs, including program delivery, participant recruitment, contractor development, training, and mentoring, and customer marketing and leads generation program elements

- Developed robust partnerships with IOUs, state agencies, and key local and regional stakeholders such as workforce and real estate organizations, and lending institutions
- Developed solid relationships with local building professionals and trade associations
- Identified market barriers associated with whole-house energy efficiency upgrades

The BayREN will build upon this initial effort to effectively deliver all subprogram elements in the 2013–2014 period.

2. Total Program Budget: $ 26,567,750

3. Total Program Savings:

BayREN Intro Table 1: Total Projected Program Budget and Savings by Subprogram

Subprogram	Total ($)	Kwh	KW	Therms
Single-Family Energy Upgrade	$9,000,000	2,128,378	3,438	293,803
Multi-Family	$7,293,750	1,365,019	1,111	152,850
Codes and Standards	$3,349,000	7,627,455	953	190,686
Financing[2]	$6,925,000	0	0	0
Total	**$26,567,750**	**11,120,853**	**5,502**	**637,340**

BayREN Intro Table 2: Total Projected Program Savings by IOU

Subprogram	BayREN Kwh	BayREN KW	BayREN Therms
Single-Family Energy Upgrade	2,128,378	3,438	293,803
Multi-Family	1,365,019	1,111	152,850
Codes and Standards	7,627,455	953	190,686
Financing[3]	0	0	0

4. Short description of each subprogram

a) Single-Family Subprogram

The BayREN Single-Family Subprogram consists of two offerings, designed to ~~will~~ increase the number of customers performing both advanced and basic energy efficiency.

[2] The Financing Subprogram ~~I~~includes reserved Single-Family Loan Loss Reserve and Multi-Family Capital Advance Program funding reserved under D. 12-11-015 to the BayREN; but ~~that~~ may not be spent or encumbered until final authorization under the Statewide Energy Efficiency Financing proceeding. ~~without further authorization after the statewide financing consultant proposals are complete and further authorization is granted.~~

[3] Given that the Single Family Loan Loss Reserve and Multifamily Capital Advance Program will be finalized in coordination with the statewide financing consultant, projected savings for the Financing Subprogram are not offered at this time.

It will build upon the successful Advanced Path Program deployed by the BayREN counties during ARRA, and implement a modified Basic Path (referred to herein as Flex Path) program redesigned to meet criteria established by D. 12-11-015, reflect guidance from the Energy Division and a rigorous statewide stakeholder process, and attract the largely-untapped moderate income market. The Flex Path subprogram applies tiered incentives, mandatory Base/Shell Measures, and full component of Flex Measures to ~~upgrades and will attract moderate income customers. The subprogram will~~ boost the number of multi-measure upgrades. ~~b~~By lowering logistical costs and overcoming technological and education barriers for participants, as well as by reducing costs for participating contractors through streamlined program design and implementation, , Flex Path is poised to broaden participation of skilled, specialty contractors and deliver a highly-accessible upgrade product to market. Key Single-Family EUC ~~s~~Subprogram elements include the addition of an alternative and multiple upgrade package incentive, enhanced marketing efforts, development of targeted audit incentives (Advanced Path), streamlined enrollment and reporting systems, integration of improvements related to the water-energy nexus, and the implementation of Home Upgrade Advisors to support homeowners through the Energy Upgrade process.

b) Comprehensive Multi-Family Subprogram

The BayREN Comprehensive Multi-Family Subprogram will conduct targeted outreach to multi-family property owners to promote participation. First, property owners will enroll in a technical assistance program designed to lower barriers to multi-measure upgrades by providing technical and financing assistance. The technical assistance will cover a multiple-benefit approach, including opportunities for water efficiency and indoor air quality improvements during upgrades. Projects with larger scopes of work will be referred to the utility whole-building program rebates. The Bundled Measures Incentive Program will serve as a complement to a whole-building utility rebate program and will reduce cost barriers for multi-family property owners who wish to conduct energy efficiency upgrades. The program will also conduct workforce development for specific multi-family building trades, such as Heating ,Ventilation, and Air Conditioning (HVAC).

c) Codes and Standards Subprogram

The BayREN Codes and Standards Subprogram consists of three components: enforcement of existing codes, training, and sharing best practices for reach codes. The enforcement effort will focus on establishing a baseline for current code compliance within each county in the Bay Area, creating metrics for ongoing measurement and identifying mechanisms for improving the current levels of compliance. Simultaneously, the program will enhance the enforcement of existing codes through training for local government personnel and building professionals. The menu of training opportunities will be targeted to specific functional areas and will be made more accessible to building departments than prior utility offerings. BayREN intends to work closely with key industry associations, such as the California Building Officials (CalBO), in delivering these trainings and creating forums for local government staff to share and align their enforcement activities. BayREN will also establish a regional forum for leveraging and disseminating the work of leading Bay Area

jurisdictions in adopting innovative new policies, such as energy labeling and disclosure and other reach codes.

d) Financing Subprogram

The BayREN Energy Efficiency Financing Portfolio (the Financing Portfolio) will be implemented in coordination with programs proposed by the single-family statewide financing consultant and the multi-family statewide pilot to provide a variety of financing options to diverse consumers (residential and non-residential) across the 9-County BayREN region (see detail below). In addition, the Financing Portfolio has been structured to facilitate leveraging of financing options, which will increase competitiveness in the lending market and extend more compelling finance mechanisms to consumers. Further, the Financing Portfolio will streamline loan application and enrollment processes, offers customers and contractors continuity, consistency, and support to a wider, deeper reach for energy efficiency upgrades, and will itself be leveraged with other BayREN subprograms and subprogram elements (such as Workforce Education and Training, deployment of Home Upgrade Advisors, and other customer incentives). Another fundamental objective governing the development of the Financing Portfolio is utilizing and leveraging these mechanisms as financing options for underserved communities and attaining greater socio-economic equity in the implementation of energy efficiency programs.

II. SUBPROGRAM BAYRENO1

1. Subprogram Name: BayREN Single-Family Energy Upgrade Subprogram

2. Subprogram ID number: BayREN01

3. Type of Subprogram: Regional Energy Network

4. Market sector or segment that this subprogram is designed to serve:

a) _X_Residential

Including low-income? __ Yes _X_ No

Including moderate-income? _X_ Yes __ No

Including or specifically multi-family buildings? __ Yes _X_ No

Including or specifically rental units? _X_ Yes __ No

b) __ Commercial (List applicable NAIC codes: _____)

c) __ Industrial (List applicable NAIC codes: _____)

d) __ Agricultural (List applicable NAIC codes: _____)

5. Is this subprogram primarily a:

a) Non-resource program ___Yes _X_ No

b) Resource acquisition program _X_ Yes ___ No

c) Market transformation program _X_ Yes __ No

6. Indicate the primary intervention strategies:

a) Upstream ___ Yes _X_ No

b) Midstream ___ Yes _X_ No

c) Downstream _X_ Yes ___ No

d) Direct Install _X_ Yes __ No

e) Non Resource__ Yes _X_ No.

7. Projected Subprogram Total Resource Cost (TRC) and Program Administrator Cost (PAC)

TRC 0.56 PAC 1.29

8. Projected Subprogram Budget

BayREN01 Table 1: Projected Subprogram Budget, by Calendar Year

	Program Year		
BayREN 01 Single-Family	**2013**	**2014**	**Total**
Admin ($)[4]	$194,052	$291,078	$485,130
General Overhead ($)	$0	$0	$0
Incentives ($)[5]	$712,950	$3,435,750	$4,148,700
Direct Install Non-Incentives ($)[6]	$638,025	$1,270,165	$1,908,190
Marketing & Outreach ($)[7]	$1,103,990	$1,103,990	$2,207,980
Education & Training[8]	$125,000	$125,000	$250,000
Total Budget	$2,774,017	$6,225,983	$9,000,000

9. Subprogram Description, Objectives, and Theory

a) Subprogram Description and Theory

The goal of this subprogram is to address key market barriers and increase the number of Advanced and Flex Path customers who undertake multi-measure energy upgrades in the Bay Area. The subprogram addresses the following market barriers:

- Narrow Scope of Consumer Awareness

The BayREN government members launched an ambitious marketing and outreach campaign under SEP, which successfully plumbed early adopters and penetrated the retrofit-ready market. This process confirmed minimal public awareness of energy efficiency benefits, and the prevalence of false expectations about the cost and process of a whole house energy upgrade. The combination of these handicaps~~deficits~~ generated a confused market, one that was frustrating to contractors and consumers alike.

The key objectives of the BayREN marketing and outreach program are to expand awareness, support contractors, and to communicate the full suite of energy efficiency direct and co-benefits in a manner that dynamically

[4] Admin is defined as contract development, internal partner coordination, administration, reporting, and other non-program activities.
[5] Includes direct incentives only. Incentive program administration activities included in "Direct Install Non-Incentives."
[6] Defined as all incentive processing, program design, set up, and evaluation activities not included directly under "Marketing and Outreach" or "Education and Training."
[7] Includes all expenses and program labor associated with marketing and outreach activities.
[8] Includes all expenses and program labor associated with education and training activities.

translates energy efficiency as a physical, economic, public health, and environmental value proposition for consumers. The ability to penetrate further into the retrofit-ready consumer sector and engage the retrofit-persuadable markets is dependent upon consumer-sensitive program design, and a marketing campaign that responsibly connects consumers to the diverse, tangible and substantive personal gains possible through home energy improvements.

This subprogram will provide a regional awareness campaign, outreach to industry stakeholders, and local marketing and outreach efforts to reinforce the Energy Upgrade California brand and increase customer participation.

In addition, the alternative Flex Package upgrade approach ~~(called "Flex Package" in these proceedings[9])~~ addresses customer confusion by providing a much simpler program design that meets homeowner expectations and is easier for contractors to explain. This dramatically reduces lead qualification times. Because Flex Package offers a very clear choice to homeowners, they can see how any particular measure will affect their incentive and energy savings.

- High Up-Front Costs

The high cost of the initial comprehensive audit can put off potential consumers from a whole-house upgrade before they have a chance to assess the total cost and benefits of energy efficiency improvements. The audit approach is inconsistent with standard customer decision making processes, and may have a chilling effect on the market.

This subprogram will address this barrier by providing a number of audit incentives that will reduce audit costs for projects that completed a PG&E EUC-SF Advanced Upgrade. During the ARRA SEP period, local governments tested a variety of audit incentive programs and were able to dramatically increase the number of audits and conversion rates on upgrades undertaken.[10]

In addition, Flex Package will provide an alternative upgrade package with predetermined and pre-engineered savings for each measure, removing the need for a pre-audit in most cases. This will enable customers to

[9] ~~BayREN understands that the Commission is concerned that the "Flex Package" name may cause market confusion as related to "Flex Alerts". While BayREN is maintaining reference to "Flex Package" in current CPUC proceedings, the final program name will be determined by the BayREN marketing team and/or in conjunction with the statewide marketing consultant~~

[10] Santa Clara County's ARRA-funded EUC Program featured no other incentive (other than PG&E installation incentives) outside a whole-home audit rebate. That design, combined with a dynamic marketing campaign, attained a 43% conversion rate, which increased to 49% under additional funding awarded by the California Center for Sustainable Energy in October 2012 for Most Innovative Program Practice in Northern California.

immediately discuss work options and bids with contractors, and even to switch contractors with no cost repercussions.

- Customer Mistrust of Contractors

  A limiting factor to the success of Energy Upgrade California in 2011–2012 was the lack of a trusted third party to educate consumers about energy efficiency options, help them choose an appropriate contractor, and provide conflict mediation and resolution should the need arise. In addition, contractors displayed varying levels of ability to support customers during the decision making process, which often resulted in long lead qualification times and lost leads. Under SEP, Bay Area local governments effectively served as a trusted advisor and motivated enhanced uptake of the Energy Upgrade California program.

  Based on that experience, this subprogram will provide a "Home Upgrade Advisor" to act on the homeowner's behalf. The Home Upgrade Advisor service will feature a dedicated advisor for individuals, contractor representation and mediation, and other support as necessary to help homeowners feel supported during the upgrade process. This approach has been demonstrated to increase participation in energy efficiency upgrade programs to 50% of all leads.

- Contractor Participation

  The design of the Advanced Package offered through the PG&E EUC-SF has required most Participating Contractors to fundamentally alter their business models to qualify for the utility program, which has had the effect of limiting the number of Participating Contractors, increasing costs of projects, and creating technical and customer service challenges with project delivery.

  Flex Package is designed to be easily incorporated into existing contractor business models, while encouraging contractors to pursue additional energy efficiency measures. For example, Flex Package can be easily incorporated into HVAC upgrades or window replacement projects. Administrative requirements are designed to fit into the contractor standard process, and contractor qualifications for the program mean that contractors are not preemptively burdened with mandatory investments in equipment and additional certification but still meet the level of professional licensure and expertise necessary to ensure first-class retrofits and consumer protections. In addition, Flex Path is structured to enroll and engage whole-home as well as specialty contractors, increasing the pool of direct marketing contacts with the public.

- Low Conversion Rates

The design of the PG&E EUC-SF program favors large-scale contractors who have strong customer sales skills and business practices to attract and convert leads, and help homeowners navigate the energy upgrade process. Many contractors, however, focus on the technical delivery of projects, which the BayREN local governments identified as a market-response model and not the market-driver model needed to create an energy efficiency economy in California. Thus, during ARRA and continuing into the 2013-2014 Energy Efficiency Transition Period, the BayREN governments have developed a convenient and effective resource for training that would enhance contractor marketability, and support business model changes that allow specialty and medium/small contractors to compete and produce in the whole-house upgrade market.

This subprogram will address this barrier by providing the Home Upgrade Advisor services (described above), which will allow contractors to focus more on delivering projects and less on qualifying leads.

Responding to Commission direction, BayREN will also provide training and mentoring opportunities to Participating Contractors to address key skills gaps, including sales, customer relations, messaging, financing options, energy efficiency benefits and co-benefits, business practices, and job sequencing.

- High Cost of Energy Upgrades

  In the period of 6/2011–6/2012, the average out of pocket cost of a whole-house upgrade in the Bay Area was approximately $10,000, and one third of all upgrades were priced above $15,000. With this large initial investment and few long-term financing products available, whole-house upgrades are out of reach for many customers.

  In D 12-05-015, the Commission determined that a key role for local governments was to "address hard-to-reach customer segments such as low- to moderate-income residential households and small- to medium-sized businesses." With a lower cost investment, the Flex Package program encourages moderate-income homeowners to undertake energy upgrades. As demonstrated in the Los Angeles County Flex Path pilot, the average out of pocket cost was approximately $3,000, a third of the cost of an Advanced Upgrade. Market research conducted during the SEP period identified $3,000 as the highest out-of-pocket costs that would be amenable to a majority of Bay Area homeowners.[11]

- No Alternative to Advanced Path Upgrades

[11] In the Bay Area, 50% of homeowners were willing to spend $3,000, 29% would spend $5,000, and the percentage drops off to just 17% willing to spend $7,000. From *Energy Upgrade California Market Research Report*, 2011. Association of Bay Area Governments.

The Basic Package offered through the PG&E EUC-SF was originally intended to be a low-cost, accessible, and simple on-ramp to performing residential upgrades. Initial estimates were that Basic Package jobs would compose more than half of all upgrades. However, the inflexibility and limited measures menu of the final Basic Package design resulted in an indifferent public response, an unprofitable model for contractors, and negligible uptake. This can be demonstrated through the PG&E 2013–2014 initial EUC-SF Program Implementation Plan, which set a Program Performance Metric (PPM) of 220 Basic Package jobs territory-wide, versus 6,700 Advanced Package jobs.

The BayREN Flex Package program offers the viable alternative to the Advanced Package that the Basic Package was meant to fulfill. The successful pilot in LA County received 1650 applications in just ten months, with essentially no homeowner outreach. Additionally, the Flex Package design is currently being piloted in the Bay Area by Alameda and Sonoma counties. The Flex Package therefore stands as a successful model ready to be expanded and take the place of the Basic Package for at least 2013–2014, driving energy savings in a program that is simple for both homeowners and contractors.

Under the SEP Program, BayREN members worked closely with the IOUs and the CEC to implement the local government Energy Upgrade California programs. Under the BayREN, these same members see opportunity for even closer coordination with the IOUs directly under the CPUC to allow for a more common "Market Transformation" Vision to be established amongst all parties. BayREN believes the CPUC directives in Decision D.12-11-015 to establish an Energy Upgrade IOU/non-IOU working group and to hire a market transformation consultant will support this work.

For the IOU/non-IOU working group, the RENs request at least SoCalREN and BayREN representation in the group. The group would serve as an advisor and a coordinator of activity. However, BayREN believes that only the RENs in conjunction with the CPUC should have ultimate authority to determine REN program offerings.

For the hiring of the market transformation consultant, the RENs should be represented as an equal partner in the hiring process. The RENs should also continue as an equal advisor throughout a deliberative, creative and results-oriented development of a market transformation strategic plan. The RENs appreciate and value the role and perspective of the utilities in this process; they bring a corporate culture and approach to the process that is meaningful. At the same time, RENs are composed of local governments, entities that by their nature communicate, educate, and advocate with the public (defined to include constituents as well as commercial, civic, foundational, workforce, academic, and special interest citizenry) on a daily, direct basis. While the relationship between consumers and utilities is created by reason of a quasi-monopoly, local governments succeed through responsiveness, communication, and service to the public.

Also, during the ARRA-funded cycle of Energy Upgrade California, member governments of the RENs (both BayREN and SoCalREN) produced marketing, outreach and education campaigns that garnered state recognition and awards, and attained national distinction in communications for energy campaigns.

The RENs are confident that an equal and dynamic partnership of the utilities and the RENs has the potential to exceed their individual efforts in the area of market transformation.

For both the working group and the market transformation consultant process, the REN presence has promise, combined with the corporate perspective of the IOUs, to engage a more meaningful process with a diverse and more-encompassing perspective. Given that the 2013-2014 Energy Efficiency Transition Period will commence well before the market transformation specialist and advisory group are deployed, their relevance to and influence on the modified Basic Path – as well as all other EE programs – will occur in the 2nd year of the Transition Period. This is not ideal timing for the entirety of the Transition Period, but is well-timed for a mid-cycle program assessment, evaluation and adjustment, if necessary. This timing also allows for the Market Transformation Specialist to incorporate actual program and market performance into its deliberations and activities. Specifically, the RENs would like the working group to develop strategies and approaches for all market sectors, not only gateway consumers sought to be engaged through a more affordable and accessible, "modified basic path" program; and, also, to identify any additional co-benefits, trigger events, partnerships, and messaging that could drive more robust public interest in energy efficiency and greater value(s) the public consciousness may attribute to energy efficiency. The RENs believe that socio-economic and other obstacles to market expansion are surmountable if the public is assured and becomes savvy of multiple values and benefits to energy efficiency. Layers of benefits and value allow the public to construct its own business case for prioritizing energy efficiency.

BayREN also looks to work with current Energy Upgrade Contractors like SolarCity, specialty and trades contractors currently not participating in Energy Upgrade, and industry stakeholder groups (e.g. CBPCA and BPI) to streamline program design and specifically address HVAC emergency replacements and high performing contractor criteria. Once the initial program design stakeholder process has been concluded, BayREN would propose engaging the stakeholders on a regular basis (quarterly or as otherwise determined by the stakeholders) to evaluate progress through the course of the 2013-14 cycle. BayREN proposes that these stakeholder groups include specialty and trade contractor groups (e.g. IHACI and NARI) which are meant to be the target contractor audience for the Flex program and are not represented by BPI or CBPCA. Prior stakeholder outreach in this area has not been inclusive of special and trade contractors, and the RENs seek parity and comprehensiveness in future stakeholder processes.

b) Subprogram Energy and Demand Objectives

BayREN01 Table 2: Projected Subprogram Net Energy and Demand Impacts, by Calendar Year[12]

	Program Years		
	2013	**2014**	**Total**
Single-Family Advanced Support			
GWh	0.48	1.65	2.13
Peak MW	0.71	2.73	3.44
Therms (millions)	0.06	0.23	0.29

c) Program Non-Energy Objectives

i. SMART non-energy objectives of the subprogram

- During the period 2013–2014, the number of contractors registered as Energy Upgrade Participating Contractors participating in the 9-County Bay Area will increase by 10%. Metric type 2b.
- During the period 2013–2014, the Home Upgrade Advisor will consult with 1,500 customers and have a lead conversion rate of 35%into PG&E EUC-SF and Flex Package projects. Metric type 2b.
- During the period 2013–2014, 250 individuals will be trained in one of the following: sales and customer relations, small business best practices, marketing and messaging, job sequencing, and green real estate certifications. Metric type 2b.
- Establish 10% brand awareness for green labeling (i.e., GreenPoint Rated, HERS, Energy Star, LEED) among recent home buyers and/or real estate professionals. Metric type 2b.

ii. See above.

iii. Relevant baseline data

Average project costs and rebates for PG&E EUC-SF jobs have been provided by PG&E to ABAG, based upon completed PG&E EUC-SF jobs to date.

Statistics on Energy Upgrade Participating Contractors are provided by PG&E and the California Energy Commission, and the total number of Participating Contractors in a county is available at www.energyupgradeca.org.

d) Quantitative Subprogram targets (PPMs)

BayREN01 Table 3: Quantitative Subprogram Targets (PPMs)

Target	**2013**	**2014**

[12] Net energy savings calculations were based upon the weighted to date energy savings generated through the BayREN Single-Family E-3 calculator.

Target	2013	2014
Number of PG&E EUC-SF Advanced Package projects incented in the Bay Area	1,320	1,380
Number of audit incentives funded through BayREN	586	743
Number of participants in Home Upgrade Advisor Program	500	1,000
Number of trained Contractors and Real Estate Professional	125	125
Number of units incented through Flex Package	360	2142
Percentage of Home Upgrade Advisor participants that complete a Flex Package project	15	25
Number of Participating Contractors who have completed one or more Flex Package projects[13]	30	70

e) Cost-Effectiveness/Market Need

Cost-effectiveness was established using the E-3 Calculator. To generate savings estimates per project per climate zone, the methods described below under "Measures Savings/Work Papers" was used.

For Flex Package savings, average project savings per climate zone were generated for two house vintages.

As this is identified as both a resource and market transformation program, TRC was expected to be lower than 1.0.

f) Measure Savings/ Work Papers

i. Indicate data source for savings estimates for subprogram measures (DEER, custom measures, etc.).

Single-Family Flex Package: To determine the expected energy savings for a typical package with the Flex Package program, we adapted the calculation methodology recommended by the Commission reviewer during workpaper development for the 2010–2012 Whole House Retrofit Program (now the EUC-SFEUC-SF). For energy savings estimation purposes, the Whole House Retrofit Program is similar to Flex Package in that multiple measures are to be completed under each project, and thus, the interactive effects of the measures need to be taken into account. During that 2010–2012 workpaper/methodology review, the Commission reviewer, Marlin Addison, allowed the use of EnergyPro to determine the modeled energy savings, provided that the simulation model of a pre-retrofit house could be shown to generate energy usage

[13] Calculation-Assume 20% of contractor complete 80% of jobs. 80% * 715 estimated completed applications=570 jobs in first year done by 20% of contractors. Assume 10 jobs max per month per contractor means that 6 contractors are the 20% of total contractors. 6/.2=30 contractors in 2013. Assume 10 months of program operation for 2013 due to program ramp up and 10 months of program operation in 2014 due to program wrap up.

similar to that of a corresponding home in the DEER database defaults. Once such a model was created for a given vintage and climate zone, we could apply values from the statewide Residential Appliance Saturation Survey (RASS) database for the target population in each climate zone and vintage expected to participate.

To determine the average Flex Package project energy savings, we used the distribution of packages from the current Flex Path program running in Los Angeles County. That program has over 1650 packages within the past year, and it was assumed that a Flex Package program in the BayREN program would encounter a similar distribution of projects. An EnergyPro model was created for each climate zone and vintage range (pre-1978 and 1978–1992), and calibrated against the DEER database specifications for such single family homes. We then used the RASS database to determine the average square footage and insulation levels for these homes based on the characteristics of participants in the program. Then, each of the possible Flex Package upgrade measures was calculated independently in EnergyPro.

The kWh, therms, kW, and overall BTU percent savings were determined for each upgrade measure. To determine the effect of a combination of measures, the second measure would apply its percent savings to the expected remaining household annual kWh, annual therms, or average avoided kW from the first measure. If there are additional measures, each measure's savings is applied to the expected remaining savings after the previous measure's savings had been applied.

To determine the average energy savings for the program from a given climate zone and vintage combination, the average total package savings was weighted by how common the package was in the Los Angeles County Flex Path program. A weighted average was calculated for the four Bay Area climate zones, using the number of detached single-family units per climate zone to weight the savings for each zone (as provided by the 2010 U.S. Census).

Single-Family Advanced Energy Upgrades: Savings estimates for projects pursuing the PG&E EUC-SF Advanced Package are based upon PG&E EUC-SF savings from the "PG&E subprogram E3 Calculator Without Spill Over for the 01_Statewide Residential Program,". BayREN has based these savings on an additional 475 Advanced Package upgrades that BayREN activities will drive within the PG&E EUC-SF in 2013-2014. This increased market penetration is based upon:

Reported monthly average of PG&E Advanced Projects in ABAG Territory:

PG&E has reported an average of less than 100 completed Advanced Package upgrades per month since local government activities funded through the CEC Retrofit Bay Area program ceased in March, 2012; total completed jobs as of March, 2012: 1029; total completed jobs as of July, 2012: 1378.

This yielded a projected baseline for the PG&E Advanced Package of 1125 upgrades in 2013 and 1100 upgrades in 2014 at existing levels of uptake for the PG&E Whole House Program.

BayREN program components not currently a part of the PG&E Whole House Program that will drive increased participation, include:

BayREN Single Family subprogram marketing activities proven to be effective during the CEC Retrofit Bay Area State Energy Program that will support the PG&E Advanced Package

BayREN Home Upgrade Advisor activities that will directly facilitate increased customer participation in the PG&E Advanced Package; PG&E's current Whole House Program does not offer this direct one-on-one customer interaction

BayREN Financing subprogram initiatives being available in 2013 Q3; PG&E's current Whole House Program does not provide accessible financing options

Audit incentives for eligible PG&E Advanced Package upgrades proven to effectively drive increase upgrade participation through the CEC Retrofit Bay Area State Energy Program.EUC-SF

ii. Indicate work paper status for subprogram measures

BayREN01 Table 4: Work Paper Status

#	Work Paper Number/Measure Name	Approved	Pending Approval	Submitted but Awaiting Review	Not Yet Submitted
1	Flex Package Energy Savings		X		

10. Program Implementation Details

a) Timelines[14]

BayREN offers the timeline found in Table 5 for the Single Family Subprogram.

[14] The timeline may vary based on the approval date of the Advice Letter.

BayREN01 Table 5: Subprogram Milestones and Timeline

Milestone	Date
Project Initiation Meeting	Dec. 2012
RFP Issued for Home Upgrade Advisor, Audit Incentive, Flex Package, and Marketing Consultant, Training Organizations	1/~~31~~28/2013
All Subcontractors Selected	~~24~~/~~27~~1/2013
Regional Marketing Strategy Developed	~~35~~/~~3~~1/2013
Flex Package Program Design Created	~~35~~/~~3~~1/2013
Home Upgrade Advisor Program Design Created	~~35~~/~~3~~1/2013
Audit Incentive Setup and Launch	~~4~~5/1/2013
Local, Regional Marketing Launch	~~4~~5/1/2013
Flex Package Program Systems Setup and Launch	~~4~~5/1/2013
Home Upgrade Advisor Program Launched	~~4~~5/1/2013
Contractor Trainings Initiated	5/1/2013
Final Home Upgrade Advisor New Participants	9/30/2014
All Incentives Closed to New Applications	10/31/2014
Final Training	11/15/2014
Final Projects Completed	11/30/2014
Final Incentives Issued	12/8/2014
Quarterly Progress Reports	3/31/2013 – 12/8/2014

In addition, BayREN offers the following implementation details for the components of the Single Family Subprogram.

BayREN01 Figure 1: BayREN Incentive and Direct Install Allocations

Incentive Component	Location in PIP Budget	Amount		
		2013	2014	Total
Flex Incentives	Incentive Category	$537,000	$3,213,000	$3,750,000
Flex Implementation	Direct Install Category	$232,400	$642,540	$874,940
Audit Incentives	Incentive Category	$175,950	$222,750	$398,700
Audit Incentive Implementation	Direct Install Category	$184,125	$185,625	$369,750

BayREN01 Figure 2: BayREN Single Family Incentive Milestones and Timeline

Milestone	Date
RFP Issued for Home Upgrade Advisor, Audit Incentive, Flex Package, and Marketing Consultant, Training Organizations	1/~~31~~28/2013
All Subcontractors Selected	~~2~~4/~~2~~71/2013
Flex Package Program Design Created	~~3~~5/~~3~~1/2013
Audit Incentive Setup and Launch	~~4~~5/1/2013
Flex Package Program Systems Setup and Launch	~~4~~5/1/2013
All Incentives Closed to New Applications	10/31/2014
Final Projects Completed	11/30/2014
Final Incentives Issued	12/8/2014

BayREN01 Figure 3: BayREN Home Upgrade Advisor Direct Install Allocations

Program Component	Location in PIP Budget	Amount		
		2013	2014	Total
Home Upgrade Advisor	Direct Install Category	$232,400	$642,540	$874,940

BayREN01 Figure 4: BayREN Home Upgrade Advisor Milestones and Timeline

Milestone	Date
RFP Issued for Home Upgrade Advisor, Audit Incentive, Flex Package, and Marketing Consultant, Training Organizations	1/~~31~~28/2013
All Subcontractors Selected	~~2~~4/~~2~~71/2013
Home Upgrade Advisor Program Design Created	~~3~~5/31/2013
Home Upgrade Advisor Program Launched	~~4~~5/1/2013
Final Home Upgrade Advisor New Participants	9/30/2014

BayREN01 Figure 5: BayREN Program Participation Scenarios*

Below are BayREN's low, medium and high scenarios for Single Family Program customer participation and budgets, based on the assumptions shown.

BayREN										
Scenarios	Single Family Flex Package			Single Family Audit Incentives			Budget			Assumptions
	2013	2014	Total	2013	2014	Total	2013	2014	Total	
Low	192	798	990	307	391	698	$ 2,321,492	$ 3,613,488	$ 5,934,980	* Final Flex Package program design requires 2 of 3 base measures (decrease) * Program launch delayed due to IOU/REN program design coordination (decrease) * Divergent contractor requirements between PG&E WHUP and BayREN slows contractor enrollment (decrease) * Impact of potential economic up/downturn (decrease)
Medium	358	2,142	2,500	586	743	1,329	$ 2,773,742	$ 6,226,258	$ 9,000,000	* Final Flex Package program design requires 1 of 3 base measures * Single contractor enrollment process between BayREN and PG&E WHUP (increase) * Net impact of financing product offerings (i.e. MIST, CAEATFA) (increase) * Net impact from BayREN Home Upgrade Advisory and marketing activities (increase)
High*	404	3,276	3,680	862	1,084	1,946	$ 3,008,178	$ 8,455,068	$11,463,246	* Net impact of financing product offerings (i.e. MIST, CAEATFA) (increase) * Net impact from BayREN Home Upgrade Advisory and marketing activities (increase) * Impact from real estate industry engagement (increase) * Impact of potential economic up/downturn (increase)

* The High Scenario would require additional funding above the already allocated $9,000,000 BayREN Single Family budget.

*To the extent that a number of critical responses and decisions on the April 1, 2013 Advice Letter filing are pending, the BayREN notes that it is prepared to work diligently with the Energy Division and the Commission to adjust High-Medium-Low EUC Participation Scenarios, where necessary upon resolution of open issues that are or have the potential to affect these forecasts.

b) Geographic Scope

BayREN01 Table 6: Geographic Regions Where the Subprogram Will Operate

Geographic Region	Single-Family Subprogram	Geographic Region	Single-Family Subprogram
CEC Climate Zone 1		CEC Climate Zone 9	
CEC Climate Zone 2	X	CEC Climate Zone 10	
CEC Climate Zone 3	X	CEC Climate Zone 11	
CEC Climate Zone 4	X	CEC Climate Zone 12	X
CEC Climate Zone 5		CEC Climate Zone 13	
CEC Climate Zone 6		CEC Climate Zone 14	
CEC Climate Zone 7		CEC Climate Zone 15	
CEC Climate Zone 8		CEC Climate Zone 16	

c) Program Administration

BayREN01 Table 7: Program Administration of Subprogram Components

Program Name	Subprogram Component	Implemented by BayREN staff	Implemented by contractors to be selected by competitive bid process	Implemented by contractors NOT selected by competitive bid process	Implemented by local government or other entity (X = Yes)
Flex Package Incentive Program	Program Administration	X			
	Contractor Recruitment and Engagement		X		X
	Program Design and Setup		X		
	Marketing/Outreach/ Professional Engagement		X		X
	Program Implementation: Desktop and Quality Assurance		X		
	Program Reporting	X	X		
PG&E EUC-SF Support Program	Program Administration	X	X		
	Home Upgrade Advisor		X		
	Marketing/Outreach/ Professional Engagement		X		X
	Audit Incentive Program Implementation		X		
	Contractor Training Management		X		
	Contractor Training: Implementation		X	X	
	Program Reporting	X	X		

d) Program Eligibility Requirements

i. Customers

BayREN01 Table 8: Customer Eligibility Requirements

Customer Eligibility Requirement
Single-Family Detached Housing
Property located in the 9-County Bay Area
Homes must meet pre-upgrade standards, which vary by measure (e.g., to qualify for points for the attic insulation measure, a home must have less than R-11 prior to installation)

ii. Contractors/Participants

Contractors seeking to participate in the BayREN Single Family subprogram offerings will need to be either a PG&E Energy Upgrade California Single Family participating contractor or will need to become a BayREN participating contractor. Contractors must meet the eligibility requirements listed in Table 9 below.

To specifically participate in the BayREN Flex Package, contractors must complete the following enrollment process:

Contractors participating in the PG&E Energy Upgrade California Single Family Program that attend a BayREN Participation Workshop and sign the BayREN Contractor Participation Agreement will automatically be eligible for BayREN Flex Package. PG&E Energy Upgrade California Single Family Program contractors will be recruited to attend the Participation Workshops through email and phone follow up as conducted by BayREN program administrators. These contractors will submit required documentation (including Contractors License and Insurance) to be reviewed and verified by BayREN staff.

~~In negotiations with PG&E since the release of the CPUC Decision D.12-11-015 on November 15, 2012, PG&E has communicated to BayREN that it may make Energy Upgrade California Single Family Program Contractor Requirements more stringent than under the 2010-2012 program, including requiring a BPI-BA on staff. If PG&E's final 2013-14 Energy Upgrade California Single Family Program Contractor Requirements exceed BayREN proposed requirements, BayREN will offer an alternative enrollment process for contractors that are not participating in the PG&E Energy Upgrade California Single Family Program. These non-Energy Upgrade California Single Family Program contractors will be recruited through BayREN outreach to specialty and trade contractor groups (e.g. IHACI and NARI). These contractors must meet the below requirements in order to participate in the BayREN Flex Package program. Multiple BayREN Participation Workshops will be offered to allow these contractors opportunities to participate in Flex Package. These non-Energy Upgrade California Single Family Program contractors will be provided enrollment forms at the Participation Workshop and on-line. These contractors will submit~~

~~required documentation (including Contractors License and Insurance) to be reviewed and verified by BayREN staff.~~

All BayREN enrolled contractors will be tracked , and Quality Assurance processes consistent with Energy Star protocols shall be applied. . Energy Upgrade California Single Family Program participation and all other required documents will be reviewed regularly for needed renewals. Contractors failing the Quality Assurance program will be un-enrolled from the program and barred from future enrollment.

BayREN01 Table 9: Contractor/Participant Eligibility Requirements

Contractor Requirements	Eligibility Question	BayREN Response
Licensing EUC-SF	What CSLB licenses are required to do the work?	License according to local code and installed scope of work, and at a minimum either a B, C-2, or C-20
Training	What training is required to perform work? Who must attend (company leadership, crew leads, crew, etc)	Flex Package Technical Training included within Participation Workshop. Crew Leads required.
Participation Workshop	Is a participation workshop required? Who must attend (company leadership, crew leads, crew, etc)	Participation Workshop will have two components: 1) Flex Program Overview, including key program documentation, processes and protocols, messaging, and support. Company Leadership required. Crew Leads recommended. 2) Technical Training. Crew Leads required. Crew recommended.
Contractor Participation Agreement	Does the contractor need to sign a participation agreement?	Yes
Test in / Test Out Diagnostics	Are these required? If so, who does the diagnostic tests? What qualifications does the person need to possess in order to conduct the test?	Test In/Test Out as appropriate for installed scope of work. Test In can be conducted on the 1st day of work. Test In/Test Out must be performed by BPI-BA, on staff or subcontracted. BayREN will study the impact of this on job penetration and would request that this could be amended pending job uptake.
Combustion Appliance Safety Tests	Who does the CAS testing?	Test In[15] and Test Out ~~only~~ by BPI-BA, on staff or sub contracted; stakeholder process underway to open the market to additional qualified providers.

As directed by the March 18, 2013 Guidance Letter, both CAS test-in and test-out are new requirements to the Flex Path program. While the BayREN appreciates the thoughtfulness in this decision process and will comply as directed, we believe that the test-in requirement is not necessary to address the collective safety concerns of the CPUC, the RENs and other stakeholders. BayREN is committed to limiting market barriers to program participation by non-BPI certified contractors or homeowners, while at the same time ensuring the utmost safety to property owners, their neighbors and the contractors.

[15] The March 18, 2013 Guidance Letter, directed that CAS test-in be a required program element. BayREN 's objections to this requirement are discussed below.

The following problems and mitigation are identified:

1. A surprising number of homes have pre-existing, behind-the-meter, undetected natural gas leaks at appliances or joints in the gas line. A concern that has been expressed is that shell measures will reduce air exchange in the home such that a pre-existing undetected leak will no longer be sufficiently diffused by air exchange, gas will build up in the home before the test-out (one to ten days after end of construction) thereby creating a fire hazard. BayREN supports requiring leak detection prior to construction, utilizing one of these options:

   i. PG&E's existing free leak detection service. Currently, PG&E immediately responds to any call about a possible gas leak. BayREN can require participating contractors to call PG&E and ask that they come to the property before any construction begins, and provide the leak detection service, regardless of the selected shell measure. This would have many benefits, including improving overall safety and helping to reduce fugitive natural gas emissions, a very potent greenhouse gas, and further contributing to the CPUC's goals for GHG reductions. The customer would benefit as no additional costs would be imposed, and the contractor will avoid having to bring in a potential competitor or someone who may have a different opinion on what should be addressed in the home causing customer confusion.
   ii. Each contractor can be required to perform a leak detection test. The detector costs approximately $300 and will pay for itself in the resultant leak repair work. Any leak found at Test-Out will be repaired by the contractor at no charge to the customer. Contractors will need training but this could be included in the program intake training BayREN is already scheduled to provide. BayREN can bulk purchase a quantity of detectors and offer them to contractors on a monthly repayment plan at little net cost to the budget. This solution avoids the complication of bringing in a second contractor before the lead contractor can start work. It also avoids the cost in both the time to schedule and the money out of the homeowner's pocket to pay for the second contractor. This eliminates the danger while avoiding the market barrier.

2. A significant number of homes have carbon monoxide (CO) problems. The concern is that shell measures will reduce air exchange in the home such that a pre-existing undetected CO problem will no longer be managed by natural air leakage in the home, CO will build up and someone may become seriously ill or worse, die. Fortunately, California recognizes this danger and now requires all homes to have a working CO sensor set to detect a level that might create either death or serious illness. The NEMA definition of the alarm standard is "CO devices must sound alarm signal before most people experience adverse effects but not at long-term, low-level or short-term CO exposures that are not a health threat". NEMA further recommends ANSI/UL 2034 or ANSI/UL 2075, the same standard adopted by California in the Carbon Monoxide Poisoning Prevention Act of 2010. To address this issue, BayREN will require all participating contractors, before any construction begins, to properly install new CO alarms or install new batteries in existing properly installed CO alarms, and provide an affidavit to BayREN signed by the contractor and the homeowner and filed with the rebate reservation application. This will address any serious health hazard for the brief time between construction and Test-Out when more subtle problems may be discovered. This also addresses the serious health risk and avoids the cost in both contractor's time to schedule and the money out of the homeowners pocket to pay for the second contractor's scheduling and travel time.
3. Customers can be surprised by added costs discovered at Test-Out. It is particularly difficult for moderate-income participants (that this program is likely to attract) to suddenly have to find hundreds and maybe thousands of dollars to address a problem that would have been discovered at Test-In. BayREN agrees that a customer should not be unduly surprised. However, the EUC program already experiences over 20% of cases where the Test-Out fails and mitigation costs are incurred. This proves that Test-In is not a real solution to the surprise problem. It is a problem already recognized by experienced contractors and the potential is usually brought to the homeowner's attention before a contract is signed. BayREN proposes to enforce that as a best

practice and require contractors to provide a BayREN authored notice that includes program statistics on Test-Out failures, cost ranges, and a clear statement that any CO or natural gas problems discovered during the project will require the shut off of any affected combustion appliance and must be resolved at the customers expense prior to renewed operation of the equipment. An affidavit of receipt of the notice, signed by contractor and customer would be filed with the rebate reservation application. The burden to this paperwork is much less than the burden of a Test-In.

While this eliminates the surprise, BayREN recognizes it does not eliminate the post Test-Out cost. However, BayREN also recognizes that no market driven CPUC/IOU program, not even EUC, has any method of helping customers who lack ready funds to fix the surprises. It would be unfair to place on one program a new requirement when no other market rate program is expected to fix the problem.

Finally, the Energy Division has offered a solution that alternative certifications may be allowed. If NATE or other certifications are allowed for Test-In and Test-Out, certified contractors will be able to in-house the work avoiding the market barriers. There is likely to be a large enough pool of such contractors who will be interested that the pilot program can meet its goals for 2013-14; however, it will limit the program to those with pre-existing certifications and may not be a scalable solution for this program to grow in future years. Further, any stakeholder process to settle on additional acceptable certifications will further delay the start of this program, already seriously delayed by the lengthy decision-making processes. BayREN appreciates being given the opportunity for stakeholder engagement and are committed to creating a process to open the market to additional qualified providers. Evaluating more CAS protocols that may increase the number and types of providers is consistent with a desire to transform the market for deep energy reductions, and may reduce any appearance of unfairly privileging one provider over others. Doing so may also positively influence the number of jobs and providers able to perform the work in California.

e) Program Partners

i. Manufacturer/Retailer/Distributor partners

The BayREN hopes to continue successful retail partnerships originally established under SEP as part of program marketing efforts, including relationships with Whole Foods, Sears, Kaiser Permanente, and Home Depot.BayREN01 Table 10: Manufacturer/Retailer/Distributor Partners (Not Included)

Manufacturer/Retailer/Distributor Partner Information	**BayREN01**
Manufacturers enrolled in program	None
Manufacturers targeted for enrollment in program	None
Retailers enrolled in program	None
Retailers enrolled in program	None
Retailers targeted for enrollment in program	None
Distributors enrolled in program	None
Distributors targeted for enrollment in program	None

ii. Other key subprogram partners

Building Operators and Managers Associations

City and County of San Francisco

City of Suisun City

Community Based Organizations

County of Contra Costa

County of Marin

County of Napa

County of San Mateo

County of Santa Clara

Green Building Associations/Green Building Labeling Programs

Joint Venture Silicon Valley

Lending Institutions (to be announced when program is launched)

Local Workforce Investment Boards Marin Clean Energy Authority

Marin Clean Energy Authority

Pacific Gas & Electric Company

Professional Building Trade Associations

Professional Training Organizations

Real Estate Professional/Associations

Sonoma County Regional Climate Protection Authority

Sonoma County Energy Independence Program

StopWaste.Org (Alameda County Waste Management Authority)

Water Utility Districts

Working Partnerships USA

f) Measures and Incentive Levels

The Single-Family Subprogram will offer two incentive programs:

- Whole-House Audit Incentive Program

During the SEP period, BayREN members identified the initial cost of an energy audit as a key market barrier to market penetration of whole-house upgrades, and Bay Area programs premised on audit incentives drove conversion rates as high as 43%. To reduce this barrier, the BayREN will provide incentives to offset the cost of test-in energy audits for customers that complete a PG&E EUC-SF Advanced Upgrade within the BayREN territory. The Audit Incentive Program will provide incentives for audits that follow Building Performance Institute (BPI) and PG&E EUC-SF protocols, and are performed by Energy Upgrade Participating Contractors.

When a homeowner has started an Advanced Upgrade, they or their contractor will be eligible to submit an Audit Incentive Application that reserves their incentive funds. Once an Advanced Upgrade is completed, homeowners or contractors will then submit a Completion Form, along with required documentation. Instructions for this process will be maintained online and will be shared with PG&E Energy Upgrade California Single Family Program participating contractors in the BayREN region All applications will undergo desktop quality assurance to ensure the property is eligible for an incentive. Since field verification for the upgrade will occur under the PG&E EUC-SF, no additional field verification will be conducted through this BayREN program.

- Flex Package Incentive Program:

To complement the Basic and Advanced Package upgrade options currently offered through the PG&E EUC-SF, the BayREN will offer the Flex Package Upgrade Incentive to single-family customers within the BayREN territory. The Flex Package Program is designed to fill a gap in the current PG&E EUC-SF design, offering an on-ramp for homeowners and contractors to pursue multi-measure energy upgrades at an accessible cost through a simple to understand program. The Flex Package has been successfully piloted in Los Angeles County, and is outperforming the Advanced Package program (1650 applications between January and October 2012), demonstrating its simplicity, accessibility, and potential.

The Flex Package Incentive allows homeowners to receive an incentive by installing three or more measures in their home. The measures are selected by the homeowner and contractor from a list of measures that have been modeled for energy savings and assigned a certain "points" value. Points values reflect the pre-modeled energy savings, as well and scope and process considerations of installing the measure. Homeowners are required to install are least one of three "Base" measures (attic air sealing and insulation, duct sealing and insulation or replacement, or whole house air sealing) and at least two additional measures ("Basic" or "Flex"). ~~measures.~~ If a home already meets requirements for all three base measures, they may install only "Flex" measures. When homeowners have selected enough measures to reach a certain points value (summed amongst all selected measures), they are eligible to receive the incentive. In this way, homeowners have flexibility to choose measures that fit their energy and comfort needs. This simple, menu-driven, flexible design is expected to greatly increase the volume of projects over the original Basic Path. Contractors will be trained and encouraged to develop work scopes that include more building envelope measures and go beyond core systems.

As the program design for Flex Package is finalized, BayREN feels any requirement that eligible Flex projects must install "2 of 3" Base Measures is too restrictive and will limit participation in much the same way as the 2010-2012 Basic Path model. In a contractor engagement meeting conducted by SoCalREN with 10 Flex Path contractors, the REN team was told by specialty contractors (HVAC, insulation, and plumbing) that they could not sell the "2 of 3" approach to homeowners. If the REN Flex program is forced to require 2 of 3 Base Measures, the REN would drastically reduce its target for completed Flex projects, as reflected in the Low Scenario presented Figure 5 above.

The IOU~~'~~s' have ~~publicly stated that should the Commission~~ indicated in Attachment A to this Advice Letter that they will accept the 1 of 3 Base Measure approach as adequately "supporting" the Loading Order; therefore, ~~they will also accept it and~~ the BayREN and IOU~~'~~s' are ~~will be~~ in ~~complete~~ agreement on a single program design. The Flex Package program offers a balanced approach intended to produce a high volume of retrofits while maintaining a reasonable level of technical rigor and quality assurance. The proposed program will:

- Link Base and Flex Measures together to support building shell and core system upgrades

- Provide a tiered incentive level from $1,000 to $2,500~~3,000~~ in $500 increments which still allows the contractor to upsell to the Advanced Path if desired by the homeowner[16]
- Penetrate the lower-middle and middle-income homeowner markets to greatly increase the volume of projects
- Maintain high standards of Quality Control consistent with IOU and industry best practices
- Maximize ratepayer benefits while minimizing lost opportunities

Many Flex Measures require a specific Base Measure to support the Energy Efficiency Loading Order and Core System upgrades as shown in the examples in Figure 1 below. In many projects this will result in the homeowner installing two or more building shell measures. BayREN feels the required Base Measure design combines complementary measures in a way that adequately supports the Loading Order without introducing unnecessary restrictions on the contractor and homeowner. This systems oriented design will help to ensure that each building system will be installed properly and provide the maximum benefit to the ratepayer.

BayREN01 Figure 6: BayREN Examples of Required Base Measure by Flex Measure

Flex Measures	Required Base Measure
Wall Insulation or Windows	Whole House Air Sealing
Crawlspace Insulation	Whole House Air Sealing
Attic Radiant Barrier	Attic Air Sealing and Insulation
HVAC Equipment Replacement	Duct Sealing and Insulation or Duct Replacement + one additional Base Measure or envelope Flex Measure

[16] ~~BayREN is currently proposing a $3,000 incentive cap, but believes this should be vetted with program stakeholders and potentially limited to $2,500 pending feedback from these parties.~~

~~Flex Measure~~	~~Required Base Measure~~
~~Wall Insulation or Windows~~	~~Whole House Air Sealing~~
~~Crawlspace Insulation~~	~~Whole House Air Sealing~~
~~Attic Radiant Barrier~~	~~Attic Air Sealing and Insulation~~

Of 1273 homeowners participating in the LA Flex Path program 60% implemented one or more shell measures without being required to do so. BayREN estimates that the 1 of 3 Base Measure approach will result in up to 75% of homeowners implementing at least one shell measure. This simple, flexible design will also greatly increase the volume of projects over the Basic Path. The remaining homeowners will focus on completing core system upgrades. Contractors will be trained and encouraged to develop work scopes that go beyond core systems and include building shell measures. The 2013-2014 transition period gives the Commission the opportunity to test a program design that will achieve a higher volume of retrofits and reasonably support the Loading Order. Flex Package also introduces a bonus measure for right-sizing of HVAC equipment to support the EE loading order for core systems and test market acceptance of this approach outside a formal Quality Installation requirement. Again, BayREN wishes to use the transition period to try an innovative program design to see what works and what does not, and one that does not limit participation. The challenge in any program design is finding the right balance between volume and home performance priorities. Lessons learned will be few if homeowner participation is low. The Commission cannot afford another two years of learning only what does not work.

Furthermore BayREN believes that the "Duct Sealing and Insulation/Replacement" base measure does qualify as a shell improvement. Duct sealing reduces infiltration to unconditioned space. Ducts in past California whole house programs have been found to have on the order of 30% leakage. Duct sealing not only reduces wasted conditioned air (thereby reducing time to run HVAC appliances), it also reduces the air infiltration to outside of the conditioned space. If needed, the program can implement a duct leakage to outside requirement, which requires the test to be conducted with blower door at 25Pa when doing the duct leakage test. Applications for Flex Package Incentives will be handled online, where homeowners will complete a simple form, which provides homeowner consent, property and project details, and proof of eligibility. Once projects have been completed, contractors will submit post-installation documentation to prove the job was completed according to the required specifications and that combustion safety testing was performed at project initiation and ~~-~~completion. Desktop quality assurance will be conducted on all jobs, and field verification will be conducted based upon Home Performance with Energy Star Protocols to ensure property installation, and compliance with health and safety code. BayREN's Flex Package program design will mirror the SoCalREN Flex Path program as approved by the CPUC, with points updated to reflect energy savings that will be achieved by each measure within the Bay Area climate zones.

The Commission has directed the IOU's to implement a 10-year declining incentive structure that is based on the number of retrofits achieved by the program. BayREN agrees in principle with the declining incentive structure provided it includes a clearly

defined market transformation plan with targets for the number and distribution of retrofits, number of participating contractors, and number of low interest loans. The declining incentive structure must have some flexibility to account for the pace of market transformation, and there are a number of critical factors that must be considered. BayREN recommends that the development of the declining incentive structure be assigned to the Energy Upgrade Working Group that includes the IOUs, RENs, and other interested stakeholders. This timeframe will also allow for the work necessary to establish emerging co-benefits of energy efficiency (e.g., formal Green MLS that sets a standard for assigning increased property values in the marketplace, ground-truthing and valuation of positive health impacts such as improved indoor air quality, etc.). Established, recognized and validated co-benefits have the ability to supplant incentives.

BayREN01 Table 11~~10~~: Summary Table of Measures, Incentive Levels, and Verification Rates

Measure Group	Market Actor Receiving Incentive or Rebate	BayREN01	
		Incentive Level	Installation Sampling Rate
Audit Incentives for completed PG&E EUC-SF Advanced Upgrades	Property Owner (can sign for direct payment to contractor)	$300	Field verification will not be included in program.
Insulation and Air Sealing	Property Owner (can sign for direct payment to contractor)	$1,000 for projects earning 100 points $1,500 – 150 points $2,000 – 200 points $2,500 – 250 and above points ~~$3,000 – 300 points~~[17]	Follows Home Performance with ENERGY STAR Protocols[18] as minimum
HVAC			Follows Home Performance with ENERGY STAR Protocols as minimum
Window Replacement			
Water Efficiency and Hot Water Heating			
Lighting			
Pool Pump			

BayREN Flex Package points for each eligible measure will be consistent across the Bay Area, regardless of climate zone or building vintage. This simplifies contractor and consumer messaging. As outlined in Section F) Measure Savings/Work Paper, BayREN points are based upon average total package savings. This was weighted by how common

[17] ~~BayREN is currently proposing a $3,000 incentive cap, but believes this should be vetted with program stakeholders and potentially limited to $2,500 pending feedback from these parties.~~

[18] "The minimum on-site job inspection rate is set at 5% (1 in every 20 jobs). NOTE: It is recommended that the Partner establish an adjustable on-site inspection rate for contractors based on job experience and performance. This inspection rate reduces as the contractor gains experience in the program and as on-site inspections show the contractor is performing well. Contactors may drop down a tier if performance slips. Here is the recommended set of tiers: a. Tier 1 Contractor - The first 3-5 jobs will be inspected on-site or mentored; b. Tier 2 Contractor - 20% of the next 20 jobs are inspected on-site (4 out of 20); c. Tier 3 Contractor - 5% of all jobs inspected on-site (1 in 20)." Protocols are available at http://www.energystar.gov/ia/home_improvement/downloads/HPwES_Partnership_Agreement.pdf?3b67-80af

the package was in the Los Angeles County Flex Path program, and then weighted again for the four Bay Area climate zones, using the number of detached single-family units per climate zone to weight the savings for each zone (as provided by the 2010 U.S. Census). It is important to note that while the points (public facing to homeowners and contractors) will be consistent across the Bay Area, final BayREN energy savings for Flex Package projects reported to the CPUC could be specific to the building vintage and climate zone for each installed project.

~~The BayREN plans to offer five points for a setback programmable thermostat, domestic water heater pipe wrap, and low flow showerheads and aeartors to encourage the best practices of installing these devices. BayREN acknowledges that there will be no energy savings claimed for these measures based on DEER, but feels that these important components should be installed when absent within a home. Furthermore, while most measures affect building performance, the programmable thermostat influences and affects consumer habits and mindset.~~

BayREN plans to develop a simple, non-proprietary Excel tool to allow a contractor to calculate (and communicate to the customer) the total Flex Package points that may be awarded for eligible Flex Package measures that are installed as part of a customer's final project scope. BayREN will evaluate the proposed IOU web-enabled tool to see if this product could meet such needs if and when that tool is released. ~~Note that the point values in Figure 2 below are preliminary pending further collaboration with stakeholders and the IOU's to determine final values.~~

BayREN01 Figure 7: BayREN Flex Package Measures and Draft Points

BASE Measures – Select ONE (1) or more Base Measures

Base Measure ID	Base Measure	Existing Condition	Post-Upgrade Condition	Diagnostic Testing	Point[19] Value
BASE Measures The Attic Insulation & Attic Air Sealing measure requires that HVAC ducts be sealed or separated from the insulation material. It is also highly recommended that all incandescent recessed can lighting fixtures be replaced with ENERGY STAR® CFL fixtures or ENERGY STAR® LED fixtures.					
1A	**Attic Insulation & Attic Air Sealing**	≤ R-11	≥ R-44; Sealed Attic Top Plate	BD Test-In/Out; CAZ Test-Out	80
1B	**Duct Insulation & Sealing OR Duct Replacement**	Leakage ≥ 28%; Insulation ≤ R-4	Leakage ≤ 6 %; Insulation ≥ R-8	DuctBlaster Test-In/Out; CAZ Test-Out	90
		15% ≤ Leakage < 28%; Insulation ≤ R-4	Leakage ≤ 6 %; Insulation ≥ R-8		45
1C	**Whole House Air Sealing**	ACHn ≥ 130% ASHRAE 62.2	ASHRAE 62.2 ≤ ACHn ≤ 130% ASHRAE 62.2	BD Test-In/Out; CAZ Test-Out	35

FLEX Measures – Select additional ~~TWO (2) or more~~ FLEX Measures for a minimum of three total measures.

Note: Some FLEX Measures may require a specific Base Measure be implemented

Required Base Measure	FLEX Measure	Existing Condition	Post-Upgrade Condition	Diagnostic Testing	Point Value
FLEX Measures – Building Shell					
1C	**Floor Insulation**	No Insulation	≥ R-19		80
1C	**Wall Insulation**	No Insulation	≥ R-13	See Base Measure 1C	90
1C	**High Performance Windows**	Single or Double Clear Pane	EnergyStar or equivalent; U-factor ≤ 0.40; SHGC ≤ 0.25	See Base Measure 1C	90

[19] All point values are preliminary pending further collaboration with PG&E and the Energy Division.

1A	**Attic Radiant Barrier**	No Radiant Barrier	Continuous Rolled or Prelaminated Radiant Barrier	See Base Measure 1A	45

Required Base Measure	**FLEX Measure**	**Existing Condition**	**Post-Upgrade Condition**	**Diagnostic Testing**	**Point Value**
FLEX Measures – Heating, Ventilation, & Air Conditioning					
1B	**Gas Furnace**	Gas Furnace; ≤ 0.80 AFUE	Gas Furnace; ≥ 0.95 AFUE	See Base Measure 1B	90
			Heat Pump; ≥ 8 HSPF; 15 SEER; 11 EER	See Base Measure 1B	TBD
1B	**Electric Heat Pump**	Heat Pump; ≤ 5.6 HSPF; 8 SEER; 6 EER	Heat Pump; ≥ 8 HSPF; 15 SEER; 11 EER	See Base Measure 1B	90
1B	**High Efficiency Air Conditioning**	≤ 10 SEER	Central AC; ≥ 15 SEER; ≥ 11 EER	See Base Measure 1B	20
N/A	**Right-Size HVAC Kicker**	New Air Conditioning	AC Unit	N/A	10 per 1/2 ton; 30 max
		New Heat Pump	Heat Pump	N/A	10 per 1/2 ton; 30 max
~~**N/A**~~	~~**Programmable Thermostat**~~	~~Manual Thermostat (digital or analog)~~	~~Energy Efficient Programmable Thermostat(s); Serves Entire Conditioned Area~~	~~N/A~~	~~5~~
1B	**Buried Ducts Kicker**	≤ R-4	Fully Buried Ducts*	See Base Measure 1B	35

Required Base Measure	FLEX Measure	Existing Condition	Post-Upgrade Condition	Diagnostic Testing	Point Value
FLEX Measures – Water Heating					
N/A	**Gas Water Heater**	Gas Storage Heater; ≤ 0.575 EF	Gas Storage Heater; ≤ 0.67 EF	CAZ Test-Out	45
			Gas On-Demand Tankless Heater; ≤ 0.88 EF	CAZ Test-Out	90
N/A	**Electric Water Heater**	Electric Storage Water Heater; ≤ 0.88 EF	Electric Storage Water Heater; ≤ 0.93 EF	N/A	10
			Electric Heat Pump Water Heater; ≥ 2.0 EF	N/A	85
~~N/A~~	~~**Low Flow Showerheads**~~	~~No Thermostatic Flow Controls~~	~~Low Flow Showerheads ≤ 1.5 gpm; Bathroom Faucet Aerators ≤ 1.5 gpm; Kitchen Faucet Aerators ≤ 2.2 gpm~~	~~N/A~~	~~5~~
~~N/A~~	~~**Hot Water Pipe Wrap**~~	~~Unwrapped Hot Water Pipe~~	~~Minimum 5ft of Hot Water Pipe Wrap~~	~~N/A~~	~~5~~

Required Base Measure	FLEX Measure	Existing Condition	Post-Upgrade Condition	Diagnostic Testing	Point Value
Additional FLEX Measures					
N/A	**Variable Speed Pool Pump**	Single-Speed Primary Pump	Title-20 Compliant Variable Speed Pump & Controller	N/A	75
		Two-Speed Primary Pump	Title-20 Compliant Variable Speed Pump & Controller	N/A	25
N/A	**EnergyStar Lighting**	Incandescent Fixture(s)	~~EnergyStar CFL or LED Fixture(s); Permanently Installed~~N/A (Upstream Incentive Program)	N/A	2 per Fixture; 10 Max

All five-point measures offered in the ARRA Flex Path program will be eliminated. However, these measures do offer value to homeowners as best practices and the chart below describe the proposed disposition of each five-point measure. Required measures below will not get any points but savings will be claimed by the REN.

Flex Path Five-Point Measures to be Removed	Flex Path Requirement	Proposed Disposition
Programmable Thermostat	Energy Efficient Programmable Thermostat(s); Serves Entire Conditioned Area	Add the following statement to all HVAC equipment measures and duct sealing and insulation measure(s): "Recommend replacement of a manual thermostat with digital, setback programmable model"
Low Flow Showerheads with TCV	Low Flow Showerheads ≤ 1.5 gpm; Bathroom Faucet Aerators ≤ 1.5 gpm; Kitchen Faucet Aerators ≤ 2.2 gpm	Add the following statement to program participation requirements (1 of 3 Base Measures; minimum three measures, etc.): "All projects require installation of a thermostatic shut-off valve on all

		showers in the home except when installing a tankless water heating system"
Hot Water Pipe Wrap	Minimum First 5ft of Hot Water Pipe Wrapped	Add the following statement, consistent with code: "Must include pipe wrap for first five feet of exposed pipes"
Sealing of can lights or Replacement with Sealed ENERGY STAR Fixtures	EnergyStar CFL or LED Fixture(s); Permanently Installed	Add the following statement to Attic Insulation and Sealing: "It is highly recommended that all incandescent recessed can lighting fixtures be replaced with ENERGY STAR® CFL fixtures or ENERGY STAR® LED fixtures"

The Modified EUC Flex Path program also proposes to provide a bonus to the homeowner for installing more than one Base Measure. The first additional Base Measure (2 of 3) will receive a bonus of 15 points and the second additional Base Measure (3 of 3) will receive a bonus of 20 points. The measure point values and bonuses are cumulative. Figure 8 below summarizes how the Base Measure Bonus will add value to a project and drive more envelope measures.

BayREN01 Figure 8: Example of Base Measure Bonus Structure

Number of Base Measures	Base Measure Description	Base Measure Points	Bonus Points Added	Measure Points	Cumulative Total Points
1 of 3	Attic Air Sealing and Insulation	70	Base Measure Points Only	70	70
2 of 3	Duct Sealing and Insulation or Duct Replacement	70	Base Measure Points + 20 Bonus Points	70+70+15	155
3 of 3	Whole House Air Sealing	30	Base Measure Points + 20 Bonus Points	155+30+20	205

g) Additional Services

Home Upgrade Advisor Service

To fill a significant gap in the current Energy Upgrade California model, BayREN will provide a free, objective, unbiased third-party "Home Upgrade Advisor" (HUA) service that will act as a facilitator, educator, and advocate for homeowners pursuing upgrades. HUAs will provide a high-level of dedicated support to participants before, during, and after an upgrade, using, but going well beyond, such services as the PG&E Energy Advisor service (see below). The HUA service will be developed in coordination with Participating Contractors to ensure that services provided flow seamlessly within the standard bid and contracting process and relieve existing contractor burdens.

The Home Upgrade Advisor model is based upon various energy advisor programs, including the Boulder County Better Buildings Program EnergySmart/Energy Advisor program (http://www.energysmartyes.com/index.php). The EnergySmart Energy Advisor program has served over 2,646 owner-occupied homes since 2011, and has achieved a conversion rate of 58 percent for owner-occupied homes making investments in energy efficiency. EnergySmart's Energy Advisor services are similar to those to be provided by the BayREN Home Upgrade Advisor: site visits with efficiency education resources and one-on-one assistance evaluating contractor bids and navigating project installation and financing processes. Communications with Boulder County program administrators attributed the hands-on approach as the critical factor in fostering its high upgrade participation rates.

The HUA will be able to serve as a first point of contact for leads through a call center, and will use that first point of contact to provide basic energy efficiency and other "green home" education to the interested homeowner, including enrolling the participant in the PG&E Energy Advisor online services. If the participant requests more information and goes through pre-screening, education and initial outreach may include a site visit and initial home survey, whereby the HUA will provide the homeowner with an energy efficiency kit and perform installation of basic measures (e.g., CFL, faucet aerators), walk the homeowner through the various energy efficiency and green program and financing options (in coordination with PG&E Energy Advisor), including those options offered through the BayREN program (see BAYREN04 for details). In this manner, the HUA program will integrate all utility, local government, and other Demand-Side Management program (DSM) offerings, following guidance provided by the Commission to the IOUs to integrate plug load, appliance, and other DSM programs into Energy Upgrade California.

If the homeowner proceeds with work, either through the PG&E EUC-SF or Flex Package programs, the HUA may act as a customer advocate to (1) interface with the contractor, financing, and incentive program administrator, (2) provide incentive application assistance, and (3) perform other functions that facilitate the process for the homeowner. A key to the entire process is that each homeowner will have a dedicated HUA, which will allow the Advisor and customer to develop a relationship of trust, thereby significantly improving the likelihood of program participation, as well as efficiency behaviors following the program.

Following the upgrade process, the Advisor will continue to act as a source of information, conflict resolution, and support for the homeowner. Importantly, the HUA will leverage the

homeowner relationship to encourage and increase post-upgrade efficiency behavior on the part of the homeowner.

It is important to note the differences between the PG&E Energy Advisor and the BayREN Home Upgrade Advisor programs. PG&E's Energy Advisor program is focused largely on surveys, especially online surveys, to provide behavioral and program recommendations to customers based upon their energy usage. There may be some phone and in-home work conducted by PG&E's Energy Advisors, but the expectation is that this service is largely online and requires the completion of a home energy survey to initiate the service. In contrast, the BayREN Home Upgrade Advisor program is a full-service customer support experience designed to provide education and options to homeowners as well as trusted third-party advocacy and guidance throughout the upgrade process should homeowners have concerns or issues with their contractor. The HUA service, by filling a key gap in PG&E's program offerings, has the potential to dramatically increase uptake of projects by interested homeowners.

BayREN will actively work with the PG&E Energy Advisor program to ensure that HUAs can use the Energy Advisor tools to support customers and as a lead-generation platform. BayREN also proposes that PG&E direct their in-home and call center efforts outside of the Bay Area region, to ensure as little duplication as possible.

Real Estate Partnerships and Green Labeling

In 2011–2012, BayREN members made significant progress toward engaging real estate professional communities agents as part of the ARRA SEP efforts. Also, Alameda, San Francisco and Los Angeles Counties have been collaborating on a statewide Green Building Labeling pilot with Department of Energy Better Buildings Program grant funding. The goal is to further the market recognition of green building and energy efficiency labels during real estate transactions. BayREN local governments are therefore uniquely positioned to lead future real estate partnership building in 2013–2014 to solidify industry support for energy efficiency and green upgrades:

- Local governments have a vested interest in the health and resource consumption (energy, water, IAQ, etc.) of their community's buildings
- Local governments have a vested interest in the valuation of their buildings and how that can be increased through green labeling
- As the main actor in marketing efforts for Energy Upgrade California, BayREN local governments have and will continue to access real estate professionals as a key outreach channel
- BayREN members developed and delivered trainings for 164 real estate professionals
- BayREN members are currently facilitating a real estate committee to discuss issues related to green labeling, market valuation, and adding green labels to the Multiple Listing Service

- Additionally, BayREN members have funded a rigorous academic study to understand the relationship between green labels and market valuation in residential properties (released July 19, 2012), which demonstrates a 9% price premium for homes that have received green labels in California

BayREN partners have not yet developed detailed budget breakdowns for green building labeling, part of the Single Family regional marketing activity. However we anticipate that that the following activities will be included:

- Real estate education and certification

Update curriculum for real estate professionals developed through the State Energy Program to include new data and lessons learned, and also new formats. Develop new curriculum that targets home inspectors and helps them incorporate education about energy efficiency and green building labeling in their business models.

- Real estate industry outreach

Continue to sponsor a Bay Area Real Estate Forum that provides real estate professionals with an opportunity to provide input on the promotion of retrofit programs and the "greening of the MLS." The Bay Area has a much more fragmented MLS market than Southern California, so additional outreach is needed to help change local industry norms.

- Promoting the value of green labels

StopWaste and SF Environment funded the first academically rigorous residential green valuation study in the US, which showed that there is additional value for building with green ratings. The marketing release of the study gained significant coverage in major media outlets both in California and nationally. BayREN would continue to promote the green labeling study through real estate trade venues.

- Rebates for green building ratings

Offer selected rebates to projects that complete a third-party verified green building or home energy rating, following the PUC's direction about how these funds should be used. These rebates, in conjunction with the promotion of the green labeling value study, can accelerate greater consumer awareness in certain markets. For example, they could be used as case studies or in outreach campaigns or offered as part of Flex Package test out. An ultimate goal is to make it easy and inexpensive for homeowners to obtain a label during the Flex Package test-out process.

Green Building Labeling is planned to be incorporated into the overall single-family marketing activities, rather than only as a part of the Flex Package program. Due to the smaller scopes of work in Flex Package projects, it does not make sense for them to pursue HERS II ratings. However, BayREN partners have been collaborating with the Department of Energy on its Home Energy Score program. This, or another similar, simplified energy rating tool is less expensive and more feasible for smaller projects. This scope of work could include contractor training so that EUC contractors can offer

a green or energy label on test-out, if a label can be completed with minimal additional cost.

In their 2013–2014 Residential Portfolio, PG&E has proposed that the IOUs lead real estate outreach and engagement efforts for 2013–2014. BayREN argues that in the Bay Area, for the reasons indicated above, the BayREN is in a much better position to continue real estate industry engagement and discussion regarding market valuation, and has a stronger vested interest in having this partnership succeed. BayREN would welcome coordination with PG&E and all other relevant market actors.

BayREN01 Table 12~~11~~2: Additional Services

Additional Services that the Subprogram Will Provide	**To Which Market Actors**	**BayREN**
Home Upgrade Advisor	Single-Family Property Owners	Fully incented
Post-upgrade services for behavior change and savings maintenance (as part of Home Upgrade Advisor)	Single-Family Property Owners	Fully incented
Premium contractor list (through Home Upgrade Advisor)	Single-Family Property Owners	N/A
Real Estate Partnerships and Green Labeling	Real Estate Industry (Brokers, Realtor Associations, etc.)	N/A

h) Subprogram Specific Marketing and Outreach

As part of the SEP program, BayREN participants have previously coordinated targeted marketing and outreach efforts at both the county and regional level. Combined with local government incentives offered in addition to IOU rebates, these efforts have been successful in creating awareness and driving upgrades. For 2013–2014, BayREN will continue the successful marketing and outreach tactics piloted in 2011–2012.

The key elements which will contribute to future success include:

- Message consistency and **brand awareness** through targeted regional advertising
- Accessible and compelling translation of the full suite of energy efficiency benefits and co-benefits
- Outreach teams conducting **local, targeted outreach**
- Collaboration with **local contractors** to expand marketing reach
- **Local customization of the Energy Upgrade website** to create a more useful tool supporting homeowners' engagement and education

- **Outreach through relevant market actors,** especially real estate professionals and associations, residential green labeling organizations, renewable energy and other direct install programs
- Coordination of marketing approaches with PG&E EUC-SF
- **Coordination with the Statewide Marketing agency, the California Center for Sustainable Energy**, to orchestrate effective branding of the Energy Upgrade California program with regional marketing efforts targeted at driving action

BayREN is ready to increase customer awareness and drive participation in the Flex Package and the PG&E EUC-SF. Strategic plans for the placement of advertising in coordination with outreach are still relevant to the current market, and the BayREN members have existing marketing and outreach assets in place that can be deployed quickly and effectively.

Local Outreach and Education

Marketing and outreach funds will support localized community outreach activities in participating counties. Outreach efforts will be broad and will include, but not be limited to:

- In-home open houses
- Homeowner workshops (coordinated with PG&E workshops as appropriate)
- Contractor outreach and support
- Community events participation and presentations to local organizations
- Leveraging local Better Building Program (BBP) pilots, including:
  - Energize for the Prize: a school and nonprofit pilot in Alameda County promoting upgrades through local community based organizations.
  - Green Labeling: a time-of-sale pilot promoting green and energy efficient upgrades

Online Advertising and Search Engine Marketing

In the first phase of Energy Upgrade California, BayREN members committed funds to promote the program through online media outlets and channels. This successful tactic will be expanded and will include:

- Online display ads
- Pandora ads
- Google Adwords

- Search engine marketing

Audiences and messages are highly targeted and can be adjusted on an ongoing basis. It is anticipated that online ads could be launched within two weeks of receiving funds and show immediate results.

Social Media and Marketing

Under SEP, the BayREN governments successfully deployed FACEBOOK®, Twitter and other social media campaigns.

Broadcast (Radio and Television)

In 2011–2012, BayREN members developed relationships with local and regional television and radio channels enabling them to increase both earned and paid media time, both of which are critical to building demand. BayREN proposes to continue a regional approach to reaching consumers through these channels.

Effective 30-second television ads, case study vignettes, PSAs and radio ads are in place and will be reused. Previously, the local TV stations were exceptionally innovative and able to offer a great deal of additional exposure. We anticipate being able to launch a broadcast campaign within several weeks of receiving funds.

Website Content Customization

The Energy Upgrade website is a critical tool for transitioning consumers from being merely interested in energy upgrades to actually contacting a contractor. Local governments must be able to make the information on their county pages dynamic, up-to-date, and relevant, or funds spent on driving consumers to the website will be wasted. Each county will be allocated a set amount of funds to update their section of the site as necessary.

Retail and Corporate Partnerships

The BayREN hopes to continue successful retail partnerships originally established under SEP, including those with Whole Foods, Sears, Kaiser Permanente, and Home Depot.

Branding with Energy Upgrade California

BayREN will market all of its Single Family program components under Energy Upgrade California. Additionally, the Flex Package program will establish that Energy Upgrade California offers a program for everyone, regardless of socio-economic and other differences. Flex Package will serve as the gateway to energy efficiency for consumer groups inadvertently discouraged by the Energy Upgrade's launch under ARRA (Basic Path's inherently rigid structure excluded much of the public it was intended to serve). Flex Package will expand Energy Upgrade's accessibility and responsiveness to a culturally and economically diverse public.

BayREN01 Figure ~~8~~9: BayREN Marketing Activities

Task	Description	Objective
Locally implemented homeowner outreach	Range of outreach activities including in-home workshops, community events, contractor/ homeowner events, real estate industry partnerships and outreach. Public relations efforts to secure earned media placement.	Connect directly with homeowners to inspire them to conduct an upgrade; provide close-to-home outreach through trusted agents, leveraging existing local government and community networks.
Online advertising and Search Engine Marketing (SEM)	Targeted online advertising connected to key words related to the program.	Increase awareness, website visits, and connection to specific search activities, i.e., HVAC replacement.
Social Media and Marketing	Messaging and outreach through electronic venues such as FACEBOOK® and Twitter	Sound-bytes and targeted messaging to a mass public forum
Broadcast advertising	Targeted local advertising using existing ads and successful media outlets.	Increased brand awareness, drive demand and website visits.
Website customization	Provide funding for local governments to update and customize local county pages with new promotional and event information.	Provide local, custom flavor to website; provide forum for local programs and ideas to be promoted.
Retail and Corporate Partnerships	Promotional partnerships that access large consumer and client bases with program information, messaging, and promotions	To take advantage of shared interests large, prominent retail and corporate players have with energy efficiency programs

i) Subprogram Specific Training

The success of the whole-building upgrade industry and Energy Upgrade incentive programs depends upon Participating Contractors' ability to navigate and excel within an evolving marketplace and deliver high quality upgrades.

In the SEP period, BayREN members coordinated with training organizations such as the California Building Performance Contractors Association, Build It Green, EnergySoft, and others to develop and deliver in-class trainings and field mentoring that addressed gaps in contractors' skills and practices, as well as delivered green building certifications, and BPI-BA certification. As a result of these efforts, 780 professionals were trained during 2011 and 2012.

In 2012, BayREN members identified the need to build upon prior training efforts to increase contractor training and mentoring in building modeling and non-technical skills to efficiently deliver high-quality upgrades.[20] Additionally in 2011, the University of California, Berkeley, conducted a statewide workforce needs assessment for the energy efficiency sector that identified significant issues with the quality of installations in

[20] *Recommendations for Energy Upgrade California in the Bay Area*. ABAG, 2012.

residential energy efficiency projects, especially related to HVAC equipment installations. Proper training, code enforcement (addressed through BayREN03), and proper incentive program design, were identified as keys to addressing installation quality.[21]

In 2013–2014, BayREN will expand the training and mentoring efforts started during the SEP period to address the gaps identified above. BayREN will collaborate with workforce and training organizations to identify needs and will use existing or new trainings to fill critical skills gaps. Trainings will be delivered in concert with the PG&E trainings, and announced through BayREN and IOU contactor outreach channels. Using this approach, BayREN will be able to train a minimum of 250 building professionals and realtors in the 2013–2014 period in the following areas:

- Quality Installations
- Sales and Marketing
- Client Management Before, During and After a Project
- Business Management and Administration
- Energy Pro Modeling
- BPI Field Mentoring—job sequencing, proper equipment use
- Green Real Estate Certifications

BayREN's contractor and building professional training objectives are consistent with a market transformation program in the following ways:

- Establishing contractor credentials and enrollment protocols that effectively deliver customer protections and energy savings while integrating Trade Contractor (HVAC, Insulation, etc.) into the program will transform the market by greatly expanding the pool of eligible contractors. These trade contractors must be participating in the program so that the program can demonstrate sufficient "added value" to these contractors of moving customer work scopes to more complete whole house upgrades.
- Training objectives must include sales and marketing training so that contractors can effectively:
- Market whole house upgrades (a new market concept) to customers
- Bundle available rebates and financing to make projects (especially deeper retrofits) affordable
- Expand their messaging capabilities

[21] Zabin, C. et. al. *California Workforce Education & Training Needs Assessment For Energy Efficiency, Distributed Generation, and Demand Response.* Donald Vial Center on Employment in the Green Economy, Institute for Research on Labor and Employment, University of California, Berkeley. 2011.

- Become sufficiently familiar with co-benefits to serve as compelling ambassadors for energy efficiency among consumers

j) Subprogram Software and/or Additional Tools

i. Software Tools Required

~~For the Flex Package Incentive Program, savings for installed measures are deemed. Therefore, contractors participating in the Flex Package Program will not be required to conduct energy modeling for individual properties, and no energy modeling software will be required.~~

~~BayREN plans to develop a simple, non-proprietary Excel tool to allow a contractor to calculate (and communicate to the customer) the total Flex Package points that may be awarded for eligible Flex Package measures that are installed as part of a customer's final project scope. BayREN will evaluate the proposed IOU web-enabled tool to see if the IOU product could meet such needs if and when that tool is released.~~

~~The Audit Incentive Program will continue to require CEC-approved energy modeling software in order to conduct energy audits. As possible and appropriate, BayREN will consider promoting new technologies available to Participating Contractors to facilitate their energy modeling activities.~~

The BayREN supports the IOUs in their development and testing of a software tool that a contractor can use to calculate project points and percentage of energy savings based on basic characteristics of each home, vintage, and climate zone, provided the RENs are not required to use it. The currently proposed REN data management system will not support the use of this tool.

In addition, the RENs feel this approach is too complicated for homeowners to understand, as it is technically a calculated method that could result in different energy savings values and incentive amounts for each home. The RENs would prefer to offer the same simple, prescriptive, points based menu approach to all homeowners and do virtually the same calculated energy savings approach on the back end for the purpose of claimed savings and to provide project specific data to Energy Division staff. The reason the ARRA Flex Path program was successful is because it was very simple and easy for homeowners to understand. The Modified EUC Flex Path measures in Figure 7 above include existing and post-upgrade conditions, diagnostic testing (if required), and estimated point values.

Lastly, the BayREN understands the gravity of the energy savings demonstration and performance, have confidence in a fair and effective outcome to questions surrounding the calculation and reporting of energy savings, and trust that a fair and equitable solution may be

achieved which permits REN programs to proceed in a timely, successful, and responsible manner.

ii. Audit Requirements

Flex Package Program:[22]

Pre-implementation audit required ___ Yes _X_ No

Post-implementation audit required ___ Yes _X_ No

Audit Incentive Program

Pre-implementation audit required _X_ Yes __ No

Post-implementation audit required ___ Yes __ No _X_ N/A

iii. Audit Incentives

BayREN01 Table 13~~12~~3: Audits resulting in completed PG&E EUC-SF Advanced Upgrades

Levels at Which Program Related Audits Are Rebated or Funded	**Who Receives the Rebate/Funding (Customer or Contractor)**
$300	Customer or Contractor (Customer may sign incentive over to contractor)

[22] Flex Package does not require a traditional audit, but does require diagnostic test in/test out for installed measures and a combustion safety test out for all projects.

k) Subprogram Quality Assurance Provisions

BayREN01 Table 14134: Quality Assurance Provisions

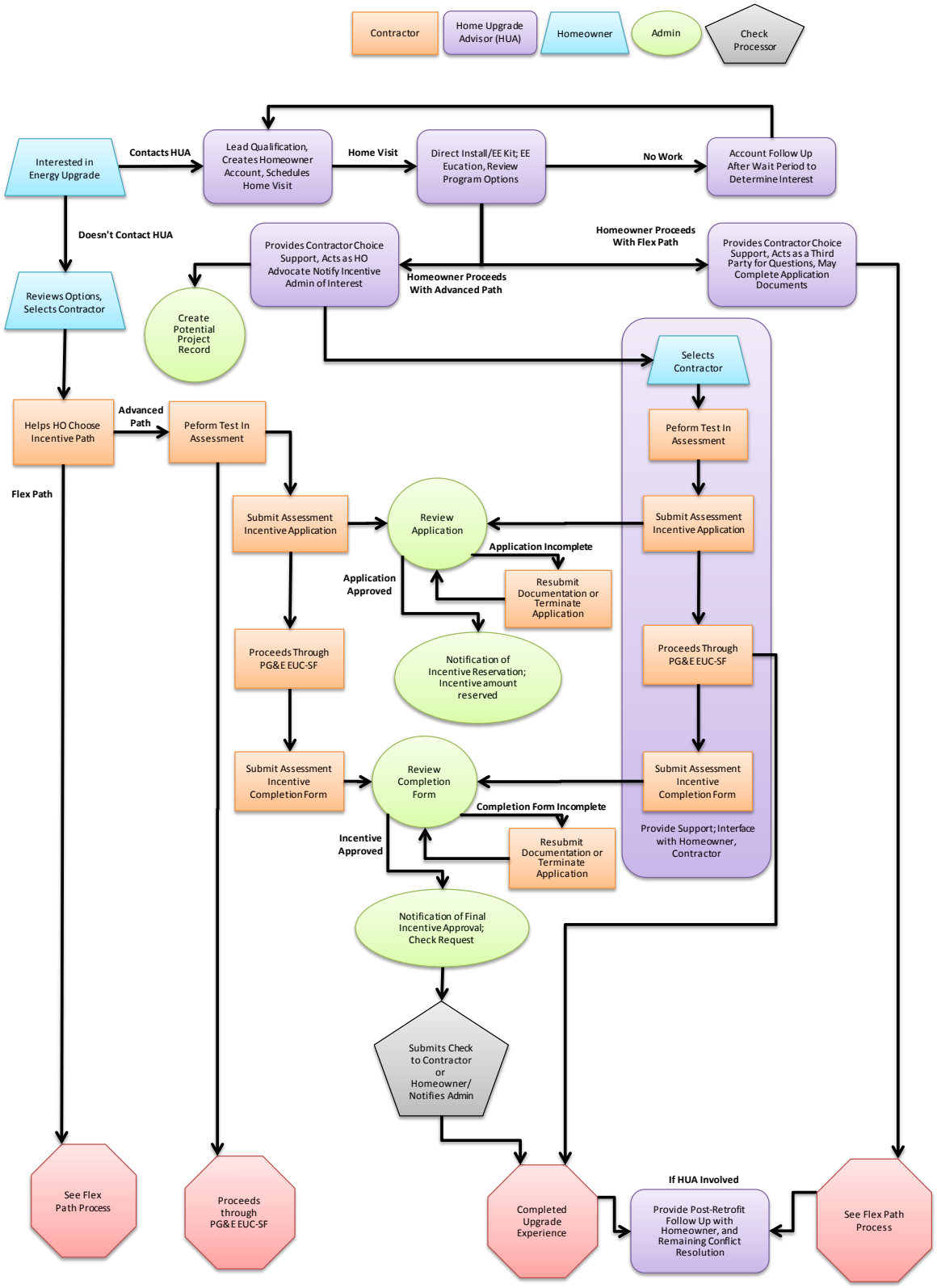
Program Element	QA Requirements	QA Sampling Rate (Indicate Pre/Post Sample)	QA Personnel Certification Requirements
Flex Package Incentive Program	Property must meet eligibility requirements for measures installed	100% pre/post	BPI-BA
	Contractor holds valid license and meets eligibility requirements	100% pre/post	None
	Project meets requirements of program	100% pre/post	BPI-BA
	Field Verification of Measures Installed and performance of Combustion Safety Test	Post: Home Performance w/ENERGY STAR Protocols (3 of first 5, 5% after initial jobs assuming initial three projects pass field inspection)	BPI-BA
Audit Incentive Program	Property must meet eligibility requirements	100% pre	None
	Contractor holds valid license and meets eligibility requirements (Energy Upgrade Participating Contractor or participant in other qualified program)	100% pre	None

l) Subprogram Delivery Method and Measure Installation/Marketing or Training

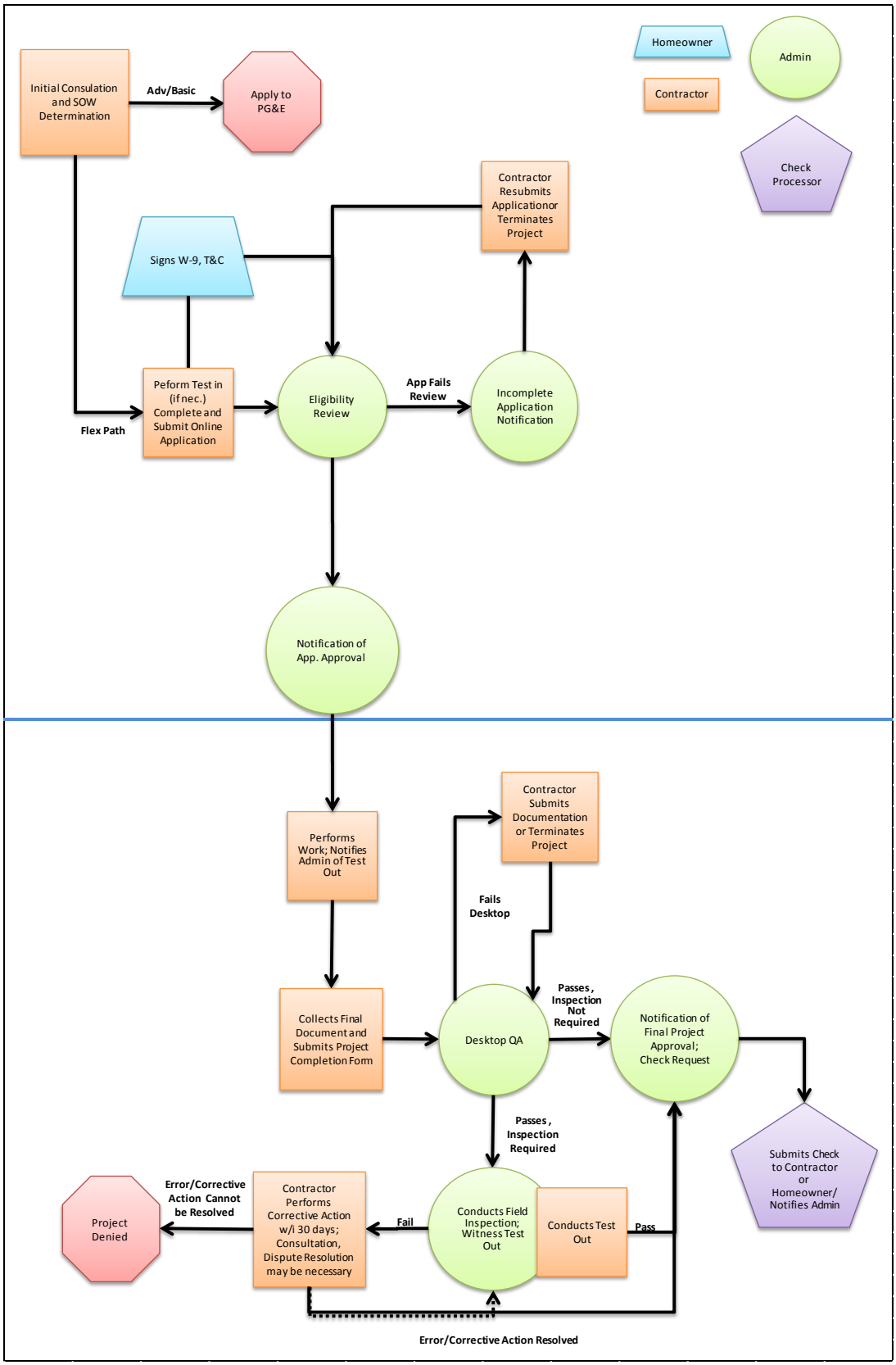
Home Upgrade Advisors will be qualified and trained to provide high-quality services and advice to homeowners by the implementing organization. Training and qualifications will be determined based upon final program design.

m) Subprogram Process Flow Chart

BayREN01 Figure 9: PG&E EUC-SF Support Program Process Flow Chart



BayREN01 Figure 10: Flex Package Incentive Program Process Flow Chart



n) Cross-Cutting Subprogram and Non-IOU Partner Coordination

BayREN01 Table 1514~~5~~: Cross-Cutting Subprogram and Non-IOU Partner Coordination

BayREN Single-Family Subprogram		
Other REN Subprograms	**Coordination Mechanism**	**Expected Frequency**
Financing	Project referrals	As requested by contractor/homeowner or determined by Home Upgrade Advisor or co-marketed through banking/lending partners
Codes and Standards	Meetings, other regular communication	As needed to ensure consistency of message and increase efficiency of local government outreach
IOU Programs	**Coordination Mechanism**	**Expected Frequency**
PG&E Whole-House Energy Upgrade Program (Energy Upgrade California)	Meetings, communication, participating contractor and QA updates	Monthly
Coordination Partners Outside the Commission	**Coordination Mechanism**	**Expected Frequency**
Flex Package/PG&E EUC-SF Contractors	Meetings/Forums, other regular communication	Quarterly or as needed
Low-Income Weatherization Programs	Project referrals	As requested by contractor/homeowner or determined by Home Upgrade Advisor
Non-BayREN Financing Programs	Project referrals, meetings, other regular communication	Quarterly or as needed
Local Workforce Investment Boards	Meetings, other regular communication	Quarterly or as needed
Building Trade Associations	Meetings, other regular communication	As needed as part of marketing efforts
Real Estate Associations	Association meetings, trainings	As needed as part of marketing efforts
Green Building Labeling Organizations	Meetings, other regular communication	As needed as part of marketing efforts
Local Retailers, Suppliers	Meetings, other regular communication	As needed as part of marketing efforts
Community Based Organizations, Religious Institutions, Educational Institutions	Meetings, other regular communication	As needed as part of marketing efforts

o) Logic Model

Logic Model provided in Attachment 1.

The BayREN Single-Family Upgrade Subprogram builds largely upon experience of local governments conducting activities and pilots in support of Energy Upgrade California from 2009–2012. In this time, local governments supported the PG&E EUC-SF through marketing, contractor training, customer support, incentives, professional outreach, and a host of other activities. Through these activities, the BayREN members identified strategies for addressing market barriers in the next iteration of Energy Upgrade California. The market barriers are described above. These strategies were identified in the *Recommendations for Energy Upgrade California in the Bay Area*, and included many of the strategies described in this subprogram and the other BayREN subprograms.

As described above, the desired outcome of the BayREN Single-Family Subprogram is to address these significant market barriers by:

- Lowering cost, education, and process barriers to boost participation in the PG&E EUC-SF by providing audit incentives, conducting broad awareness and targeted customer outreach, and providing an independent third party to advocate for the customer.
- Providing a viable alternative to the Advanced Package incentive that is inexpensive, simple to understand, and easy to sell, to act as an on-ramp to whole house upgrades for both customers and contractors.
- Through training and mentoring activities, equipping contractors with the skills to successfully penetrate the market and navigate the complicated energy efficiency program landscape while providing quality services to clients.

11. Additional Subprogram Information

a) Advancing Strategic Plan Goals and Objectives

BayREN01 Figure 11: Strategic Plan Alignment

BayREN Single-Family Subprogram Alignment with CA Long-Term Energy Efficiency Strategic Plan		
Residential		
Strategy Number	**Strategy**	**BayREN SF Subprogram Strategy**
1-5	Encourage local, regional, and statewide leadership groups to support pilots and foster communication among pioneering homeowners and builders	BayREN will conduct contractor, other building professional, real estate, and other trade outreach to spread brand awareness and facilitate dialogues among industry partners to support the program.
2-2	Promote effective decision making to create widespread demand for energy efficiency measures	BayREN will conduct broad outreach and awareness campaigns to customers and provide support around decision making through Home Upgrade Advisor, including potential for home energy ratings and green labels.
3-2	In coordination with Strategy 2-2 above, develop public awareness of and demand for highly efficient products	See strategy 2-2 above.
DSM Coordination and Integration		
Strategy Number	**Strategy**	**BayREN SF Subprogram Strategy**
1-1	Carry out integrated marketing of DSM opportunities across all customer classes	BayREN marketing efforts will be coordinated with IOU Whole House Program, Local Government Partnerships, Weatherization Programs, etc. Home Upgrade Advisor to conduct free mini-audits and support customer through DSM program offerings.
Marketing, Education and Outreach		
Strategy Number	**Strategy**	**BayREN SF Subprogram Strategy**
1-3	Use social marketing techniques to build awareness and change consumer attitudes and perceptions	BayREN marketing campaign will include use of community based organizations, schools, religious institutions and other organizations as drivers of energy efficient behaviors. Campaign will also use online social networking platforms.
1-5	Conduct public communications campaigns, alongside longer-term supporting school education initiatives to deliver the efficiency message	BayREN will coordinate with BBP Pilots that activate schools as "Energy Ambassadors" to spread energy efficiency message to students and parents.
Local Government Goals		
Strategy Number	**Strategy**	**BayREN SF Subprogram Strategy**
4-4	Develop local projects that integrate energy efficiency, DSM, and water/wastewater end uses	Home Upgrade Advisor service will promote cross-resource DSM offerings and promote green labels (e.g., Green Point Rated Existing Home), as well as perform direct installations of water conservation measures. BayREN marketing will be coordinated with cross-resource BBP pilots such as the Pay-As-You-Save® on-water bill pilot in Sonoma County.
5-2	Develop model approaches to assist local governments participating in regional coordinated efforts for energy efficiency, DSM, renewables, green buildings, and zoning	BayREN members will engage local governments at multiple levels to support outreach campaigns and ensure local government is aware of BayREN and other DSM program offerings. Will be coordinated with Codes & Standards program (BayREN03).

b) Integration

i. *Integrated/Coordinated Demand Side Management*

Through efforts conducted during the SEP period, BayREN members strengthened existing and developed new relationships with water efficiency and green building programs to help cross-promote services and increase customer awareness of all efficiency options. These efforts will be expanded in the 2013–2014 period, as BayREN will continue to identify opportunities to promote indoor and outdoor water efficiency, green product rebates, and other programs to consumers. BayREN will also promote green building upgrades, which focus on additional concerns such as indoor air quality and resource conservation, as a viable long-term strategy for increasing property value and occupant health and quality of life.

BayREN will promote cross-program services through two efforts. First, the Home Upgrade Advisor services offered through BayREN will provide an integrated, one-stop service for customers to learn about all IOU, local government, water utility, and other DSM offerings. Advisors will be well positioned to engage with customers when they are most receptive to hearing about how to improve their home, and will provide them with options for any upgrades they are interested in pursuing. In addition, a significant part of homeowner marketing will be cross promotion efforts by various DSM programs to ensure that, whether through media, collateral, or targeted outreach, homeowners are made aware of all program options and provided with opportunities to participate in all relevant DSM programs.

BayREN01 Table 16~~15~~6: Non-Energy Efficiency Subprogram Information

Single-Family Upgrade Subprogram		
Non-Energy Efficiency Subprogram	**Budget**	**Rationale and General Approach for Integrating Across Resource Types**
Water Utility Indoor Water Efficiency Incentive Programs	Vary	Cross promotion, integration into Home Upgrade Advisor services
Local Government Outdoor Water Efficiency Programs (e.g. Lawn conversion rebates, Bay-Friendly Landscaping and Gardening)	Vary	Cross promotion, integration into Home Upgrade Advisor services
EPA WaterSense	Unavailable	Promotion of brand, installation of products (e.g., aerators) by Home Upgrade Advisor
Green Point Rated Existing Home	Unavailable	Cross promotion of label, incentives offered through BBP pilots

ii. Integration across resource types

See above for a description of cross-marketing efforts to be conducted by BayREN. In addition to marketing activities, contractor training opportunities will integrate cross-resource consideration and promote awareness among building professionals of water conservation, air quality, and other considerations, as well as customer offerings.

The Flex Package Incentive Program will include measures associated with non-energy savings, especially those related to indoor water conservation. Points will be awarded to measures including such water efficiency measures as low-flow showerheads, faucet aerators, high efficiency toilets, etc. In addition, Home Upgrade Advisors will perform free installations of faucet aerators and other simple water efficiency devices when conducting home visits and supporting the customer in their energy efficiency choices.

c) Leveraging of Resources

In D 12-05-015, the Commission determined that a key role for local governments was to "leverage additional state and federal resources so that energy efficiency programs are offered at lower costs to ratepayers." To that end, the BayREN Single-Family Upgrade Subprogram program leverages the following programs:

- Local government ARRA-funded programs (BBP Pilots)
- CPUC/CEC Energy Upgrade California Brand
- PG&E EUC-SF
- PG&E Local Government Partnerships and Energy Watches
- Water utility incentives and programs
- Other local government energy and sustainability efforts and campaigns
- Other local government agencies and bureaus, such as building, permitting, and inspection departments

d) Trials/Pilots

Flex Package pilots are currently complete or have been launched throughout the State using ARRA funds provided by DOE. ~~, and these pilots have demonstrated significant success.~~ The County of Los Angeles recently completed a 1,650-application pilot in October, achieving this total in 10 months. The Los Angeles County Flex Path Program allowed for multiple applications, and aggressively enrolled specialty contractors as a market force for their program. In the San Francisco Bay Area, Sonoma County and Alameda County (through StopWaste.Org) ~~-~~offer nearly identical programs, launched in October and September 2012 respectively. Both pilots engage contractors previously certified as Energy Upgrade California Advanced contractors. AlamedaFlex offered a single flat incentive of $1,500 for a 2-measure minimum package that accounted for at

least 100 points. Sonoma Flex also applied a 2-measure minimum, with a qualifying threshold of 150 points (for a $1,500 incentive), and progressive additional incentives based upon incremental measure and point increases.[23] Uptake of these programs has been modest, with observations in both that Advanced Path contractors seek to scale up their recommendations to a level more indicative of Advanced Path retrofits. This may indicate that specialty contractors, forming new business models and alliances, may not only serve as critical indicators in a moderate-income program, but also represent a potential migration of those contractors toward whole-home capacity and aptitude. ~~a 250-project Flex Package pilot in Alameda County in August 2012, and the Sonoma County Regional Climate Protection Authority launched a small pilot in October 2012.~~

For the PY 2013–2014, it is expected that the Flex Package Incentive Program will take advantage of the lessons learned from these pilots. For this reason, it is expected that Flex Package will not need a pilot phase. The Flex Package program implemented by BayREN will mirror the SoCalREN Flex Path program as approved by the CPUC, with points updated to reflect energy savings that will be achieved by each measure within the Bay Area climate zones.

In addition, the efforts conducted through BayREN will be coordinated with 2013 pilot efforts to be conducted by BayREN members under BBP. These include the Pay-As-You-Save® (PAYS®) On-Water-Bill Pilot conducted in Sonoma County (www.windsorefficiencypays.com), and the community-based social marketing program Energize for the Prize in Alameda County (www.energizefortheprize.org). Results from these pilots will inform marketing and other offerings to be conducted in 2014 and beyond.

e) Knowledge Transfer

BayREN staff and partners will regularly track challenges, lessons learned, and necessary adjustments for all technical, administrative, and marketing aspects of program implementation. These challenges will be transmitted to local government partners operating similar programs (e.g., County of Los Angeles) through regular meetings of local government forums (such as LGSEC, Local Government Commission, Urban Sustainability Directors Network, etc.), regional NGO and institutional partners (e.g., Joint Venture Silicon Valley, etc.), and through program updates provided to Commission and program partners.

12. Market Transformation Information:

a) Market Transformation Objectives

The market transformation objectives of the BayREN Single-Family Upgrade Subprogram are the following:

[23] These pilot programs will continue pending approval of the Advice Letter, as allowed by D.12-11-015: "We see no reason to allow BayREN to conduct a wide-scale rollout of a program where we already know improvements are needed, **but they may continue to offer the program in Sonoma and Alameda counties in the interim**." (Emphasis Added.) D.12-11-015, Section 3.3.1.1, page 37. *See also* Conclusion of Law, para11, page 118 .

- Increase general knowledge and awareness among homeowners of energy efficiency and green upgrade practices and benefits, and encourage a long-term transition toward energy efficient behaviors and purchases.
- Complete the public and professional knowledge base of energy efficiency through a marketing and outreach campaign that takes advantage of all benefits and co-benefits and creates tangible value propositions for all consumers
- Raise awareness of energy efficiency and green upgrades among relevant professional industries, including real estate, building trades, manufacturing/supply, and other industries.
- Streamline coordination of DSM programs across IOUs, local governments, and other organizations.
- Develop a skilled and motivated professional building workforce that incorporates energy efficient and green upgrade best practices into standard service delivery.
- Active participation in the process directed under D. 12-11-015 for the engagement of a market transformation specialist
- Close coordination with the Statewide Marketing agency, the California Center for Sustainable Energy, to greater establish the Energy Upgrade California brand and complement statewide awareness campaigns with local outreach that drives action in the marketplace

b) Market Description

Market actors include:

- **Building Performance Contractors —** Deliver whole-house energy upgrades and green upgrades to residential property owners
- **General Contractors —** Oversee delivery of residential remodels, other installation work. May perform direct installation or subcontract to specialty contractors. May be associated with whole house performance upgrades and Energy Upgrade California.
- **Specialty Contractors —** Have specialty license in HVAC and insulation. Deliver specialty installations, and may also perform whole house and general contracting duties. May be associated with whole house performance upgrades and Energy Upgrade California.
- **Green Building Professionals —** Building professionals, including general and specialty contractors, who are trained in delivering or assessing technical work that incorporates additional green building concerns beyond energy efficiency, such as outdoor water efficiency, indoor air quality, resource conservation, and low-impact development/site water

management. Serve as private contractors or on behalf of green building rating and incentive programs.

- Single-Family Residential Property Owners
- **IOUs —** Run energy efficiency incentive programs, especially Energy Upgrade California. Conduct contractor management, quality assurance, program administration for Energy Upgrade California.
- **Local Governments —** Set greenhouse gas emissions, energy savings, and other sustainability goals and implement programs to meet those goals. Support IOU energy efficiency programs through professional and customer outreach, coordination among local actors, and enforcement of code. Conduct or support pilot energy efficiency programs.
- **Other Energy Efficiency Programs —** IOU third party and local government partnership programs that implement direct install, weatherization, and other incentive programs.
- **Workforce Training Organizations —** Community colleges, professional training organizations, workforce investment boards, and nonprofit programs that provide job training and placement services for new professionals.
- **Non-Energy Efficiency and Conservation Programs —** Water utility, local government, green building, and other programs that promote and incent resource conservation, air quality, green products, and other non-energy efficiency efforts.
- **Other Relevant Professional Trades —**All professional industries and associations that may affect property owner and building professional choices, including real estate professionals, product manufacturers and suppliers. These actors affect behavior of their clients through the services they offer and products they provide.

c) Market Characterization and Assessment

Many of the market barriers associated with the single-family energy efficiency and whole house markets are described above in the Subprogram Description and Theory. The following market characterization and assessment is adapted from the analysis provided by BayREN members in the *Recommendations for Energy Upgrade California in the Bay Area* report.

i. Homeowner Awareness and Behavior

While the Energy Upgrade California website and local marketing campaigns have achieved an initial measure of homeowner education, most homeowners are not aware of how their homes work or the economic and environmental benefits of

energy efficiency. Building broader awareness and deeper knowledge will be a key to future program implementation and market transformation.

Homeowners vary in their motivations for undertaking energy efficiency work in their homes, including saving money, increasing comfort and health, and protecting the environment (among others). Given these different motivations, as well as demographic, geographic, economic, and ethnic diversity in the BayREN region, there is no one single marketing approach that will reach or resonate with everyone. Thus, there is a need to market to different segments with different strategies — social media, print, radio, TV, tabling events, workshops, etc. Such multi-faceted marketing should be employed in future programs. Additionally, marketing and outreach are inherently local, and marketing success in generating leads must leverage the character of a community, local events, and trusted messengers.

Currently, most marketing efforts for single-family energy upgrade programs are relatively uncoordinated, with PG&E providing little direct marketing and Participating Contractors varying significantly in their messaging and focus, as well as the veracity of their information regarding program options and incentives. Additionally, awareness amongst other industry actors is relatively low, and energy efficiency considerations have not yet entered into standard business practice for any relevant market actors.

Additionally, market barriers as described in the Subprogram Description and Theory, including high cost, lack of adequate financing, program complexity, and customer distrust of the contracting community, have dissuaded many interested customers from participating in the PG&E EUC-SF. As of yet, no simple coordinated solution has been provided to address many of these barriers.

ii. Professional Industry Awareness

Successful program implementation depends on a robust partnership between program administrators (IOUs or local governments) and those working in the industries related to those programs. Through the services these industries provide, they have a dramatic effect on homeowner and professional valuation of energy efficiency products and services. In D 12-05-015, the Commission directed the IOUs to take a strong role in engaging industry partners, especially those in the real estate industry. Local governments have been performing this work for several years, and stand poised to continue strengthening connections in these industries in partnership with the IOUs.

In 2011–2012, BayREN members conducted a concerted effort to make inroads into the real estate sector, and, to a lesser extent, the supplier market. Through the SEP period, BayREN members have engaged these actors, developed and delivered trainings for realtors, discussed approaches for listing and valuation of energy efficient and green-labeled homes, coordinated on strategic marketing approaches with local retailers, and developed pilot approaches for securing reduced costs for energy efficient and green products for Participating Contractors.

This work has created inroads into industries that are vital for long-term market transformation. That said, energy efficiency and green upgrades are still tangential considerations for most professionals in these industries, and are not yet part of the central message conveyed to customers and clients. In order to ensure that opportunities created within the last few years are not lost, local governments and IOUs must continue outreach and engagement, and develop models and messages that serve the core needs of these industries while promoting energy efficiency and other cross-resource conservation options. Through the Single-Family Upgrade Subprogram, BayREN members will continue to engage these actors through cross-promotion and marketing efforts, so energy efficiency can be a core consideration of these actors.

iii. Coordination of DSM Programs

Similarly, the ARRA period dramatically expanded the role of local governments within energy efficiency, and provided an unprecedented opportunity for collaboration and streamlining between local government actors, IOUs and third-party program providers (third-party providers, water utilities, nonprofit advocates, etc.). The ARRA period was successful in more firmly establishing relationships between these actors, and led to some successes in collaboration and streamlining between actors, most notably through the use of a common program brand and statewide website.

The ARRA period also demonstrated the significant challenges associated with coordination among large bureaucracies, and the marketplace confusion that can result from the involvement of so many actors. Notable examples include the coordination of marketing and outreach messages, coordination of incentive program offerings and messaging around those offerings, and sharing of program data amongst organizations for program evaluation. It is clear that continued coordination, as well as the long-term development of governance structures that can effectively manage such issues, is required for the market to mature and effectively penetrate into professional and customer awareness.

iv. Professional Building Workforce

To successfully penetrate the market, Energy Upgrade California needs to provide a distinct, consistent, and long term advantage to building industry professionals over business as usual. In its current program design, Energy Upgrade California fails to make a convincing case for professionals to provide energy efficiency services and develop the systems necessary to work with Energy Upgrade California. Because of this fundamental challenge, efforts to recruit, train, and place new professionals have been impaired.

Energy Upgrade California's failure to provide a strong business case to building professionals has significant impacts that go beyond the success of the program. As

identified by UC Berkeley in 2011,[24] proper incentive program design is a key to increasing the overall quality of any installation in the residential sector (especially HVAC installations) and shifting the "low-road" environment of residential energy efficiency to one that values the quality of installations over the cost of the installation. In the energy efficiency sector, since the quality of installations affects the energy use of a building, it becomes vital to the long-term mission of the Commission to ensure that Energy Upgrade California and other incentive programs are attractive to residential building professionals.

To increase the business proposition of Energy Upgrade California, program implementers need to remove the market barriers that stand in the way of market penetration. This would include such coordinated actions as a re-evaluation of the program design and introduction of accessible upgrade packages, more effective marketing, strong consumer advocacy and support, targeted contractor support, introduction of viable financing mechanisms and reduction of other cost and process barriers.

If implementers can remove these barriers in the coming years, consumer interest will create a demand for qualified and trained professionals, which can be filled by trainers and other workforce actors, working alongside program implementers.

[24] Zabin, C. et al. *California Workforce Education & Training Needs Assessment For Energy Efficiency, Distributed Generation, and Demand Response*. Donald Vial Center on Employment in the Green Economy, Institute for Research on Labor and Employment, University of California, Berkeley. 2011.

d) Proposed Interventions

Proposed interventions have been described throughout this subprogram description. Along with the Financing Subprogram (BayREN04), all proposed interventions are focused on reducing the technical, cost, and process barriers to making Energy Upgrade California a successful program. A summary is provided in the table below.

BayREN01 Figure 12: Market Transformation Barriers and Interventions

Barrier	Proposed Intervention
Program design barriers—required audit, program complexity	Audit incentives, Flex Package incentive, Home Upgrade Advisor
Program cost barriers	Audit incentives, Flex Package incentive, financing (BayREN04)
Lack of customer awareness	Broad and targeted marketing campaign that incorporate all energy efficiency benefits and co-benefits, contractor sales training
Lack of professional/industry awareness	Professional outreach as part of marketing campaign
Contractor skills gap	Contractor sales, administrative, installation, and other technical trainings; Home Upgrade Advisor to support contractor sales

e) Program Logic Model: See Program Logic Model in Attachment 1

f) Market Transformation Indicators (MTIs) and Evaluation Plans

Resolution E-485 (December 2, 2010) Appendix B, lists adopted Market Transformation Indicators for the 2010–2012 Energy Efficiency Portfolio, which were then amended by Energy Division in 2011 at the direction of the Commission. To ensure consistency with adopted Market Transformation Indicators and Program Evaluation strategies, BayREN proposes the following Market Transformation Indicator (based upon the Adopted Whole House Retrofit MTIs, adapted for multi-family properties, and PG&E's 2013–2014 EUC-SF Subprogram PIP):

- Whole House MTI 2: The proportion of households that elect to perform comprehensive energy upgrades. Metric Type 3.

Program evaluation will be conducted in coordination with evaluation, measurement, and verification (EM&V) activities conducted on behalf of the Commission and PG&E. BayREN members will participate as possible in all data collection and interpretation activities, as directed by the Commission and in coordination with the guidance offered by the statewide market transformation consultant.

13. Additional information as required by Commission decision or ruling or as needed: N/A

III. SUBPROGRAM BAYREN02

1. Subprogram Name: BayREN Comprehensive Multi-Family Subprogram

2. Subprogram ID number: BayREN02

3. Type of Subprogram: Regional Energy Network

4. Market sector or segment that this subprogram is designed to serve:

a) _X_ Residential

Including Low Income?	_X_ Yes __ No
Including Moderate Income?	_X_ Yes __ No
Including or specifically multi-family buildings	_X_ Yes __ No
Including or specifically Rental units?	_X_ Yes __ No

b) __ Commercial (List applicable NAIC codes: _____)

c) __ Industrial (List applicable NAIC codes: _____)

d) __ Agricultural (List applicable NAIC codes: _____)

5. Is this subprogram primarily a:

a) Non-resource program ___ Yes _X_ No

b) Resource acquisition program _X_ Yes ___ No

c) Market Transformation Program _X_ Yes ___ No

6. Indicate the primary intervention strategies:

a) Upstream ___ Yes _X_ No

b) Midstream ___ Yes _X_ No

c) Downstream _X_ Yes ___ No

d) Direct Install ___ Yes _X_ No

e) Non Resource ___ Yes _X_ No

7. Projected Subprogram Total Resource Cost (TRC) and Program Administrator Cost (PAC)

TRC 0.67 PAC 0.97

8. Projected Subprogram Budget

BayREN02 Table 1: Projected Subprogram Budget, by Calendar Year[25]

	Program Year		
BayREN02 Multi-Family	**2013**	**2014**	**Total**
Admin ($)	$132,500	$132,500	$265,000
General Overhead ($)	$0	$0	$0
Incentives ($)	$937,500	$2,812,500	$3,750,000
Direct Install Non-Incentives ($)	$1,416,875	$1,416,875	$2,833,750
Marketing & Outreach ($)	$250,000	$75,000	$325,000
Education & Training	$72,000	$48,000	$120,000
Total Budget	**$2,808,875**	**$4,484,875**	**$7,293,750**

9. Subprogram Description, Objectives and Theory

a) Subprogram Description and Theory

The goal of the BayREN Comprehensive Multi-Family Subprogram is to increase the number of multi-family upgrades for energy efficiency and other resource conservation measures. The subprogram will achieve this goal by providing customized technical assistance, supporting participation in a wide range of existing programs, and providing a low-cost multiple-measure incentive to fill an existing gap in energy efficiency incentives available to the multi-family sector. The program components consist of:

- Targeted outreach

[25] See BayREN01, Table 1- Projected Subprogram Budget, by Calendar Year for category definitions.

- Customized technical assistance (see Additional Services section below)
- Bundled measure incentives — requiring two or more measures, yielding an average of 12% energy savings (see Measures and Incentive Levels section below)
- Workforce development support for multi-family-specific trades

Through these components, the BayREN Comprehensive Multi-Family Subprogram addresses the following market barriers to comprehensive upgrades:

Market confusion around which programs will apply to the various multi-family building subsectors and upgrade scopes. Technical assistance (TA) will walk properties owners through the steps of initiating an energy upgrade, and introduce them to the appropriate programs. TA will refer projects to the PG&E single-point-of-contact, as well as relevant non-IOU energy and non-energy programs. In particular, the TA will leverage low-income government programs and water utility programs. The TA providers will be familiar with the eligibility requirements and program offerings of the wide variety of available programs, and will coordinate closely with program administrators to ensure a seamless referral experience to the property owner.

Lack of utility data tracking and analysis by property owners/managers. TA will include entering properties into utility tracking and benchmarking software, in order to inform project-specific decision making and add to the development of a robust database of local multi-family energy use profiles.

Lack of accessible analytical methodologies, which leaves property owners ill-equipped to evaluate the technical and economic potential for upgrading their properties. TA will use energy savings analysis software specifically designed for the multi-family sector to identify each project's opportunities.

Lack of access to affordable capital to pursue upgrading opportunities. TA will connect property owners interested in upgrades to financing options and incentives that can offset the capital requirements. TA will assist property owners in evaluating financing options, including PG&E on-bill financing or MF financing products (when available), BayREN Multi-Family Capital Advance Pilot, commercial PACE programs, BayREN PAYS® Financing Pilot, and other public or private sources of financing.

Lack of long-term energy planning with property owners/managers. Create a long-term investment plan for each client to achieve the full energy efficiency potential. The plan may extend beyond the program cycle, in order to show how full implementation of the plan will continue to provide positive cash flow for the owner. BayREN will provide post-

installation guidance to encourage property owners to undertake further upgrades. BayREN will track and maintain contact with customers about continued implementation of the plan beyond the program cycle (assuming there is continued funding).

Lack of energy efficiency knowledge in the multi-family-specific building trades. Training will be provided to the key multi-family-specific trade of central HVAC and DHW contractors.

Diversity of building types, which prevents a single approach for all buildings. This program features customized TA that will offer guidance specific to each building's particularities.

Diversity of upgrade triggers within the lifetime of a multi-family building. During a multi-family building's lifecycle, there are specific times when it is most cost-effective and convenient for the owners to make energy and green upgrades. TA providers will be cognizant of these trigger times and will recommend approaches that effectively leverage these opportunities.

Split incentives that prevent property owner investments and prevent tenants from receiving energy efficiency benefits. TA will be tailored to the metering configurations and needs of each building. It can include assistance with green lease agreements and capital expense pass-through mechanisms as ways of balancing the split incentive. Utility tracking assistance may include guidance on obtaining utility bill data for tenant meters to inform decisions about in-unit upgrades. TA will also evaluate opportunities to use innovative on-bill financing mechanisms (e.g., BayREN PAYS® Financing Pilot) that may allow responsibility for repayment to be assigned to tenants.

The BayREN Multi-Family Subprogram will participate in any CPUC mid-cycle workshop to report on program progress in cooperation with all implementers of multi-family pilots during 2013 and 2014. The feedback and outcomes from the workshop will inform revisions to program design. Expected outcomes of the mid-cycle evaluation process are identified under the EM&V discussion in this Plan.

b) Subprogram Energy and Demand Objectives

BayREN02 Table 2: Projected Subprogram Net Energy and Demand Impacts, by Calendar Year[26]

	Program Years		
	2013	2014	Total
BayREN Comprehensive Multi-Family Program			

[26] Net energy savings calculations were based upon the weighted to date energy savings generated through the BayREN Multi-Family E-3 calculator.

GWh	0.35	1.02	1.37
Peak MW	0.28	0.83	1.11
Therms (millions)	0.04	0.11	0.15

c) Program Non-Energy Objectives

i. SMART non-energy objectives of the subprogram

- During the period 2013–2014, 50 contractors in the multi-family building trades will be trained. Metric Type 2b.
- During the period 2013–2014, 5,000 units will undergo energy efficiency upgrades through the BayREN Bundled Measures Program. Metric Type 2b.
- During the period 2013–2014, 225 projects, representing 9,000 units, will receive technical assistance through the BayREN subprogram.
- During the period 2013–2014, 300 property owners or managers will participate in outreach events or activities (each property owner may own multiple properties). Metric Type 2b.

ii. See above.

iii. Relevant baseline data

- With State Energy Program funding, approximately 70 auditors and 30 building operators were trained over three trainings.
- The State Energy Program tracked approximately 800 multi-family units in completed upgrade projects in the Bay Area.[27]
- With the Better Buildings Program funding, approximately 30 projects representing 2,000 units have received some form of technical assistance in Alameda County over 18 months.
- With ARRA funding, approximately 261 projects representing approximately 10,000 units have received some form of technical assistance in San Francisco over 22 months.
- The Alameda County program's outreach activities engaged 60 property owners, resulting in 50 project interest forms received during the same period.

These baseline estimates represent a program that was run in one or two counties, in the absence of substantial whole-building or bundled measure-style incentives.

iv. Quantitative Subprogram targets (PPMs)

[27] *Recommendations for Energy Upgrade California in the Bay Area*. ABAG, 2012.

BayREN02 Table 3: Quantitative Subprogram Targets (PPMs)

Target	2013	2014
Number of units incented	1,250	3,750
Number of multi-family contractors trained	25	25
Number of projects & units receiving technical assistance	75 projects 3,000 units	150 projects 6,000 units
Number of property owners reached by outreach activities	150	150

d) Cost-Effectiveness/Market Need

Cost-effectiveness for this subprogram was established using the E-3 Calculator, identifying expected projects and associated modeled savings (see below) by climate zone. The number and distribution of projects was estimated based upon program goals and expected uptake as well as U.S. Census data on the number of multi-family units within the region. Projects entered in the E-3 calculator included those in the Bundled Measures Incentive Program.

e) Measure Savings/ Work Papers

i. Indicate data source for savings estimates for program measures (DEER, custom measures, etc.)

For the multi-family energy savings calculations, typical upgrade packages and the associated costs were determined for each of the climate zones. Existing building scenarios were prepared to account for the presence of a gas furnace, heat pump, or electric resistance heater, with central and individual domestic hot water (DHW) systems modeled for each heating type. All conditions were represented within low-rise and high-rise multi-family buildings. Each package scenario was modeled in EnergyPro using a typical unit configuration, thus accounting for interactive effects of implementing multiple measures. The kWh savings, therms savings, and average kW avoided were then tabulated, and the distribution of projects across each BayREN target climate zone was determined using a weighted distribution based on U.S. Census data for county population.

ii. Indicate work paper status for subprogram measures

BayREN02 Table 4: Work Paper Status

#	Work Paper Number/Measure Name	Approved	Pending Approval	Submitted but Awaiting Review	Not Yet Submitted
1	Bundled Measure Incentive Program		X		

10. Program Implementation Details

a) Timelines

BayREN02 Table 5: Subprogram Milestones and Timeline

Milestone	Date
Project Initiation Meeting	1/31/2013
Technical Consultant RFPs Issued — software, training, TA & QA provider	2/1/2013
Technical consultants selected and contracted	3/31/2013
Technical assistance services set up	5/30/2013
Program collateral developed	5/30/2013
Software development completed	6/30/2013
Workforce training session 1 completed	6/30/2013
TA and bundled measure roll-out	7/1/2013
Targeted local and regional outreach for project recruitment	7/1/2013 – ongoing
Workforce training session 2 completed	3/31/2014
Installations completed	10/31/2014
Conclude pilot program	12/31/2014
Quarterly progress reports	3/31/2013 – 12/8/2014
Final program reporting	12/31/2014

b) Geographic Scope

BayREN02 Table 6: Geographic Regions Where the Subprogram Will Operate

Geographic Region	Multi-Family Subprogram	Geographic Region	Multi-Family Subprogram
CEC Climate Zone 1		CEC Climate Zone 9	
CEC Climate Zone 2	X	CEC Climate Zone 10	
CEC Climate Zone 3	X	CEC Climate Zone 11	
CEC Climate Zone 4	X	CEC Climate Zone 12	X
CEC Climate Zone 5		CEC Climate Zone 13	
CEC Climate Zone 6		CEC Climate Zone 14	
CEC Climate Zone 7		CEC Climate Zone 15	
CEC Climate Zone 8		CEC Climate Zone 16	

c) Program Administration

BayREN02 Table 7: Program Administration of Program Components

Program Name	Subprogram Component	Implemented by BayREN staff	Implemented by contractors to be selected by competitive bid process	Implemented by contractors NOT selected by competitive bid process	Implemented by local government or other entity (X = Yes)

Bundled Measures Incentive Program	Targeted Outreach				X
	Technical Assistance		Energy efficiency consultants		X[28]
	Bundled Measure Rebates				X
	Software development			X, TBD based on software specifications	
	Site visit conducted by Site Surveyors		X		X[29]
	Workforce Development, Outreach and Training		X		X

d) Subprogram Eligibility Requirements

i. Customers

BayREN02 Table 8: Customer Eligibility Requirements

Customer Eligibility Requirement
Five or more attached dwelling units
Property located in the 9-County Bay Area
Market rate, low-income, and affordable housing are all eligible

[28] Where existing staff are qualified.
[29] Where existing staff are qualified.

ii. Contractors/Participants

BayREN02 Table 9: Contractor/Participant Eligibility Requirements

Role	Eligibility Requirement
TA Provider	Qualifications equivalent to a professional firm delivering comprehensive multi-family building audits. Audit team must have the ability to provide comprehensive TA, including advice and referrals for non-energy efficiency DSM measures and non-energy measures. TA Provider will be selected by RFP process for regional implementation except in counties where existing multi-family program staff meets TA Provider qualifications.
Site Surveyor	HERS II Multi-Family Rater or equivalent qualified professionals with supplemental software training (i.e., completed California Multi-family Existing Building training with either GreenPoint Rated Existing Multi-family or BPI Multi-family Building Analyst certification).
Installation Contractors	Licensed in appropriate trade
QA Provider	Same as TA Provider (may be same entity or subcontracted to another entity with equivalent qualifications)

e) Program Partners:

i. Manufacturer/Retailer/Distributor partners

This subprogram will not include any upstream activities, and therefore will not include any manufacturer/retailer/distributor partners.

BayREN02 Table 10: Manufacturer/Retailer/Distributor Partners

Manufacturer/Retailer/Distributor Partner Information	BayREN02
Manufacturers enrolled in program	None
Manufacturers targeted for enrollment in program	None
Retailers enrolled in program	None
Retailers enrolled in program	None
Retailers targeted for enrollment in program	None
Distributors enrolled in program	None
Distributors targeted for enrollment in program	None

ii. Other key subprogram partners

Building Owners and Managers Association

California Apartment Association

City and County of San Francisco

City of Suisun City

County of Contra Costa

County of Marin

County of Napa

County of San Mateo

County of Santa Clara

County Tax Assessors Offices

HERS Providers (CHEERS, CalCERTS)

IOU program implementation organizations

Marin Clean Energy Authority

National Apartment Association

Other Industry associations

Pacific Gas& Electric

Public Agencies

Property owners

Service providers

Sonoma County Energy Independence Program

Sonoma County Regional Climate Protection Authority

StopWaste.Org (Alameda County Waste Management Authority)

Contractor Associations (EGIA, ACCA, etc.)

f) Measures and Incentive Levels

Bundled Measures Incentive

The BayREN proposes to pilot a bundled measure incentive that is aimed at filling the market gap between single-measure and whole building utility programs. The bundled measure approach is designed to capture projects that have smaller budgets and scope of work, and encourage installation of two or more measures that will result in a program average of 12% whole-building energy savings.

The bundled measure approach is appropriate for the medium-scope trigger events, ranging from:

- Replacement of one or more pieces of equipment — other measures may be added to increase total energy savings of project scope
- Unit turnover allowing access to several units — consider a bundle of in-unit measures in addition to some central systems/common area work
- Upgrade — depending on the extent of the upgrade and how many building components are affected, this could be a bundled measure or whole building approach

The bundled measures pilot provides a customized list of measures based on utility bill information, existing building characteristics, and a site survey. The TA provider will utilize program software to calculate projected savings. The estimated energy savings per

measure will vary by building type and take into account interactive effects. The pilot is designed to offer the following solutions:

- Incorporates actual utility usage data to inform measure recommendations
- Offers an alternative to costly energy audits for smaller project scopes and smaller buildings
- Provides property managers with basic energy savings information that may help them justify pursuing a more comprehensive audit later
- Reduces reliance on costly audits, which may depend upon energy models with questionable accuracy (they may not necessarily provide more savings assurance than a refined deemed savings calculation)
- Can motivate further or more extensive work, by layering complementary or additional measures onto a planned single measure
- Allows property owners to choose from a broad range of energy efficiency measures and utilize contractors that they trust
- Allows property owners to include emerging technologies in their upgrade scopes, and allows the program to obtain data to track their energy saving performance (see asterisked measures in Figure 1 below)

Measures eligible under the bundled measures incentive include measures that can be modeled in the CEC approved Energy Pro software and specifically the Energy Pro Lite module to be developed. The full list of such measures is extensive, and a short list of common measures is provided below for illustration purposes. The actual bundles of measures may include measures not listed but which can be input to the modeling software. With the scope of the project defined during technical assistance, the property owner will have the opportunity to choose from an extensive pool of modeled measures to meet minimum program participation thresholds whereby the bundle must contain at least two measures and show a minimum of 8% whole building energy savings performance above existing conditions with the hope that projects will actually achieve an average of 12% performance improvement based on modeled measures. While this is the approach for determining program compliance with the property owner, the individual measures in the bundle of measures approved for program participation will be matched with deemed savings estimates for the purposes of reporting program savings to CPUC, and for comparing this performance based program with Multifamily direct install and individual measure programs which report on a deemed savings basis. The eligible measures, thresholds for program compliance and assumptions in energy savings predictions and reporting will be refined based on program monitoring and feedback; and in order to remain complementary with other incentive programs offered in the market.

BayREN02 Figure 1: Bundled Measure Program Eligible Measures

Domestic Hot Water (Individual and Central)	
Natural gas storage DHW	Pipe insulation

Electric storage DHW	Circulation pump
DHW heaters/boilers	Heat pump DHW
Boiler controls	Tankless/instant DHW
Recirculation controls	Tank insulation
Condensing gas water heater*	Combined space and water heater*
Space Heating and Cooling (Individual and Central)	
Natural gas hydronic heat boiler/space heating hot water boilers/hydronic systems	Ducted evaporative cooling
Natural gas steam heat boiler/space heating low pressure steam boilers	Duct insulation/pipe insulation
Natural gas furnace	Duct sealing
Boilers for steam heating	Refrigerant charge verification
Cogeneration systems	System airflow verification
Package terminal heat pump	System fan wattage verification
Package terminal air conditioner	Variable speed motor
Room air conditioner	Programmable thermostat
Chillers	Cooling towers
VAV systems	HRV
System fan size/hp	Ventilation schedules

Bathroom fans	Tank insulation
Ductless air-conditioning for common areas	High performance rooftop unit*
Variable refrigerant flow for common areas	
Appliances	
Clothes washer (in-unit and common area)	Dishwasher (in-unit)
Refrigerator (in-unit)	Vending Machine Controller (cooled; common area)
Clothes Dryer	
Lighting (In-unit and Common Area; Interior and Exterior)	
CFL bulb (screw-in)	Cold cathode lamps
CFL fixture (hard-wired)	Ceiling fans
Screw-in CFL reflector bulb	LED exit signs
Linear fluorescent fixtures and bulbs	Timer
Occupancy sensor	Bi-Level lighting
LED night lights	Occupancy sensors
De-lamping	Photocells
LED interior lighting*	LED site lighting*
Advanced HID lighting for site lighting*	Advanced lighting controls
Task lighting	Daylighting
Building Envelope	
Attic/roof insulation	Cool roof
Wall insulation	Radiant barrier
Floor insulation	Windows

Air sealing	Overhangs
Weather-stripping	
Pools	
Filtration pump and motor	Pool booster pump

*Emerging technologies

Ineligible Measures
The following measures are explicitly identified as being ineligible to count toward the energy savings in the bundled measures incentive. However, the TA provider may recommend these measures and refer projects to other programs that provide incentives for these measures, namely the California Solar Initiative.

- Solar thermal for DHW, space heating, pool and heating
- Solar photovoltaic

BayREN02 Table 11: Summary Table of Measures, Incentive Levels, and Verification Rates

Measure Group (Bundled Measures — Average 12%)	**Market Actor Receiving Incentive or Rebate**	**BayREN**	
		Incentive Level	**Installation Sampling Rate**
Domestic Hot Water (Individual and Central)	Property owner	$750/Unit	100%
Space Heating and Cooling (Individual and Central)			
Appliances			
Lighting (In-unit and Common Area; Interior and Exterior)			
Building Envelope			
Pool Pumps			

g) Additional Services

Technical Assistance to Identify Approach and Potential Measures, Begin Utility Tracking, and Refer to Resources

The technical assistance offered through this subprogram is intended to serve a broad range of properties at different points in a multi-family building's life cycle. It will assist property owners by providing them with customized recommendations and facilitating their participation in rebate and financing programs. TA will be provided as a live phone-based service from a centralized location. In jurisdictions where in-person TA is available through other complementary programs, the BayREN TA provider may refer projects to the local in-person TA provider as appropriate.

Depending on the needs of each property and its owner/manager, TA can include property analysis and upgrade approach/measure recommendations, program and financing referral and guidance, and project management guidance.

Upgrade Approach and Measure Recommendation

Technical assistance begins with a consultation on the property owner's interests and property characteristics. The technical advisors will leverage newly developed IT tools and additional analytic methodologies to identify appropriate approach and upgrade measures for each building. They will then connect property owners to incentive and assistance programs relevant to their properties, including the IOU programs (through the single-point-of-contact), non-IOU energy (low-income resources, weatherization, etc.), and non-energy resource programs, like water utility incentives and green building programs. The project management component may include comparison of contractor bids and referral to certification programs that qualify energy auditors/raters.

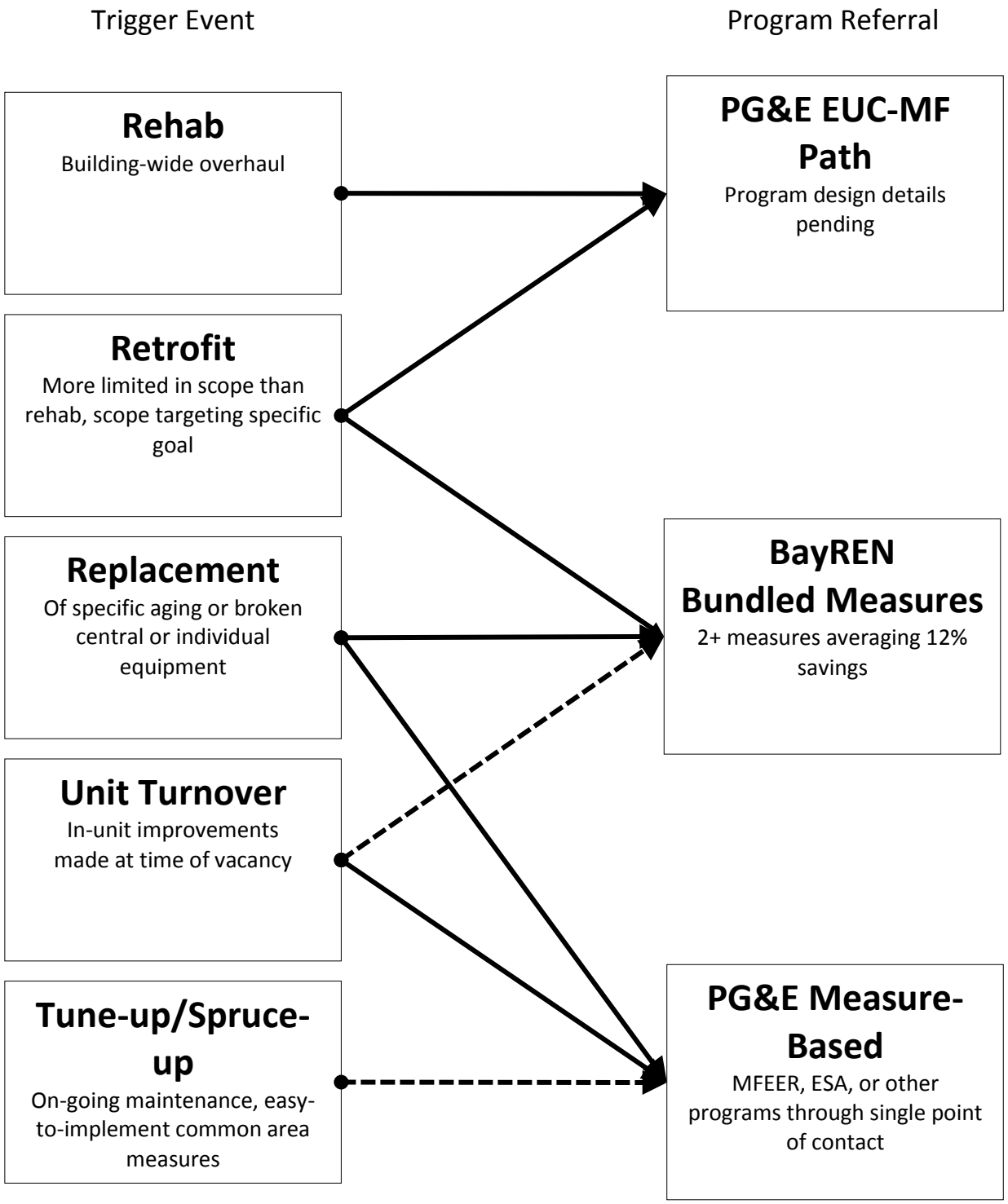
Program Referral

Technical advisors will refer projects to the appropriate utility programs, or single-point-of-contact where applicable. Figure 2 below shows the likely pathways for project referrals in the program, based on trigger events for making improvements.

Technical assistance providers will screen projects appropriate for whole-building upgrades, which will typically be those that have a significant upgrade or rehabilitation scope or work. For these projects, TA will support the project's participation in the PG&E Energy Upgrade California Multi-Family (EUC-MF) Path.

The opportunity to participate at the whole-building level is limited to a relatively small portion of the building stock. Without major planned work already budgeted, the capital requirements of a whole-building upgrade are a major barrier. Utility rebate amounts will generally not be sufficient to justify an owner pursuing major improvements. For property owners interested in pursuing a moderate scope of improvements, TA will offer assistance with the bundled measure approach.

BayREN02 Figure 2: Trigger Event Related Program Direction Through Technical Asssitance



For smaller scopes consisting of individual measures or very limited budgets, TA will refer projects to the PG&E single-point-of-contact for further assessment of eligibility for Multi-Family Energy Efficiency Rebates (MFEER), Energy Savings Assistance (ESA), and other PG&E programs. However, these programs do not include all measures that are of interest to building owners, and the incentive levels are based on individual measures, not the overall energy savings that can be achieved by pursuing multiple measures. The program will be tracking the participation of projects and expects that property owners will come back to do additional improvements throughout the life cycle of the building. Where appropriate, the technical advisor will refer projects to the utility single-measure rebate program (MFEER, ESA).

Program Referral for Low-Income Sector Services

The referral component will serve properties with low-income tenants with specific referral to the income-based programs. The advisor can provide guidance on the steps required to qualify the property based on tenant income documentation. See Table 15 for specific income-qualified programs that may be included in the referral service.

Program Referral to Water Efficiency Programs

The TA will include recommendations and program referral for water efficiency measures. In the multi-family sector, water heating represents a significant portion of total energy use. Water efficiency devices such as efficiency clothes washers, low-flow showerheads, and faucet aerators will save both water heating energy and water consumption. Reduced water consumption also represents additional upstream energy savings related to water treatment and distribution. The TA will approach water conservation comprehensively to include other measures, such as low-flow toilets. Program referral will direct property owners to the appropriate water utility programs for rebates or direct install opportunities.

Coordination with PG&E Local Government Partnership or CCA Energy Efficiency Programs

Jurisdictions in a few counties in the BayREN region also have access to multi-family services through PG&E Local Government Partnership (LGP) or CCA energy efficiency programs. The BayREN multi-family program will coordinate closely with the LGP implementers to ensure that the offerings to a property owner are complementary and not duplicative. BayREN's multi-family program focuses on leveraging ARRA-funded online tools with phone-based technical consultations, an alternative multi-family incentive program, and a Capital Advance financing pilot. The county-level multi-family programs may include in-person technical assistance, subsidies for audits, single-measure or performance-based rebates and additional marketing and outreach. These services are complementary of BayREN and can be leveraged for greater overall program participation.

Specifically, BayREN's Comprehensive Multi-family Subprogram delivery will be coordinated with:

- San Francisco Energy Watch (San Francisco)
- East Bay Energy Watch (Alameda County, Contra Costa County)
- Marin Energy Authority (Marin County, City of Richmond)

Financial Analysis and Referral to Financing Options

The financial analysis component will include comparison of financing options, and may incorporate a cash flow analysis and a long-term capital plan including all feasible energy efficiency measures. Projects undertaking work under either the bundled measures approach or the PG&E EUC-MF will be offered assistance with financing options. The TA provider will be familiar with the eligibility criteria, benefits, and limitations of several financial products. In particular, the TA provider will be able to provide guidance on the PG&E On-bill financing or multi-family financing products (when available); BayREN's Multi-Family Capital Advance Pilot (when approved) and PAYS® Pilot; and financing offered by other public or private sources including existing commercial PACE options..

Site Visit for Bundled Measure Projects

For projects applying for the bundled measure incentive, the TA provider will schedule a site visit by a qualified Site Surveyor. The site visit will consist of verifying the existing building conditions that were described to the TA provider, and confirming the appropriateness of the bundled measures identified for the project.

BayREN02 Table 12: Additional Services

Additional Services that the Subprogram Will Provide	To Which Market Actors	BayREN
Technical assistance	Property owner	Fully incented
Bundled measures – site visit	Property owner	Fully incented

h) Subprogram Specific Marketing and Outreach

The targeted outreach will build upon lessons learned through previous multi-family efforts, and focus on developing compelling messaging and strategic delivery through highly targeted channels. The outreach will leverage the existing Funding Finder and marketing collateral developed through SEP that studied energy upgrade messaging in the multi-family sector.

Developing Compelling Messaging and Collateral

Feedback from the multi-family sector indicates an interest in a centralized resource and a customized approach to upgrades. The messaging regarding the BayREN Comprehensive Multi-Family Subprogram will therefore emphasize:

- The presence of an incentive option to fit any multi-family property
- The technical assistance available to help decide on the best approach
- Testimonials and case studies from successfully complete upgrades

Collateral will be available in multiple media, including PDFs, web pages, some print, and text available for inclusion in industry newsletters.

Utilizing Existing Channels

Targeted outreach will leverage existing organizational structures and communication channels, specifically industry associations, local government departments, and service providers and property management associations.

- Multi-family industry organizations, including rental housing associations, property management associations, the California Apartment Association, apartment owner associations, the nonprofit Housing Association of Northern California, the East Bay Housing Organization, and individual homeowners associations and real estate investment trusts
- Public agencies and programs with a housing-related mission, including local government departments or agencies for housing and community/economic development. Materials will be provided for distribution to their lists
- Service providers, including property management companies, HVAC maintenance companies, mechanical engineers, general contractors, etc.

Leveraging Trigger Events

The trigger events identified earlier are often accompanied by an opportunity for interfacing with a property owner. Specifically, two points of interaction with government are:

- Affordable housing projects undertaking public finance through local or state entities

- Building department permits for one or more improvement measures that could lead to participation in a bundled measure upgrade

i) Subprogram Specific Training

In multi-family buildings, water heating systems account for a much higher portion of energy consumption compared to single-family buildings. Additionally, the central system trades have been underserved by single-family oriented contractor training opportunities. To ensure that a pool of knowledgeable central systems contractors is available to support the demand created by the incentive, training will be offered for these trades. Because of the sheer number of specialized subcontractors on any given comprehensive multi-family rehab project, it does not make sense to require a single contractor certification for all contractors and sub-trades. Rather, it will be more effective to target very specific professional training at the sub-trade that has the greatest potential for delivering efficiency improvements: contractors who work on central HVAC and water heating systems in multi-family buildings.

The program will offer targeted training to license boiler contractors (C-4 contractors), HVAC contractors (C-20 contractors), plumbers (C-36 contractors) and related building operators. The training will cover methods of redesigning existing systems to increase efficiency and conducting system tune-up inspections and repairs.

Specialized training will give these contractors the expertise needed to optimize the design, specifications and operations of these systems. This training will focus less on the verification methods and more on the efficiency gains to be made to conventional construction and operation practices. This training also includes combustion safety measures, and could incorporate retro-commissioning. The focus on water heating also provides an opportunity to include water efficiency training, which will promote energy savings on-site as well as in upstream water treatment and distribution energy.

j) Subprogram Software and/or Additional Tools

i. Subprogram Software

The subprogram will leverage existing energy analysis software to develop an energy savings assessment and tracking tool that will provide feedback data for refining the bundled measures list and projected savings. Through ARRA funding, a suite of multi-family tools was developed, including the EUC Multifamily Funding Finder and EUC Multifamily Portfolio Tracker. The Funding Finder makes general upgrade recommendations based on basic information on existing building characteristics, and connects users to applicable incentive programs. The Portfolio Tracker allows utility data tracking and upgrade project tracking. Under the BayREN Multi-family Subprogram, a module to existing CEC approved compliance software will be developed, herein referred to as Energy Pro Lite.

The ARRA funded EUC IT tools and Energy Pro Lite tool used in combination will serve three main purposes:

- **Energy Modeling Lite:** Provide property owners with prioritized measures based on estimated energy savings that are informed by project-specific details
- **Project Tracking & Reporting:** Provide program administrators and the EM&V process with an organized database of participating projects and their upgrade profiles
- **Measure Feedback & Refinement:** Provide property owners and program administrators with feedback on actual savings per bundle of measures to refine savings estimates.

Energy Modeling Lite

The assessment and tracking tool will utilize some modeling calculations based on basic information about the existing building and proposed improvements. These assumptions and algorithms will align with industry accepted modeling tools. However, the data input requirements will be less extensive than full modeling software programs, and will not require a full on-site audit. This assessment tool is designed to reduce the barrier to upgrades caused by the cost and time investment required to complete a full audit and energy model run. The tool will be designed for data exchange compatibility with existing local government CRM systems.

As described in the Eligible measures section above, the BayREN proposes to build the energy modeling "lite" tool by modifying the Energy Pro software to essentially generate a deemed savings projection based upon very preliminary project inputs. This will enable program implementers and Technical Assistance providers to quickly establish a minimum savings projection for program participation, prior to requiring property owners to undertake a costly audit. It is not the intent to use the software program to calculate exact savings numbers or to base incentive amounts upon the predicted savings; it is rather to provide an efficient upfront analysis tool that will estimate a minimum assumed savings similar to how current IOU programs (e.g., ESAP & MFEER) utilize deemed savings.[30]

The software modifications needed to create the Energy Pro Lite module is expected to take six to eight weeks of development time. It will build upon work conducted with CEC staff and software developers to improve the software's applicability to multi-family buildings with State Energy Program funding. The BayREN will engage the key stakeholders including multifamily experts, software developers, CEC and CPUC in review and input during tool development via the MF HERCC HERS II tools task group and will ensure that savings assumptions conform to CPUC's requirements for energy savings analysis and reporting.

[30] This approach is essentially the same as the simplified Sim Calc Version of Energy Pro that PG&E funded for use in its Commercial New Construction programs. PG&E and SCE account representatives who do not have energy modeling training are using this version of Energy Pro Sim Calc with customers to generate preliminary savings estimates for Commercial New Construction program participation. That program works off of 40+ prototypes that are populated based upon occupancy, location, and square footage.

Project Tracking and Reporting

Project participation will be tracked in EUC Multifamily Portfolio Tracker. The data gathered in this system will allow for reporting on metrics achieved and detailed characteristics of the participating projects. The tool has the capability to track the following metrics:

- Name, contact, location of the property and property owners
- Building characteristics including size, units, system types and configurations
- Measures installed
- Projected energy savings (if measure list was developed through standard modeling software)
- Actual utility bills pre- and post- installation for common area and master meters, and any tenant meters, for which data authorization is obtained
- Actual savings over baseline

The data will be made available during regular reporting, and for evaluation in mid-cycle review. The BayREN will engage in on-going coordination with Energy Division to ensure appropriate data collection for EM&V needs.

Measure Feedback and Refinement

The tools will also provide a mechanism for feedback to refine measures. Combined with a sampling of extensive on-site verification and gathering of building metric data by the QA providers, this tracking mechanism will provide a robust dataset for analyzing and improving the understanding of multi-family upgrade measures. As needed, adjustments will be made based on the findings on the appropriate level of complexity of data input for the energy savings estimates of bundled measures.

ii. Audit Requirements

Pre-implementation audit required ___ Yes _X_ No

Post-implementation audit required ___ Yes _X_ No

iii. Audit Incentives

While the BayREN subprogram does not offer audit incentives, TA will refer property owners to other sources that may offer audit incentives. Investment grade audit costs can also be covered by multi-family financing.

BayREN02 Table 13: Post-implementation Audits

Levels at Which Program Related Audits Are Rebated or Funded	Who Receives the Rebate/Funding (Customer or Contractor)

None	N/A

k) Subprogram Quality Assurance Provisions

BayREN02 Table 14: Quality Assurance Provisions

QA Requirements	QA Sampling Rate (Indicate Pre/Post Sample)	QA Personnel Certification Requirements
Site visit — by program site surveyor	100% of bundled measure (pre)	HERS II MF Rater or equivalent qualified professionals with supplemental software training
QA on post-installation to verify installation and quality	100% of bundled measures (post)	See TA provider qualifications

For projects that apply for the Bundled Measure incentive, QA for pre- and post-installation will be conducted on-site and verify the (1) existence, (2) quantity/specifications, and (3) quality of installation. In addition to verifying and approving the completed work, this post-installation interface offers an opportunity to encourage property owners to continue with further upgrades. This will be particularly applicable in jurisdictions where the TA and QA are provided by the same entity, and a long-term upgrade plan was outlined as part of the TA.

Pre-Qualification, Assessment, and Verification Process

The project pre-qualification, assessment, and verification process involves a varying sequence of steps, depending on which programs are pursued. If, after a project receives BayREN Technical Assistance, it is directed to the PG&E EUC Multifamily Pathway, it would be required to follow PG&E's defined protocols for pre-qualification, assessment, and verification. The process outlined below applies to projects that receive BayREN TA, and subsequently pursues the BayREN Bundled Measures incentive.

The bundled measures incentive program does not rely on an extensive audit to generate measure recommendations and energy savings projections. The energy modeling "lite" software described in the software section will require data inputs that can be gathered by a property owner and not an on-site auditor.

- **Pre-qualification:** During the TA process, a project that decides to pursue the BayREN Bundled Measures incentive will receive a customized package of measures. The package defined by the TA provider is considered pre-qualified for the incentive, pending confirmation by the Site Surveyor.

- **Pre-installation Site Visit by Site Surveyor:** Once a bundle of measures is determined, a Site Surveyor will be dispatched to verify (1) the accuracy of the building characteristics that were used by the technical assistance providers to develop the recommended bundle, and (2) the feasibility and appropriateness of the recommended bundle.

- **Installation:** The property owner is responsible for carrying out installation of the defined bundle of measures. They are free to use any licensed contractor appropriate to the work. While property owners will be directed to a list of multi-family contractors who have received the central systems training offered under this program, they will not be limited to using only these as "participating contractors".

- **Post-installation QA Visit:** The post-installation quality assurance verifies (1) that the measures were installed, (2) the quantity and specifications of the installed measures, and (3) the quality of installation work. QA on projects with scopes that include measures to tighten building envelope or alter combustion appliances will include combustion safety testing following the CA MF HERCC combustion safety protocol addendum.

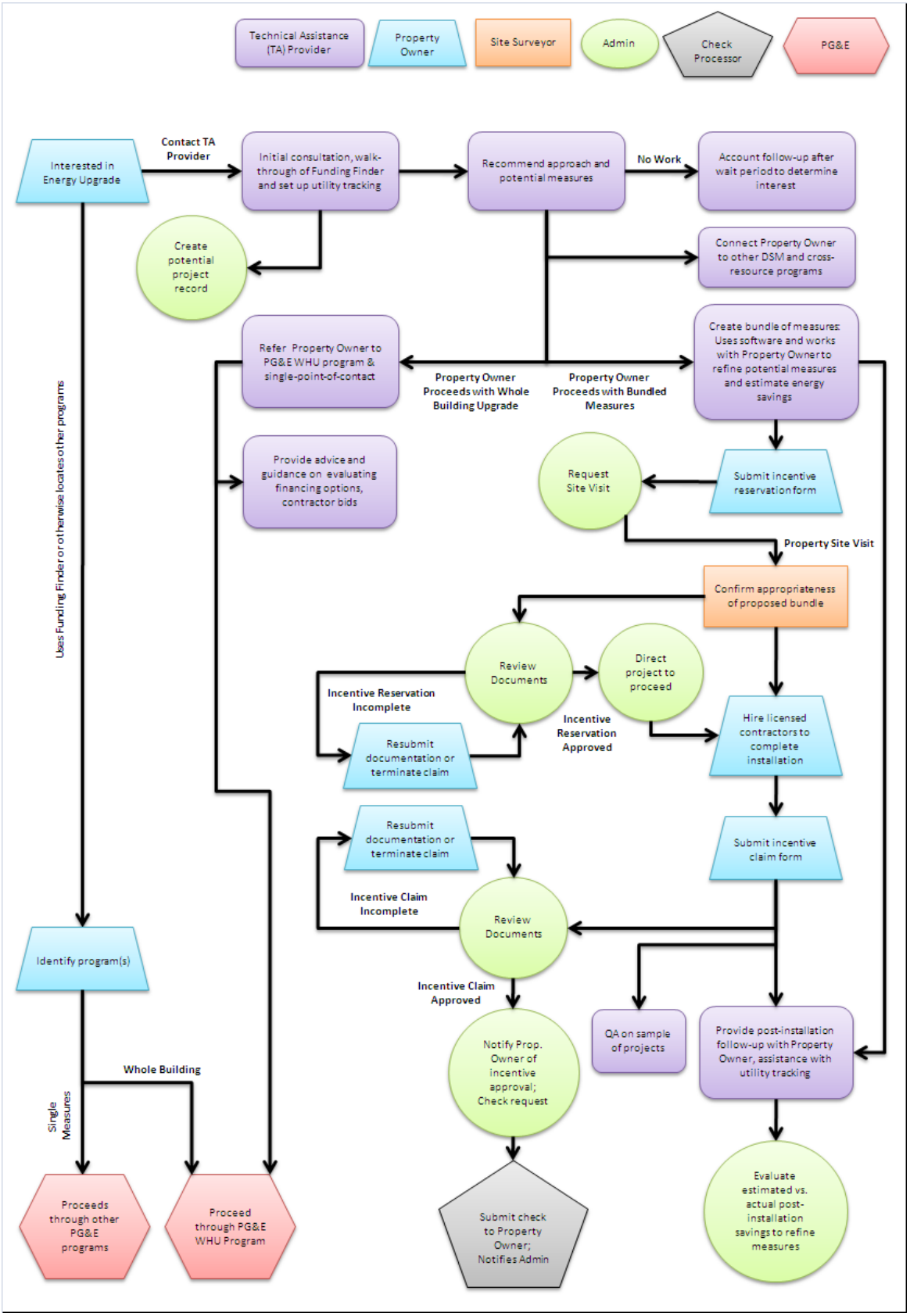
The same entities can provide technical assistance and conduct the pre- and/or post-installation on-site verification on the existing building condition and the installation work of the contractors who are selected by the property owner.

l) Subprogram Delivery Method and Measure Installation /Marketing or Training

No additional marketing or training will be provided for participants in the Bundled Measures program beyond that described above.

m) Subprogram Process Flow Chart

BayREN02 Figure 3: Subprogram Process Flow Chart



n) Cross-cutting Subprogram and Non-IOU Partner Coordination

BayREN02 Table 15: Cross-cutting Subprogram and Non-IOU Partner Coordination

Multi-Family Subprogram		
Other BayREN Subprograms	**Coordination Mechanism**	**Expected Frequency**
Codes & Standards	Coordination on compliance	Ongoing
Financing - Multi-Family Capital Advance Pilot (pending); PAYS® Financing Pilot	Project referral through TA	As appropriate, based on projects in TA
Other IOU/PUC Subprograms		
PG&E EUC-MF Path	Direct referral or referral through single point of contact	As appropriate, based on projects in TA; and quarterly or as needed
PG&E Single Point of Contact (including coordination with MFEER and ESAP)	Direct project referrals	As appropriate, based on projects in TA; and quarterly or as needed
PG&E Multi-Family Financing (TBD)	Project referral through TA	As appropriate, based on projects in TA
PG&E Local Government Partnership Programs	Project referrals, meetings, other regular communication	As appropriate, based on projects in TA; and quarterly or as needed
Coordination Partners Outside CPUC (non-REN and non-IOU)		
Government weatherization assistance programs	Direct referral for TA recipients	As appropriate, based on projects in TA
Municipal utility programs	Project referrals, meetings, other regular communication	As appropriate, based on projects in TA; and quarterly or as needed
Community Choice Aggregation (Marin Energy Authority) energy efficiency programs	Project referrals, meetings, other regular communication	As appropriate, based on projects in TA; and quarterly or as needed
Non-BayREN Financing Programs	Project referrals, meetings, other regular communication	Quarterly or as needed
Local Trade Associations	Meetings, other regular communication	Quarterly or as needed; as needed as part of outreach efforts
Green Building Labeling Organizations	Project referrals, meetings, other regular communication	As needed as part of outreach efforts

o) Logic Model

Logic Model provided in Attachment 1.

The logic informing the BayREN Comprehensive Multi-Family Subprogram design is aligned with recommendations from industry stakeholders and best practices from existing programs. During 2010–2011, the Home Energy Retrofit Coordinating Committee's Multi-family Subcommittee was convened to gather the insights and recommendations from industry experts and professionals.

This subprogram's design largely reflects the findings from that stakeholder process, which have been compiled in the report Improving California's Multi-family Buildings: Opportunities and Recommendations for Green Retrofit & Rehab programs: Findings from the Multi-family Subcommittee of the California Home Energy Retrofit Coordinating Committee dated April 11, 2011.

The subprogram logic draws from the experience of local governments in administering pilot programs and built multi-family upgrade infrastructure through Energy Upgrade California. During this time, local governments provided outreach, customized technical assistance, rater training, and software development. The local programs were summarized in the report *Recommendations for Energy Upgrade California in the Bay Area* dated April 13, 2011.

Additionally, stakeholder input has been gathered by the local governments of Berkeley, Oakland, and Emeryville through a grant to study the multi-family sector and its barriers, particularly split incentive. Their research included a survey of local government actions and policy options and compiled feedback from owners and tenants of multi-family properties. A report summarizing the policy options was published in October 2011 titled *Increasing Energy Efficiency in Existing Multi-family Buildings*.

The findings across these publications identify the components of this subprogram as key strategies to removing barriers to multi-family upgrades. As describe above, the desired outcome of the BayREN Comprehensive Multi-Family Subprogram is to address market barriers by:

- Providing customized technical assistance to overcome the diversity of building types and energy usage and billing configurations, and providing assistance with analyzing potential upgrade measures;
- Providing guidance through the complicated initial assessment of upgrade potential that could lead to a whole-building upgrade approach, and referring projects to existing utility programs;
- Providing a long-term energy upgrade and cash flow plan that fits with the building's capital improvement plan;
- Providing a viable alternative to the whole-building performance-based incentive that is less capital intensive yet customized;

- Training trades that represent a large opportunity for energy savings in multi-family buildings, and are underserved by single-family training initiatives
- Creating a mechanism for data feedback on the actual performance of implemented upgrade measures to refine the accuracy of energy savings estimates used in multi-family energy modeling and a better understanding of highest opportunity measures

11. Additional Subprogram Information

a) Advancing Strategic Plan Goals and Objectives

The Strategic Plan states that non-low-income multi-family units were not specifically addressed in the first Plan and recognizes that the market must be addressed in future iterations of the Plan (s2-p11). In the BayREN region, with high concentrations of urban areas, this market composes a significantly larger proportion of the residential sector than the statewide average.

BayREN02 Figure 4: Strategic Plan Alignment

BayREN Comprehensive Multi-Family Subprogram Alignment with CA Long-Term Energy Efficiency Strategic Plan		
Residential		
Strategy Number	**Strategy**	**BayREN Multi-Family Subprogram Strategy**
2-2	Promote effective decision making to create widespread demand for energy efficiency measures	The TA is designed to provide multi-family property owners with the expertise and analytical tools needed to make an informed decision
Low Income		
Strategy Number	**Strategy**	**BayREN Multi-Family Subprogram Strategy**
2-1	Increase collaboration and leveraging of other low-income programs and services	The TA will refer eligible and interested projects to IOU and other low-income specific programs
2-4	Identifying segmented concentrations of customers to improve delivery	The strategic development for targeted outreach will include a sector study of the Bay Area multi-family sector
Local Government		
Strategy Number	**Strategy**	**BayREN Multi-Family Subprogram Strategy**
4-4	Develop local projects that integrate energy efficiency, DSM, and water/wastewater end uses	Projects that integrate measures in all categories are an intended outcome of the comprehensive TA, which provides non-program-specific advice and connection to a wide of an array of energy efficiency, DSM, and non-energy resources and programs.
5-1	Create a menu of products, services, approved technologies and implementation channels to guide local governments that currently lack deep expertise in energy efficiency	The utility tracking and measure energy saving refinement process will result in a better understanding of multi-family measures
5-2	Develop model approaches to assist local governments participating in regional coordinated efforts for energy efficiency, DSM, renewables, green buildings, and zoning	The BayREN programs will model several approaches for local governments to coordinate regionally around energy efficiency, DSM, renewable, and green building

b) Integration

i. Integrated/coordinated Demand Side Management

The program's targeted outreach and technical assistance are designed specifically to promote customer education and awareness of existing DSM programs and to support participation in the most appropriate DSM options.

BayREN02 Table 16: Non-Energy Efficiency Subprogram Information

Comprehensive Multi-Family Subprogram		
Non-Energy Efficiency Subprogram	**Budget**	**Rationale and General Approach for Integrating Across Resource Types**
California Solar Initiative		Refer eligible and interested projects
Multi-Family Affordable Solar Housing (if made available)		Refer eligible and interested projects
Automated Benchmarking Service		Set up interested projects during utility analysis service of technical assistance

ii. Integration across resource types

BayREN02 Figure 5: Integration of Cross-Resource DSM programs

Non-Energy Efficiency Programs — across resource types	
Non-Energy Programs	**Rationale and General Approach for Integrating Across Resource Types**
Water utility rebates	Leverage water utility rebates for hot water energy measures; refer to water utilities for other eligible measures
Indoor air quality programs	Refer interested projects, assist with explanation of program and indoor air quality measures
Green labeling programs	Refer to green labeling programs (GreenPoint Rated, LEED-EBOM, LEED-NC), assist with preliminary checklists review
Third-party green product labeling programs	Inform interested participants about green product directories and third-party labels for identifying and looking for environmentally preferable attributes

c) Leveraging of Resources

The program will leverage infrastructure that was developed through ARRA funding, including:

- Outreach sources:

- Market analysis methodology
- Established local association relationships
- Technical assistance:
- Design of effective technical assistance services
- Funding Finder and Compass Portfolio Tracker software tools
- Trained raters/auditors (TBD)

The subprogram will also leverage other sources of funding:

- ARRA Better Buildings Program funding in 2013
- Local public agency funding for property owner green certification stipends

d) Trials/ Pilots

The BayREN Comprehensive Multi-Family Subprogram will not offer any trials or pilots.

e) Knowledge Transfer

BayREN staff and members will regularly track challenges, lessons learned, and necessary adjustments for all technical, administrative, and marketing aspects of program implementation. These challenges will be transmitted to local government partners operating similar programs (e.g., County of Los Angeles) through regular meetings of local government forums (such as LGSEC, Local Government Commission, Urban Sustainability Directors Network, etc.), regional NGO and institutional partners (e.g., Joint Venture Silicon Valley, etc.), and through program updates provided to Commission and program partners.

12. Market Transformation Information:

a) Market Transformation Objectives

The market transformation objectives of the BayREN Comprehensive Multi-Family Subprogram are the following:

- Increase general knowledge and awareness amongst property owners and managers of energy efficiency practices and benefits, and encourage a long-term transition toward energy efficient property improvements
- Raise awareness of energy efficiency among relevant professional industries, including central system contractors, industry associations, and other multi-family service providers
- Streamline coordination of DSM programs across IOUs, local governments, and other organizations

b) Market Description

Market actors include:

- **General Contractors —** Oversee delivery of upgrades, other installation work; May perform direct installation or subcontract to specialty contractors; Not qualified or trained by BayREN Comprehensive Multi-Family Subprogram.

- **Specialty Contractors —** Have specialty license in central HVAC or DHW. Training will be available, but not required, to specialty contractors performing work under the BayREN Comprehensive Multi-Family Subprogram.

- **Green Building Professionals —** Building professionals, including general and specialty contractors, who are trained in delivering or assessing technical work that incorporates additional green building concerns beyond energy efficiency, such as outdoor water efficiency, indoor air quality, resource conservation, and low-impact development/site water management. Serve as private contractors or on behalf of green building rating and incentive programs.

- **Multi-family Property Owners** (or ownership entities and relevant asset managers).

- **Multi-family Property Managers** (or management companies)- Management responsibilities vary widely. In some cases, upgrades/investment decisions are assessed by the management entity that will make recommendations to the property owner. Proper ongoing operations are also important to realizing the potential energy savings from upgrades.

- **IOUs —** Administer energy efficiency incentive programs, including Energy Upgrade California, single-measure multi-family energy efficiency rebates, and low-income programs.

- **Local Governments —** Set greenhouse gas emissions, energy savings, and other sustainability goals and implement programs to meet those goals. Support IOU energy efficiency programs through professional and customer outreach, coordination amongst local actors, enforcement of code. Pilot energy efficiency programs.

- **Other Energy Efficiency Programs —** IOU third party and local government partnership programs that implement direct install, weatherization, and other incentive programs.

- **Non-Energy Efficiency and Conservation Programs —** Water utility, local government, green building, and other programs that promote and incent resource conservation, air quality, green products, and other non-energy efficiency efforts.

- **Product Manufacturers and Suppliers —** These actors affect behavior of their clients through the services they offer and products they provide.
- **Financing Sources —** Both public and private sources of development capital influence decisions made by those receiving their funds through prerequisites or preferential terms for energy efficiency or other green building features.

c) Market Characterization and Assessment

The market barriers associated with the multi-family energy upgrades are described above in the Subprogram Description and Theory. More in-depth discussion may be found in the previous reference report *Improving California's Multi-family Buildings: Opportunities and Recommendations for Green Retrofit & Rehab programs: Findings from the Multi-family Sub-Committee of the California Home Energy Retrofit Coordinating Committee* dated April 11, 2011.

Programs currently serving the multi-family market have been unable to overcome barriers to widespread adoption of whole-building upgrades. Property owners require significant hand-holding to pursue whole-building upgrades. While this level of assistance is effective at serving a few properties, additional infrastructure development is needed to transform the market. The BayREN Comprehensive Multi-Family Subprogram provides customized assistance at a regionalized, wider scale, while developing lasting infrastructure through contractor training, software enhancements to increase ease of use, and piloting an incentive approach that is designed in response to the needs expressed by the market.

d) Proposed Interventions

Proposed interventions have been described throughout this program description. Along with the Financing Subprogram (BayREN04), all proposed interventions are focused on reducing the technical, cost, and process barriers toward making Energy Upgrade California a successful program. A summary is provided in the table below.

BayREN02 Figure 4: Market Transformation Barriers and Interventions

Barrier	Proposed Intervention
Complexity of multi-family upgrades and programs	Customized technical assistance that generates a recommended approach, measure list (if bundled measures) and connection to *appropriate* programs and resources
Upgrade cost barriers	Bundled measure program option that eliminates up-front audit costs and provides an incentive designed for moderate and customized upgrade scopes, financing (BayREN04)
Central systems contractor energy efficient design and operations training gap	Targeted training for multi-family-specific trades: central HVAC and DHW

e) Program Logic Model: See Program Logic Model in Attachment 1

f) Market Transformation Indicators (MTIs) and Evaluation Plans

Resolution E-485 (December 2, 2010) Appendix B, lists adopted Market Transformation Indicators for the 2010–2012 Energy Efficiency Portfolio. To ensure consistency with adopted Market Transformation Indicators and Program Evaluation strategies, BayREN proposes the following Market Transformation Indicator (based upon the Adopted Whole House Retrofit MTIs, adapted for multi-family properties, and PG&E's 2013–2014 EUC-MF Subprogram PIP):

- Whole House MTI 2: The proportion of multi-family properties that elect to perform comprehensive energy upgrades. Metric Type 3.

Program evaluation will be coordinated with EM&V activities conducted on behalf of the Commission and PG&E. BayREN members will participate as possible in all data collection and interpretation activities, as directed by the Commission.

13. Additional information as required by Commission decision or ruling or as needed:

Subprogram EM&V Plans:

The BayREN, in close consultation with the CPUC Energy Division, will submit a detailed EM&V plan for program evaluation. The EM&V plan will include plans for continuously improving the program offering. The evaluation efforts will provide the process and strategies for advancing the program's management of key issues including those identified in the description of the Multi-family Subprogram's objectives and theory above, and restated below.

- **Targeted Outreach.** Properly targeted outreach will bring in more multifamily sector participants to Energy Upgrade programs.
- **Integrated Technical Assistance.** Integrated technical assistance can overcome the barrier of a complex financing and incentive landscape, and lead to more appropriate program participation.
- **Incentives.** Incentives for energy efficiency measures will increase program participation.
- **Energy Modeling "Lite".** A lightweight approach to energy modeling is appropriate and elimination of an up-front extensive audit will encourage and facilitate participation.
- **Financing.** The availability of a low-interest financing product offered in direct conjunction with incentives and other program services will encourage participation and depth of energy measures.

The BayREN Multi-Family Subprogram will participate in any CPUC mid-cycle workshop to report on program progress in cooperation with all implementers of multi-family pilots during 2013 and 2014. The feedback and outcomes from the workshop will inform revisions to program design.

The BayREN will be prepared to provide project-level and programmatic data during the mid-cycle review. Project metrics will be tracked using the EUC Multi-Family Compass Portfolio Tracker developed under ARRA and described in the Software section of this Plan. Additional EM&V data will be collected and provided in formats specified by the Energy Division.

IV. SUBPROGRAM BAYREN03

1. Subprogram Name: BayREN Codes and Standards Program

2. Subprogram ID number: BAYREN03

3. Type of Subprogram: Regional Energy Network

4. Market sector or segment that this subprogram is designed to serve:

Residential and non-residential; applies to all occupancies where local jurisdictions are responsible for enforcing Title 24 Part 6 CA Energy Standards and Title 20 Appliance Standards.

a) _X_ Residential

Including Low Income? _X_ Yes __ No

Including Moderate Income? _X_ Yes __ No

Including or specifically Multi-family buildings _X_ Yes __ No

Including or specifically Rental units? _X_ Yes __ No

b) _X_ Commercial (List applicable NAIC codes: _____)

- All NAIC codes for Commercial Buildings

c) _X_ Industrial (List applicable NAIC codes: _____)

- All NAIC codes for Industrial Buildings

d) _X_ Agricultural (List applicable NAIC codes: _____)

- All NAIC codes for Agricultural Buildings

5. Is this subprogram primarily a:

a) Non-resource program __ Yes _X_ No

b) Resource acquisition program _X_ Yes __ No

c) Market Transformation Program _X_ Yes __ No

6. Indicate the primary intervention strategies:

a) Upstream __X_ Yes __ No

b) Midstream _X__ Yes __ No

c) Downstream _X_ Yes ___ No

d) Direct Install ___ Yes _X_ No

e) Non Resource__ Yes __X_ No

7. Projected Subprogram Total Resource Cost (TRC) and Program Administrator Cost (PAC)

TRC 1.05 PAC 3.96

8. Projected Subprogram Budget

BayREN03 Table 1: Projected Subprogram Budget, by Calendar Year[31]

	Program Year		
BAYREN03 Codes and Standards	**2013**	**2014**	**Total**
Admin ($)	$167,450	$167,450	$334,900
General Overhead ($)			
Incentives ($)			
Direct Install Non-Incentives ($)	$1,018,929	$758,571	$1,777,500
Marketing & Outreach ($)	$145,800	$145,800	$291,600
Education & Training($)	$459,643	$485,357	$945,000
Total Budget	$1,791,821	$1,557,179	$3,349,000

9. Subprogram Description, Objectives and Theory

a) Subprogram Description and Theory

Energy codes and standards help California meet its ambitious goals for energy efficiency through strong and cost-effective energy efficiency regulations, and by supporting local reach codes that exceed statewide minimum requirements. Similarly, state and local climate, water, and green building goals are reliant on the enactment of sound regulations that push the market in the direction of supporting a more sustainable future. However, codes and standards only deliver the expected results if they are thoroughly understood by local authorities, developers, designers, and builders, and if they are properly and consistently enforced. In recent years, the IOUs have increasingly relied on codes and standards to achieve their energy savings goals; codes and standards contributed 19% of

[31] See BayREN01, Table 1- Projected Subprogram Budget, by Calendar Year for category definitions.

portfolio energy savings in 2010–12. Although these programs undergo measurement and verification to protect ratepayer investments, they have not provided information on which measures are working successfully in a given jurisdiction, or provided data that could support improvements.

BayREN proposes an integrated, measurement-driven management process for enhancing energy code compliance. We will establish code compliance baselines for jurisdictions in the 9-County Bay Area, utilize baseline data to inform and target training in order to institutionalize regular actionable feedback to local officials by tracking compliance over time, and to inform efforts to standardize reach codes in the region based on observed best practices. The effort is modeled after private sector tools such as Six Sigma and Total Quality Management, which establish performance benchmarks in order to inform and drive efforts for continuous improvement. The BayREN Codes and Standards group will leverage the expertise and direct alliances among its local governments in order to:

- Enhance the enforcement of energy, water, and green building codes
- Establish and institutionalize measurement of code compliance
- Share expertise and best practices on development of reach codes and work to align policies and enforcement across jurisdictions
- Prepare to implement future code updates

BayREN proposes to meet these milestones and goals by establishing and supporting compliance quality assurance programs at individual jurisdictions, developing and delivering local trainings that target data-driven priorities for enhancing enforcement, and developing forums for sharing best practices, resources, and tools. The theory underlying the BayREN Codes and Standards Subprogram is that the most effective way for the Commission to attain the expected goals in this area is to enable those with the greatest expertise and core competency to manage and implement the appropriate program activities. BayREN can play a primary or supportive role in the following areas:

Compliance and Enforcement (Lead)

Local governments, not utilities, are responsible for enforcing code compliance. Local government staff have the relationships and understanding of internal processes to engage with policymakers and enforcement personnel and to identify and overcome institutional barriers where external parties, including IOUs, cannot. The combination of financial resources via the BayREN and fresh strategies for leveraging the internal capacities of local agencies are essential to establishing performance measurement and supporting ongoing improvement in codes and standards enforcement. Key elements best accomplished within the local governments include needs assessment, peer-to-peer training, buy-in from departmental and elected leaders, and interaction with local builders and contractors.

BayREN's position is that solutions informed by field measurements will increase the quality of inspections through better technology, training, and new approaches to institutional problems in the inspection process. By delivering services through local

governments, BayREN will support building departments and inspectors with key training and technical and verification resources to enforce the code more effectively. This, in turn, will enhance the training of contractors and other essential stakeholders in the building industry.

Reach Codes (Lead)

A number of BayREN members have been developing and passing reach codes in their respective jurisdictions for years. They possess the knowledge not only of the rules governing code development, but also of the stakeholder process necessary to achieve the political support to have codes adopted. Among the activities listed in PG&E's C&S PIP for 2013–14 are: providing a "road map" of policy guidelines for adopting a reach code; providing a "reach code ordinance template"; facilitating public workshops and presentations to interested stakeholders; and working with market actors to conduct "outreach to local governments" regarding code assistance. It is BayREN's position that these and related activities would be more effectively conducted by the pool of experts within the local governments on a peer-to-peer basis. With resources to establish a BayREN support system that could serve all nine counties, the potential for adoption of new, more consistent codes would be greatly increased. This regional approach would serve the interests of contractors, industry stakeholders, and policymakers alike. The model could be extended to include adjoining counties and also be replicated in regions throughout the state.

Advocacy for Statewide Codes and Standards (Support)

In the development of codes and standards, there are many levels of interaction, and each party has strengths to contribute. While members of BayREN are active in some of the key agencies, organizations,[32] and decision making processes at the national and state level—our greatest expertise and influence is at the local level. Emphasizing core strengths of local governments, IOUs, state agencies, and other stakeholders will be the best strategy for advancing the adoption of effective regulations going forward. Therefore, we propose a model that leverages the strengths of local governments in advocacy work for stricter Codes and Standards that will help jurisdictions meet their own sustainability goals, which ultimately contribute to the State's goals. Contributions local governments would make include: documenting and sharing the results of reach code implementation from all BayREN jurisdictions where such codes are in place; presenting case studies of any emerging technology efforts being carried out in the region; participating in stakeholder meetings where new codes and standards opportunities are being assessed; and using local administrative incentives to pilot new reach codes and enforcement approaches.

Local jurisdictions have successfully used local administrative incentives to pilot new code approaches in the recent past. Prior to adopting reach codes, several Bay Area jurisdictions offered priority in permitting queues, increased floor area ratio, or other incentives in return for voluntary commitment to obtain green building certifications. Obtaining commitment that a project would, for example, earn GreenPoint Rated certification yielded

[32] See BayREN03 Table 15.

a specific code compliance margin (typically 15%), while commitment to LEED Gold yielded commissioning and associated documentation. Offering voluntary priority permitting for Net Zero Energy Building certification, or similar, would provide the jurisdiction experience with a fundamentally new approach to energy codes. A Net Zero Energy standard is met by verifying the building is designed and built (and ideally operated) to achieve a fixed energy use intensity (total kWh or kBtu per square foot per year consumed by the building), rather than incremental improvement relative to current code.

Market Barriers.

The following represent the chief barriers to effective code compliance and enforcement that BayREN will address:

- **Gaps in understanding extent of code compliance.** There is a knowledge/research gap in the industry. Energy code compliance rates are known to be low; however, an accurate baseline has not been established. Code compliance studies are cost prohibitive to individual local governments, requiring staff time for study shadowing as well as study design and execution. Concerns about repercussions if a lack of compliance is documented make baselining/assessment activities a low priority for code officials. Therefore, it is difficult to know how effective or efficient code enforcement is across jurisdictions, code sections (e.g., specific energy measures vs. plumbing vs. green codes), and enforcement agencies (zoning, planning, inspections).

- **Patchwork of standards and their interpretation.** Differences in energy code permit processing, builder sophistication and compliance, building code amendments, and application forms/processes across jurisdictions yield a patchwork of standards and—still more problematic—inconsistent interpretation. California green building codes are new, and enforcement officials are at the front end of a steep learning curve. Issues like commissioning, as well as new technologies like demand response automation, will require education and experience to master. Complex requirements with no local and timely data to inform action tend to encourage resistance and non-compliance, thereby compromising intended savings.

- **Priority given to life-safety issues.** Building code officials are the linchpin for ensuring compliance with Title 24 and Title 20 standards, but must deliver inspection and plan review services within the political limitations of cost-recovery fee structures. Given limited time and resources, their first priority is appropriately ensuring life-safety and fire standards are met.

- **Lack of effective training.** Training offerings for energy efficiency, water efficiency, and green building codes are scarce, not customized to the specific audiences (e.g., topics that would best aid local enforcement efforts), and are not offered at times and locations conducive to broad engagement by code enforcement agencies.

- **Lack of consistent sharing of best practices and policies.** Elected and executive level government officials have existing peer-to-peer networks for sharing best practices, but regional coordination of energy/water/green building policies and technological opportunities is infrequent. Peer-to-peer networks could benefit from increased attention on shared polices and implementation of best practices with regard to energy/green/water. While senior building officials have organizations such as CALBO, local staff have limited opportunities to learn from one another, and sharing opportunities are limited.

Actions that Address These Barriers:

The three categories listed below include activities that address a number of barriers simultaneously or at some point in a continuum. For example, baseline metrics and tracking will inform methods of improving compliance and will also support training efforts. Many of the gaps, on the other hand, will be addressed with targeted, data-driven training and/or policy support and advocacy activities. The BayREN activities outlined below will focus on permitted buildings. BayREN will investigate unpermitted buildings, however, some building departments consider this a sensitive area. Therefore BayREN will attempt to develop a workable methodology through consultation with each county building inspection department. If a workable methodology is developed, BayREN will then proceed with an investigation of the energy efficiency potential.

Compliance Baseline and Tracking

Quantitative metrics are essential to improving code enforcement. To efficiently use the extremely limited time and resources dedicated to enforcing energy-related codes, it is critical to raise the baseline level of compliance for common measures and to enhance inspector efficiency. We manage what we measure. Data-driven training and quality assurance programs are proven tools for enhancing productivity in many industries, but have yet to be applied to energy code enforcement. Local governments have direct knowledge of the institutional connections that are essential to achieving higher levels of compliance in code enforcement and overcoming the barriers and challenges to increased compliance. For the purposes of this work, BayREN defines compliance as completed construction projects conforming to energy codes. BayREN's Compliance and Tracking component will include:

- Compliance audits, including field testing, to establish baselines and improve energy code compliance in the 9-County Bay Area. The compliance baseline will be developed according to the following methodology:

- In each county, BayREN will conduct focus groups with building inspectors and contractors.
- BayREN will develop a survey for inspectors and another for contractors.
- The surveys will be administered in each county.
- Results of the focus groups and surveys will guide the development of the compliance baseline methodology.
- BayREN will review the current CEC and IOU compliance audit tool, and if needed, modify the audit in consultation with the CEC and IOUs.
- BayREN staff and consultants will receive training to perform on-site compliance audits.
- In each county, BayREN will select representative projects and perform construction site compliance audits.
- BayREN will analyze results and develop a tool to estimate energy savings potential.

- Regular compliance checks to institutionalize quality assurance as a fundamental practice in enforcement agency management. Provide code compliance assessments to staff as tools to study and improve contractor performance first and foremost, and not as a critique of the inspector's performance.

- Utilization of networks to access compliance officials to develop compliance metrics and establish compliance baseline conditions in order to prioritize future training and technical support, as well as better attribute energy savings to improved code enforcement.

- Establish a steering committee or network composed of local officials to engage local staff, drive buy-in, and ensure metrics are meaningful within the context of their duties.

- Focus on value-add propositions (such as on-site training, new managerial tools, and more efficient compliance checks) in return for access and establishment of reliable local baselines of compliance with energy/water/green building codes and policies.

- Use on-site verification as a mechanism to determine levels of compliance and knowledge. Use assessments to design trainings to improve the performance of both contractors and inspectors.

- As local governments, we are particularly attuned to the political landscape in which a measurement system must be designed. It is critical that the QA program be sensitive to agency political reality, recognize that agency resources are limited, and be designed to enhance compliance without penalizing jurisdictions that can most benefit from improved outcomes.

Education and Training

As local governments, we can provide trainings that will be well received by building and related departments and staff. We can also design trainings (informed by metrics) to increase enforcement and compliance with energy/water/green building codes and policies using a comprehensive approach. To optimize compliance, all market actors—designers, builders, inspectors, state and local regulators, and IOUs—must understand current performance levels and have effective feedback to motivate improvement. Some identified needs are:

- Begin to provide quality assurance for code enforcement by using sampling methods to audit compliance throughout the process—from application/plan check to site inspection and certificate of occupancy or final permit approval.
- Provide quarterly regional trainings that address basics of compliance and enforcement to a wide audience. Invite contractors and other outside stakeholders as appropriate. Include field-training exercises.
- Provide monthly local trainings to line and field staff on energy codes, technologies, and implementation of best practices. Focus trainings on measures and enforcement practices with the greatest potential for improvement and energy savings (such as HVAC, lighting, plumbing/hot water, and commissioning). Hold trainings in locations and at times that dovetail with staff training hours in order to minimize travel and increase participation.
- Provide monthly local specialized workshops targeting the responsibilities of specialist staff, such as plumbing and electrical inspectors, to verify energy and water efficiency.
- Include subcontracted third-party verification entities for training assistance where practical (building inspection consultants, green building raters, etc.).
- Deliver training addressing the water-energy nexus in partnership with water utilities (e.g., trainings on solar hot water, efficient plumbing fixtures and fittings, and irrigation systems commissioning).
- Train building permit staff in current energy efficiency and green building techniques, technologies, regulations, and incentive programs such as the PG&E EUC-SF and Flex Package, so they can be frontline representatives for property owners seeking to remodel, upgrade, or build new structures.
- Offer co-training/certification programs and industry update workshops to provide an opportunity for building code officials, planners, engineers, building trade professionals, and technology vendors to learn together and share knowledge.

- Provide co-training opportunities for building code officials, planners, engineers, building trade professionals, technology vendors, and contractors to encourage better understanding of the needs of the other parties, facilitate effective working relationships, and find opportunities to save time and expedite projects.
- Engage with the California Contractors State Licensing Board to notify contractors about the new quality assurance efforts, training opportunities, and enhanced enforcement campaign. Widespread understanding that energy codes will receive greater enforcement attention is the most powerful tool available to increase compliance.
- A regional body of elected officials and local government staff, sophisticated in energy efficiency and green building principles and measures, can be a highly-effective communications resource across the greater constituencies of the Bay Area. These actors have unique opportunities for sharing key ideas and benefits with the public, whether in public meetings, civic events, or during the regular course of business. This model also promotes better policymaking because implementation is considered during adoption.
- Establish regular opportunities to educate and train municipal staff at the local site. Provide workshops around the Bay Area, such that each jurisdiction can attend within a 20 minute commute or less.
- Provide ongoing educational programs for government elected officials on energy policies, regulations, and funding opportunities.
- As codes change, it is critical to ensure that enforcement staff are expert in the specifics of such changes. However, the pace of change in energy and green building codes is much more dramatic than in other building standards. Peer-to-peer training and forums for professional exchange among inspection staff will help leverage and reinforce existing training resources for contractors and design professionals. Since the most costly system is one that must be installed multiple times, enhancing the perception of inspector priority on energy codes will help motivate the industry to understand and comply with requirements.

Policy Support and Advocacy

The Bay Area is home to some of the most innovative energy policies in the country, and the BayREN will utilize its collective expertise to propagate regional efforts for better and more consistent code enforcement and standards development. Local governments can learn more from one another than is often possible from third-party consultants.

- Provide "train the trainer" meetings to regional leaders to enable them to deliver best practices and expert content at trainings and site visits provided to peer agencies
- Leverage, evolve, and promote existing policy resources and toolkits
- Support a public agency forum and convene quarterly forums for sharing best practices such as interagency coordination or adoption of building labeling and disclosure policies
- Engage CEC and CalBO in alignment of interpretation of state codes by local officials (e.g., installation of insulation triggers a permit and inspection in some communities, but not others)
- Coordinate and engage in the code development processes, such as Title 24 and Title 20 energy standards, CALGreen, and IgCC
- Share experience and lessons learned in development of reach codes with local government peers
- Advocate for statewide codes and standards by presenting results of regional reach codes

b) Subprogram Energy and Demand Objectives

BayREN03 Table 2: Projected Subprogram Net Energy and Demand Impacts, by Calendar Year

	Program Years		
	2013	**2014**	**Total**
Codes and Standards Program			
GWh	2.67	4.96	7.63
Peak MW	0.33	0.62	0.95
Therms (millions)	0.07	0.12	0.19

c) Program Non-Energy Objectives

i. SMART non-energy objectives of the program

Compliance Baseline & Tracking:

- During the period 2013–2014, all nine counties will establish a compliance baseline
- During the period 2013–2014, develop a regional plan for measurement-driven energy code compliance quality assurance

Code Enforcement Education & Training

- During the period 2013–2014, 71 workshops will be conducted throughout the nine Bay Area counties. Metric Type 2b.

- During the period 2013–2014, 7 professional forums will be conducted within the nine Bay Area counties. Metric Type 2b.
- Establish local government marketing and outreach coordinators in all 9 counties.

Reach Codes (Local Adoption and Implementation)

- During the period 2013–2014, all 9 counties will receive updated model policy tools for adopting reach codes.
- During the period 2013–2014, provide four "train the trainer" meetings to engage regional leaders to deliver best practices and expert content at trainings and site visits provided to peer agencies.

Policy Support and Advocacy (Statewide and Reach Codes)

- During the period 2013–2014 engage in stakeholder processes with the CEC, Building Standards Commission, Housing and Community Development, and other state agencies responsible for codes and standards development.

ii. See above.

iii. Relevant baseline data

Compliance Baseline & Tracking

Compliance baseline and savings potential from compliance enhancement are informed by PG&E 2013–2014 Codes and Standards Program Implementation Plan, with supporting details from the Commission's Energy Division Proposal for 2013–2014 Energy Efficiency Goals, and the potential study embedded therein.

Local compliance baselines do not exist but will be developed through this program.

Code enforcement education and training

Objectives for training were drawn from prior work in Alameda, San Francisco, and Sonoma Counties and scaled regionally.

Reach Codes, & Policy Support and Advocacy

In 2004, Bay Area local governments formed a Public Agency Council to coordinate the development of green building codes. This policy forum was hosted by Build It Green and met quarterly through 2010, and numerous local governments participated over the six years. In 2010–2011, the Bay Area Climate Collaborative—a public-private consortium including 16 major regional jurisdictions and 25 corporate and non-profit partners—assessed the status of local green building code adoption, and provided recommendations for consistent reach codes informed by local experience and the then-new California Green Building Standards.

iv. Quantitative program targets

BayREN03 Table 3: Quantitative Program Targets

Target	2013	2014
Compliance Baseline and Tracking (With improved metrics for compliance tracking)	9 counties	9 counties
Code Enforcement Education and Training	33 trainings/ 750 trainees	38 trainings/ 900 trainees
Policy Support and Advocacy	150 forum participants	200 forum participants

d) Cost-Effectiveness/Market Need:

There is substantial precedent recognizing the value of enforcement and verification as sources of energy savings. Codes and standards have been recognized in ratepayer funded portfolios, and—for example—contributed to 19% of projected IOU 2010–2012 portfolio energy (kWh) savings.[33] We propose that savings attributable to the BayREN Codes and Standards Subprogram be a function of the documented change in code compliance from baseline to the end of the program delivery period.

Cost-effectiveness calculations have been substantially informed by the methodology applied by IOU Codes and Standards enhancement programs.

The "Addendum to the 2011 Potential Study in Support of the [Commission Staff]'s Goals Proposal" suggested a statewide compliance rate for post-2005 Title 24 building standards of 83%, and a goal of achieving 100% compliance in 6 years, or two code cycles. The gross energy savings target for code compliance enhancement in PG&E's 2013–2014 Codes and Standards Implementation Plan (42 GWh) is significantly less than the savings required to be on track to meet the Commission's goals (125.9 GWh) within two code cycles.

We propose increasing ratepayer investment in codes and standards within the BayREN in order to make substantial progress toward the Commission's goal of 100% compliance. More fundamentally, we propose to engage local governments in an integrated, measurement-driven management process, which will be necessary to achieve the Commission's goal.

For further justification of market need, refer to Quantec (2007), (http://www.energycodes.gov/publications/research/documents/codes/ca_codes_standards_adopt_noncompliance.pdf), and to the decision establishing this proposal opportunity.

e) Measure Savings/ Work Papers

i. Indicate data source for savings estimates for program measures (DEER, custom measures, etc.).

[33] http://docs.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/166830-10.htm#P1907_425870

To determine the BayREN Codes & Standards Subprogram target energy savings, a top-down approach was utilized to derive these figures based on PG&E net projected savings for their 2013–2014 C&S Program as summarized in Table 6 of the PG&E "2013–2014 Energy Efficiency Portfolio Statewide Program Implementation Plan Codes and Standards." For this approach, we first determined the percentage of total PG&E customer population within the BayREN region, which provided weighted target savings for the BayREN region as compared to PG&E's complete service territory estimates. Once we established the customer percentage break-out for the BayREN region, we extracted the PG&E C&S target savings from Table 6, as mentioned above for PG&E's Compliance Improvement and Reach Codes subprograms, and applied the BayREN population factor to these energy savings goals.

Because the BayREN proposed C&S energy savings were determined as a specific percentage of the PG&E C&S efforts, the BayREN E3 calculator entries for codes and standards follow a similar approach as that used by PG&E.

For instance, all of the parameters describing the nature of the program were kept the same as for PG&E (e.g., the net-to-gross ratio, the load profile, etc.) with the following exceptions: 1) the overall net cost for the measure installation is proportionally the same as that proposed by PG&E, 2) the "number of units" were defined to properly distribute the anticipated energy savings between quarters, and 3) the per-unit savings were defined to produce the overall expected savings. As in the PG&E submission a "unit" of effort was not specified, because the program targets are defined in terms of combined savings per quarter.

ii. Indicate work paper status for program measures

BayREN03 Table 4: Work Paper Status

#	Work Paper Number/Measure Name	Approved	Pending Approval	Submitted but Awaiting Review
1	None Planned			

10. Program Implementation Details

a) Timelines

BayREN03 Table 5: Subprogram Milestones and Timeline

Milestone	Date
Project Initiation Meeting	Dec. 2012
RFPs for Regional/Local Training Providers	12/31/2012
RFPs for Specialty Training Providers	3/1/2013
Compliance Baseline Tracking Strategy Developed	3/31/2013
Marketing/Outreach Strategy Developed	3/31/2013
Policy Support and Advocacy Strategy Developed	3/31/2013
Compliance Baseline Tracking Launch	4/1/2013
Marking/Outreach Launch	4/1/2013
Public Agency Forum Launch	4/1/2013
Regional and Local Trainings Launched	4/1/2013
Specialty Trainings Launched	7/1/2013
Enhanced Tools and Metric for Compliance Developed	9/30/2013
Compliance Assessments Initiated	10/1/2013
Quarterly Progress Reports	3/31/2013 – 12/8/2014

b) Geographic Scope

BayREN03 Table 6: Geographic Regions Where the Program Will Operate

Geographic Region	Codes and Standards Program	Geographic Region	Codes and Standards Program
CEC Climate Zone 1		CEC Climate Zone 9	
CEC Climate Zone 2	X	CEC Climate Zone 10	
CEC Climate Zone 3	X	CEC Climate Zone 11	
CEC Climate Zone 4	X	CEC Climate Zone 12	X
CEC Climate Zone 5		CEC Climate Zone 13	
CEC Climate Zone 6		CEC Climate Zone 14	
CEC Climate Zone 7		CEC Climate Zone 15	
CEC Climate Zone 8		CEC Climate Zone 16	

c) Program Administration

BayREN03 Table 7: Program Administration of Program Components

Program Name	Program Component	Implemented by BayREN staff	Implemented by contractors to be selected by competitive bid process	Implemented by contractors NOT selected by competitive bid process	Implemented by local government or other entity (X = Yes)
Codes and Standards Program	Compliance baseline and tracking				X
	Develop tools and metrics for compliance		X		
	Conduct compliance assessments				X
	Quarterly regional trainings		X		
	Local trainings		X		X
	Specialty trainings		X		X
	Marketing/Outreach for training (1 lead per county)		X		X
	Develop a public agency forum	X	X		X
	Leverage, evolve, and promote existing policy resources and toolkits				X
	Engage in the codes and standards development processes	X	X		X
	Quarterly Reporting	X	X		X

d) Program Eligibility Requirements

i. Customers — Utility customers will not be a targeted population for this subprogram.

BayREN03 Table 8: Customer Eligibility Requirements

Customer Eligibility Requirement
N/A

ii. Contractors/Participants:

BayREN03 Table 9: Contractor/Participant Eligibility Requirements

Contractor Eligibility Requirement
Licensed Contractors performing building improvements targeted by codes and standards addressed by the program (B, C20, C10, etc.). Building and specialty (electrical, plumbing, etc.) inspectors and building department staff in Bay Area municipalities

e) Program Partners

i. Manufacturer/Retailer/Distributor partners

This subprogram will not include any upstream activities, and therefore will not include any manufacturer/retailer/distributor partners.

BayREN03 Table 10: Manufacturer/Retailer/Distributor Partners

Manufacturer/Retailer/Distributor Partner Information	BayREN03
Manufacturers enrolled in program	None
Manufacturers targeted for enrollment in program	None
Retailers enrolled in program	None
Retailers enrolled in program	None
Retailers targeted for enrollment in program	None
Distributors enrolled in program	None
Distributors targeted for enrollment in program	None

ii. Other key program partners

Effective enforcement requires the collaboration of local governmental agencies, IOUs, and public-private organizations. Our existing relationships with the following groups will be utilized to foster greater collaboration and enforcement of energy/water codes and standards.

CALBO and other regional building official networks

California State Contractor Licensing Board

Planning department professional networks

Water utilities and retailers

PG&E Codes and Standards group

California Energy Commission

Bay Area Climate Collaborative

Build It Green

US Green Building Council

ASHRAE, NFRC, CRRC, etc. national organizations

City and County of San Francisco

City of Suisun City

County of Contra Costa

County of Marin

County of Napa

County of San Mateo

County of Santa Clara

Marin Clean Energy Authority

Pacific Gas& Electric

Sonoma County Regional Climate Protection Authority

StopWaste.Org (Alameda County Waste Management Authority)

f) Measures and Incentive Levels

No incentives will be offered by this subprogram.

BayREN03 Table 11: Summary Table of Measures, Incentive Levels and Verification Rates

Measure Group	Market Actor Receiving Incentive or Rebate	BayREN	
		Incentive Level	Installation Sampling Rate
N/A			

g) Additional Services

BayREN03 Table 12: Additional Services

Additional Services that the Subprogram Will Provide	To Which Market Actors	BayREN
Compliance baseline and tracking	Building Officials/Departments	Fully Funded
Develop tools and metrics for compliance	Building Officials/Departments	Fully Funded
Conduct compliance assessments	Building Officials/Departments	Fully Funded
Develop a public agency forum	Building Officials/Departments; Contractors; Code Enforcement Training Organizations	Fully Funded
Leverage, evolve, and promote existing policy resources and toolkits	Building Officials/Departments; Contractors; Code Enforcement Training Organizations	Fully Funded
Engage in the codes and standards development processes	Building Officials/Departments; CALBO; CEC; CalGREEN; IgCC	Fully Funded

h) Subprogram Specific Marketing and Outreach

Program specific Marketing and Outreach will be directed at the local level in each of the nine Bay Area counties. These activities will primarily focus on conducting outreach to individual building departments within county municipalities to tailor training deployment to be aligned with local needs and to drive participation in the trainings.

BayREN03 Figure 1: Marketing Timeline

		2013				2014			
Obj.	**Description**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**
2	**Code Enforcement Education & Training — Informed by Metrics**								
2.1	Quarterly regional trainings		X	X	X	X	X	X	
2.2	Local trainings		X	X	X	X	X	X	X
2.3	Specialty trainings			X	X	X	X	X	X
2.4	Marketing/Outreach for training (1 lead per county)	X	X	X	X	X	X	X	X

i) Subprogram Specific Training

Benefits: Informed constituents. A regional body of elected officials and local government staff, sophisticated in energy efficiency and green building principles and measures, can be a highly-effective communications force across the greater constituencies of the Bay Area. These actors have a unique ability for sharing key ideas and benefits with the public, whether in public meetings, civic events, or during the regular course of business. This model also promotes better policymaking since implementation is considered during adoption.

- Establish regular opportunities to educate and train municipal staff at the local site. Provide workshops around the Bay Area, such that each jurisdiction can attend within a 20 minute commute or less.
- Provide ongoing educational programs for government elected officials on energy policies, regulations, and funding opportunities.
- Train building permit staff in current energy efficiency and green building techniques, technologies, regulations, and incentives programs such as Energy Upgrade California, so they can become frontline representatives for property owners seeking to remodel, upgrade, or build new structures.

Co-Training:

Benefits: Training/certification programs and industry update workshops provide an opportunity for building code officials, planners, engineers, building trade professionals, and technology vendors to learn together and share knowledge.

- Provide co-training opportunities for building code officials, planners, engineers, building trade professionals, technology vendors, and contractors to encourage better understanding of the needs of the other parties, facilitate effective working relationships, and find opportunities to save time and expedite projects.

BayREN03 Figure 2: Training Timeline

		2013				2014			
Obj.	**Description**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**
2	**Code Enforcement Education & Training — Informed by Metrics**								
2.1	Quarterly regional trainings		X	X	X	X	X	X	
2.2	Local trainings		X	X	X	X	X	X	X
2.3	Specialty trainings			X	X	X	X	X	X
2.4	Marketing/Outreach for training (1 lead per county)	X	X	X	X	X	X	X	X

j) Subprogram Software and/or Additional Tools

i. Software

Software and/or technology based solutions (paperless/tablet PC inspection forms, etc.) will be identified through the program's Compliance Assessment activities.

ii. Audits

Pre-implementation audit required ___ Yes _X_ No

Post-implementation audit required ___ Yes _X_ No

iii. As applicable, indicate levels at which such audits shall be rebated or funded, and to whom such rebates/funding will be provided (i.e. to customer or contractor).

No funding will be provided to incent audits in this subprogram.

BayREN03 Table 13: Post-implementation Audits

Levels at Which Program Related Audits Are Rebated or Funded	Who Receives the Rebate/Funding (Customer or Contractor)
None	N/A

k) Subprogram Quality Assurance Provisions

BayREN03 Table 14: Quality Assurance Provisions

Program Element	QA Requirements	QA Sampling Rate (Indicate Pre/Post Sample)	QA Personnel Certification Requirements
Codes and Standards	None	N/A	N/A

l) Subprogram Delivery Method and Measure Installation /Marketing or Training:

No additional marketing or training will be provided.

m) Subprogram Process Flow Chart

A process flow chart was not included for this subprogram as there is no direct program process flow for this subprogram.

n) Cross-cutting Subprogram and Non-IOU Partner Coordination

BayREN will coordinate closely with various partners in the development and roll out of the Codes and Standards Subprogram. Early coordination efforts have involved BayREN and the PG&E Codes and Standards Group. BayREN representatives held several conference calls and had one face-to-face meeting with PG&E C&S staff in the weeks

following the Draft Decision. PG&E agreed to share the results of a best practices study they had recently completed and also the tools and process improvements they intend to develop based on that study. BayREN could test the IOU tool as well as do comparison/modifications that could enhance tools and improve processes through demonstrations in BayREN counties. BayREN intends to coordinate closely with PG&E on scheduling the standard C&S trainings given by PG&E consultants so classes coincide with BayREN's more specialized and in-field trainings that apply theory to actual inspection sites and issues contractors face. The coordination process is yet to be determined but both parties have agreed to work together to avoid any duplication and to support each other's efforts. BayREN will be contacting PG&E in January 2013 to resume engagement and coordinate implementation plans.

BayREN 03 Table 15: Cross-cutting Subprogram and Non-IOU Partner Coordination

Codes and Standards Subprogram		
IOU Program Name	**Coordination Mechanism**	**Expected Frequency**
IOU energy efficiency rebates, direct install programs, demand response, local government partnerships, etc.	Regional coordination, rebate coordination,	Quarterly
PG&E Codes and Standards Group	Regional coordination of training materials and delivery, cross promotion	Quarterly
Coordination Partners Outside the Commission	**Coordination Mechanism**	**Expected Frequency**
California Energy Commission	Standards monitoring, training coordination, outreach	Quarterly
CALBO and other regional building official networks	Regional coordination, training assistance, marketing/outreach, peer-to-peer network	Quarterly
Planning department professional networks	Regional coordination, training assistance, marketing/outreach, peer-to-peer network	Quarterly
Water utilities and retailers	Regional coordination, rebate coordination	Quarterly
Build It Green	Standards monitoring, training coordination, outreach	Quarterly
Bay Area Climate Collaborative/Silicon Valley Leadership Group	Regional coordination, training assistance, marketing/outreach, peer-to-peer network	Quarterly
California Building Standards Commission/Housing and Community Development	CalGREEN development process; training engagement/partnerships	Quarterly
California State Contractor Licensing Board	Coordination, outreach	Quarterly
Bay Area Green Business Program	Regional coordination, integrated services	Quarterly
U.S. Green Building Council	Training, standards monitoring and development	Quarterly
Energy Star	Standards monitoring and development assistance	Quarterly
ASHRAE, NFRC, CRRC, other national organizations	Standards monitoring and development assistance	Quarterly

o) Logic Model

Logic Model provided in Attachment 1.

The logic informing the BayREN Codes and Standards Subprogram design is shaped by existing local government code enforcement activities and known challenges. BayREN proposes to meet its C&S milestones and goals by establishing and supporting compliance quality assurance programs at individual jurisdictions, developing and delivering local trainings that target data-driven priorities for enhancing enforcement, and developing forums for sharing best practices, resources, and tools. The theory underlying the BayREN Codes and Standards Subprogram is that the most effective way for the Commission to attain the expected goals in this area is to enable those with the greatest expertise and core competency to manage and implement the appropriate program activities.

11. Additional Subprogram Information

a) Advancing Strategic Plan Goals and Objectives

BayREN03 Figure 3: Strategic Plan Alignment

BayREN Codes and Standards Program Alignment with California Long-Term Energy Efficiency Strategic Plan		
Local Governments		
Strategy Number	Strategy	BayREN Program Strategy
1-1	Develop, adopt, and implement model building energy codes (and/or other green codes) more stringent than Title 24's requirements, on both a mandatory and voluntary basis; adopt one or two additional tiers of increasing stringency	Coordination on these topics will be part of Objective 3: Policy Support & Advocacy
1-2	Establish expedited permitting and entitlement approval processes, fee structures, and other incentives for green buildings and other above-code developments	Coordination on these topics will be part of Objective 3: Policy Support & Advocacy
1-3	Develop, adopt, and implement model point-of-sale and other point-of-transactions relying on building ratings to increase efficiency in existing buildings	Coordination on these topics will be part of Objective 3: Policy Support & Advocacy
1-5	Develop broad education program and peer-to-peer support to local governments to adopt and implement model "reach" codes and/or point-of-sale policies	Part of Objective 3: Policy Support & Advocacy
1-7	Develop energy efficiency related "carrots" and "sticks" using local zoning and development authority	Coordination on these topics will be part of Objective 3: Policy Support & Advocacy
2-1	Statewide assessment of local government code enforcement and recommendations for change	Regional assessment is part of Objective 1: Compliance Baseline & Tracking
2-2	Dramatically improve compliance with and enforcement of Title 24, including HVAC permitting and inspection requirements (including focus on peak load reductions in inland areas)	Objective 1: Compliance Baseline & Tracking; Objective 2: Code Enforcement Education & Training; sharing of best practices via Objective 3: Policy Support &

BayREN Codes and Standards Program Alignment with California Long-Term Energy Efficiency Strategic Plan		
		Advocacy
2-3	Local inspectors and contractors hired by local governments shall meet the requirements of the energy component of their professional licensing (as such energy components are adopted)	Objective 2: Code Enforcement Education & Training will inform these processes at the local level
4-3	Statewide liaison to assist local governments in energy efficiency, sustainability, and climate change programs	Objective 3: Policy Support & Advocacy
4-4	Develop local projects that integrate energy efficiency, DSM, and water/wastewater end uses	Objective 3: Policy Support & Advocacy
5-1	Create a menu of products, services, approved technologies, and implementation channels to guide local governments that currently lack deep expertise in energy efficiency	Objective 3: Policy Support & Advocacy
5-2	Develop model approaches to assist local governments participating in regional coordinated efforts for energy efficiency, DSM, renewables, green buildings, and zoning	Objective 3: Policy Support & Advocacy

b) Integration

i. Integrated/coordinated Demand Side Management

BayREN03 Table 16: Non-Energy Efficiency Subprogram Information

Codes and Standards		
Non-Energy Efficiency Subprogram	**Budget**	**Rationale and General Approach for Integrating Across Resource Types**
Water Utility Indoor Water Efficiency Incentive Programs	Vary	Coordination of training, standards monitoring and development
Local Government Outdoor Water Efficiency Programs (e.g., Lawn Conversion Rebates, Bay-Friendly Landscaping and Gardening)	Vary	Coordination of training, standards monitoring and development
Green Point Rated	Unavailable	Coordination of training, standards monitoring and development
U.S. Green Building Council	Unavailable	Coordination of training, standards monitoring and development

ii. Integration across resource types (included in Table 16 above)

c) Leveraging of Resources

Alameda County, San Francisco County, and Sonoma County have each made significant investments in codes and standards, which will be leveraged for this effort.

Alameda County (StopWaste.Org): Since 2001, StopWaste.Org has provided green building education, grants, and technical assistance to showcase leadership from the public sector. StopWaste.Org has assisted or given out grants and services totaling more than $3.5 million to civic and non-profits projects, provided training seminars and scholarships to hundreds of city/county staff, and helped establish green building ordinances (or "reach" codes) in every municipality in Alameda County. StopWaste.Org's green building program was recently recognized by the U.S. Green Building Council as the "Most Market Transforming" local government program in California, (see www.usgbc.org/california10). Features and accomplishments of StopWaste.Org include:

- Supplemental Verification Manual for CalGREEN Tiers that reduces ambiguity for inspectors and is compatible with 3rd party rating systems.
- Field-based building inspector training in verifying energy efficiency and green building measures.
- Mandatory policy toolkit for reach codes, including model findings for the California Building Standards Commission, a countywide cost-effectiveness study (now replicated by PG&E for its entire territory).
- Convened and sponsored regional policy networks and training sessions such as the Build It Green Public Agency Council and annual green building update seminars (2008-present).
- Funded development of verification checklists and rating systems to increase accountability: Build It Green's GreenPoint Rated, Bay-Friendly Coalition's rating system for landscapes, and the Small Commercial Checklist for Alameda County.
- Formed the Alameda County Water Supplier's Council to address water/energy planning, such as rebate coordination, codes and standards tracking, and training opportunities.
- Engaged in creating standardized tools and model policies for energy/green labeling and disclosure for commercial and residential buildings through an Innovator Pilot grant .

San Francisco: The City and County of San Francisco has been a national leader in adopting energy efficiency and green building policies. In 2011, the World Green Building Council awarded San Francisco its highest Leadership Award for "Excellence in City Policy for Green Building." In 2011 and 2010, San Francisco was recognized as the top office market in the United States in the Northwest Energy Efficiency Alliance/Cushman & Wakefield Green Building Opportunity Index, and was recognized by Siemens and the

Economist Business Intelligence Unit as the greenest major city in the United States and Canada Green City Index. San Francisco has received these honors in part because it:

- Developed and implemented San Francisco's Green Building Ordinance, which includes all California Green Building Standards Code requirements, and:
- Requires all buildings to beat Title 24 Energy Standards by at least 15%, to meet stricter requirements for storm water management, irrigation, and construction and demolition debris diversion.
- Requires all new residential buildings to meet GreenPoint Rated standards.
- Requires that all new large commercial buildings, as well as certain large tenant improvements, be designed and built to the LEED Gold standard.
- The Existing Commercial Buildings Energy Performance Ordinance requires non-residential buildings larger than 10,000 gross square feet to annually benchmark energy performance with Energy Star Portfolio manager, and to obtain an energy audit or retrocommissioning at least once every five years.
- Passed and implemented a Commercial Lighting Efficiency Ordinance that sets performance requirements for all 4' and 8' fluorescent fixtures, interior and exterior, including multi-family common areas.

Sonoma County: The *2010 Sonoma County Solar Implementation Plan* and the stakeholder process leading to its completion helped instigate a move to streamline green codes countywide. Currently all Sonoma County governments have adopted CalGREEN Tier 1. Local building officials used the Redwood Empire Association of Code Officials (REACO) as a platform to educate electeds, building staff, and most importantly designers, architects, builders, developers, and builders exchanges and other trade groups about the benefits of adopting the new CalGREEN codes. REACO has a green code committee that acts as an advisory body for local officials. They have a successful model for building local support. This is an example that BayREN could leverage for wider participation.

http://www4.eere.energy.gov/solar/sunshot/resource_center/sites/default/files/solar_implementation_plan_final-05-10-10.pdf

- REACO partners also developed "checklists" including a generic list and jurisdiction-specific lists that include sections for related code issues that must remain custom to each government, such as water-related codes
- REACO promoted CalGREEN adoption and enlisted 42 fire districts to adopt uniform fire codes as well; fire code overlaps energy upgrades in several areas including solar installations.

- Developed a standard solar permit that is used throughout the County.
- Local remodeling goal: Locally, some jurisdictions have set minimum code compliance at 500 square feet, which encompasses many remodeling projects and promotes upgrades in existing building stock

d) Trials/ Pilots

No trials or pilots will be operated as part of this program.

e) Knowledge Transfer

As one of its core activities, this program will utilize several strategies to disseminate best practices and lessons learned, including: Support a public agency forum, and convene seven (7) quarterly forums, for sharing best practices, such as interagency coordination or adoption of building labeling and disclosure policies

- Provide "train the trainer" engagement to engage regional leaders to deliver best practices and expert content at trainings and site visits provided to peer agencies.
- Leverage, evolve, and promote existing policy resources and toolkits
- Engage CALBO in alignment of interpretation of state codes by local officials. (Examples: Installation of insulation triggers a permit and inspection in some communities, but not others.)
- Coordinate and engage in the code development processes, such as Title 24 energy standards, CalGREEN, and IgCC.

12. Market Transformation Information

a) Market Transformation Objectives

The market transformation objectives of the BayREN Codes and Standards Program are the following:

- Increased general knowledge, understanding, and measurement of baselines of code compliance with existing energy/water/green building codes and policies.
- Improved metrics for compliance tracking, enhanced compliance understanding and enforcement, and increased documentation of code compliance quality assurance/verification in the nine BayREN counties and encompassed municipalities.
- Increased standardization of local reach codes across BayREN counties and incorporation of same reach codes into code development processes, such as Title 24 energy standards, CALGreen.

b) Market Description

Market actors include:

- **Local Governments —** Set greenhouse gas emissions, energy savings, and other sustainability goals and implement programs to meet those goals. Support IOU energy efficiency programs through professional and customer outreach, coordination amongst local actors, enforcement of code. Pilot energy efficiency programs.
- **Building and Specialty Inspectors/Code Officials —** Professionals employed in the establishment and enforcement of building codes, including life and fire safety, energy, and other codes and standards.
- **Local Policy Makers —** Local government staff, department heads, and elected officials charged with setting local codes and standards.
- **General Contractors —** Oversee delivery of residential remodels, other installation work. May perform direct installation or subcontract to specialty contractors. May be associated with whole house/building performance upgrades and Energy Upgrade California.
- **Specialty Contractors —** Have specialty license in HVAC, Insulation and deliver installation. May also perform whole house/building and general contracting duties. May or may not be associated with whole house/building performance upgrades and Energy Upgrade California.
- **Green Building Professionals —** Building professionals, including general and specialty contractors, who are trained in delivering or assessing technical work that incorporates additional green building concerns beyond energy efficiency, such as outdoor water efficiency, indoor air quality, resource conservation, and low-impact development/site water management. Serve as private contractors or on behalf of green building rating and incentive programs.
- **Energy Consultants/Raters —** Provide energy analysis and modeling services to owners and builders for code compliance. Includes HERS raters.
- **Professional boards and organizations** (CALBO, CSLB, etc.) **—** Centralize outreach channels to facilitate communication to targeted communities including building officials, contractors, and policy makers.
- **Code development agencies and organizations** (CEC, CALGreen, and IgCC) – Influence new code and standards development.

- **IOUs —** Run energy efficiency incentive programs. Conduct contractor management, quality assurance, program administration for these programs.
- **Workforce Training Organizations —** Community colleges, professional training organizations, workforce investment boards, and nonprofit programs that provide job training and placement services for new professionals.
- **Non-Energy Efficiency and Conservation Programs —** Water utility, local government, green building, and other programs that promote and incent resource conservation, air quality, green products, and other non-energy efficiency efforts.
- **Other Relevant Professional Trades —** Includes all professional industries and associations that may affect property owner and building professional choices, including real estate professionals, product manufacturers and suppliers. These actors affect behavior of their clients through the services they offer and products they provide.

c) Market Characterization and Assessment

Many of the market barriers associated with energy efficient codes and standards are described above in the Subprogram Description and Theory. Recognizing these barriers, California has come to increasingly depend upon codes and standards to cost-effectively save energy and reduce greenhouse gas emissions. Nineteen percent of energy savings attributed to ratepayer funded programs are derived from codes and standards.[34] However, there is room for improvement. The best statewide energy code enforcement study in recent years revealed noncompliance rates ranging from 28% for residential hardwired lighting to 100% for non-residential duct sealing.[35] Updates to make the state energy requirements and local reach codes more stringent have received significant attention and support in recent years. Codes are fundamental to achieving California's Zero Net Energy and greenhouse gas emission reduction goals. However, laws and regulations alone do not save energy. The intended energy savings can only be realized if code requirements are effectively enforced. To optimize compliance, all market actors—designers, builders, inspectors, state and local regulators, and IOUs—must understand their current performance and have effective feedback to motivate improvement. On the other hand, the *status quo*—complex requirements with no local and timely data to inform action — discourages compliance and erodes potential savings from more effective codes.

[34] http://docs.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/166830-10.htm#P1907_425870

[35] Quantec (2007), http://www.energycodes.gov/publications/research/documents/codes/ca_codes_standards_adopt_noncompliance.pdf While the study provided a crucial snapshot of enforcement across the state, a single study that included only one Bay Area jurisdiction (Sonoma County) does not provide specific, actionable information or a record of performance over time. A better baseline is needed to truly gauge the compliance or noncompliance of energy and water provisions of the codes.

Building code officials, who are critical for ensuring compliance with Title 24 standards, must deliver inspection and plan review services within the political limitations of cost-recovery fee structures. Given limited time and resources, their first priority is to ensure that life-safety and fire standards are met. To efficiently use the extremely limited time and resources dedicated to enforcing energy-related codes, it is critical to raise the baseline level of compliance for common measures and to enhance inspector efficiency. Data-driven training and quality assurance programs, which are proven tools for enhancing productivity in many industries, have yet to be applied to energy code enforcement.

As codes change, it is also critical to ensure that enforcement staff is expert in the specifics of such changes. However, the pace of change in energy and green building codes is much more dramatic than in other building standards. Peer-to-peer training and forums for professional exchange among inspection staff will help leverage and reinforce existing training resources for contractors and design professionals.

d) Proposed Interventions

Proposed interventions have been described throughout this subprogram description. A summary is provided in the table below.

BayREN01 Figure 4: Market Transformation Barriers and Interventions

Barrier	Proposed Intervention
Existing gaps in understand of code compliance	Code compliance baseline and tracking
Existing patchwork of standards and their interpretation	Audit incentives, Flex Package incentive, financing (BayREN04)
Lack of effective training	Multiple and accessible trainings to increase code enforcement and compliance
Lack of consistent sharing of best practices and policies	Best practice forums for building officials and policy makers and “train the trainer” engagement
Lack of local jurisdiction engagement in code and standards adoption processes	Build upon existing policy resources and toolkits and align local official interpretation of state codes

e) Program Logic Model: See Program Logic Model in Attachment 1

f) Market Transformation Indicators (MTIs) and Evaluation Plans

Resolution E-485 (December 2, 2010) Appendix B, lists adopted Market Transformation Indicators for the 2010-2012 Energy Efficiency Portfolio, which were then amended by Energy Division in 2011 at the direction of the Commission. To ensure consistency with adopted Market Transformation Indicators and Program Evaluation strategies, BayREN proposes the following Market Transformation Indicators, based upon the proposed amended Codes and Standards MTIs proposed by Energy Division in 2011:

- Codes and Standards MTI 3: Compliance rates of remodels triggering T24 in existing (a) homes and (b) commercial buildings in California. Metric Type 3.

- Codes and Standards MTI 4: Compliance rates of T24 in (a) new homes (b) new commercial buildings in California. Metric Type 3.
- Codes and Standards MTI 5: Percent of building departments (jurisdictions) that adopt and use tools identified as industry best practices to improve permit application, tracking, and inspection processes and increase regional consistency. Metric Type 3.
- Codes and Standards MTI 6: Number of measures from Voluntary beyond code standards and rating systems (LEED, CHPS, 189) that are incorporated into mandatory T24 Standards in the Residential and Commercial Sectors. Metric Type 3.
- Codes and Standards MTI 8: Number and percent of eligible jurisdictions participating in the compliance enhancement program.

Program evaluation will be conducted in coordination with EM&V activities conducted on behalf of the Commission and PG&E. BayREN partners will participate as possible in all data collection and interpretation activities, as directed by the Commission.

13. Additional information as required by Commission decision or ruling or as needed: N/A

V. SUBPROGRAM BAYREN04

1. Subprogram Name: BayREN Energy Efficiency Financing Portfolio

2. Subprogram ID number: BayREN04

3. Type of Subprogram: Regional Energy Network

4. Market sector or segment that this subprogram is designed to serve:

a) _X_ Residential

Including Low Income? _X_ Yes __ No

Including Moderate Income? _X_ Yes __ No

Including or specifically Multi-family buildings _X_ Yes __ No

Including or specifically Rental units? _X_ Yes __ No

b) _X_ Commercial (List applicable NAIC codes):

- 531312 — Non-Residential Property Managers
- 236220 — Commercial/Institutional Building Construction (includes additions, alterations, and renovations)
- 522110 — Commercial Banking
- 531120 — Commercial Buildings Rental/Leasing

c) _X_ Industrial (List applicable NAIC codes:

- See above for Commercial; plus236210 — Industrial Building Construction

d) _X_ Agricultural (List applicable NAIC codes:

- Included in Commercial/Industrial

5. Is this subprogram primarily a:

a) Non-resource program ___ Yes _X_ No

b) Resource acquisition program _X_ Yes __ No

c) Market Transformation Program _X_ Yes __ No

6. Indicate the primary intervention strategies:

a) Upstream ___ Yes _X_ No

b) Midstream ___ Yes _X_ No

c) Downstream _X_ Yes ___ No

d) Direct Install _X_ Yes ___ No

e) Non Resource_X_ Yes ___ No

7. Projected Subprogram Total Resource Cost (TRC) and Program Administrator Cost (PAC)

TRC and PAC will not be calculated for this subprogram.

8. Projected Subprogram Budget

BayREN04 Table 1: Projected Subprogram Budget, by Calendar Year [36]

	Program Year		
Subprogram	**2013**	**2014**	**Total**
Admin ($)	$292,500	$202,500	$495,000
General overhead ($)	$0	$0	$0
Incentives ($)	$0	$0	$0
Direct Install Non-Incentives ($)	$2,415,600	$3,206,400	$5,622,000
Marketing and Outreach ($)[37]	$469,000	$336,000	$805,000
Education and Training ($)[38]	$0	$3,000	$3,000
Total Budget	**$3,177,100**	**$3,747,900**	**$6,925,000**

[36] See BayREN01, Table 1- Projected Subprogram Budget, by Calendar Year for category definitions. BayREN04 budget includes Single-Family Loan Loss Reserve and Multi-Family Capital Advance Program funds that are reserved until further authorization after the statewide financing consultant proposals are complete.

[37] A separate but targeted budget for the Finance Portfolio Subprogram has been included to provide ME&O specific to this program, e.g., cooperative advertising with lenders, specific lender-based collateral, and marketing directed at home financing and refinancing options.

[38] Education and Training under the Finance Portfolio Subprogram is specifically for the Pay-as-You-Save Pilot. Education and Training related to the Single Family LLR and Multifamily CAP (e.g., for contractors, appraisers, realtors, etc.) is provided for in the budgets of the Single-Family, and Multi-Family Subprograms.

9. Subprogram Description, Objectives and Theory

a) Subprogram — Financing Portfolio Elements

Pending CPUC authorization, the BayREN Energy Efficiency Financing Portfolio (the Financing Portfolio) will provide a variety of financing options to serve diverse consumer markets (residential and non-residential) across the 9-County region. Through a cross-leveraged, multi-option financing menu, and tiered systems that scale loan and credit enhancements to energy performance, the Financing Portfolio will address gaps that emerged as key impediments to broader uptake and deeper efficiencies during the ARRA SEP. In addition, the Financing Portfolio connects lenders, local governments, contractors, professional and trade organizations, and the utility in common messaging and marketing of the BayREN programs, featuring cash-positive and cash-neutral financing options, the value of benefits and co-benefits (including public health), and expanding the understanding and deployment of energy efficiency to the full "energy system," as well as addressing substantial energy consumption embedded in other building systems such as water.

Specifically, the BayREN Financing Portfolio will consist of:

- B1. Residential loan loss reserve program in Support of Energy Upgrade California Single-Family Home Projects (EUC SF-LLR)

$3,825,000 - reserved pending coordination with programs proposed by the statewide financing consultant and CPUC authorization. This financing option is structured to stimulate uptake in single-family home energy efficiency projects by way of a Loan Loss Reserve (LLR), partially tiered to increase the reserve ratio for deeper projects assessed for higher efficiency improvements. This model introduces a security/assurance mechanism to promote increased lender engagement and motivate competitive interest rates. The EUC SF-LLR will stimulate demand by leveraging a common regional design and application, enhanced by the capacity of local governments to augment the program with district, agency, foundational and/or federal grants, and additional inducements (such as matched water district incentives). Similar programs established by Los Angeles County and Santa Barbara County, and national programs in Wisconsin, Missouri, Washington, Maryland, and North Carolina, demonstrate the promise of loan loss reserves to suppress default risks and lower interest rates. The funds requested would support a region-wide Bay Area program, and facilitate private sector financing for approximately 1,345 energy upgrade loans worth approximately $16 million. Measures eligible for these loans would include those eligible for a BayREN Flex Package Incentive or a PG&E EUC-SF Incentive. Renewable technologies would not be eligible for these loans.

BayREN is confident that a robust LLR is a compelling tool to enroll lender participation, but agrees that all research indicates low default rates. As loans are enrolled, the approved debt-risk ratio will be encumbered and shifted to a parallel account (LLR-Encumbered). A LLR will expand the consumer base lenders are willing to consider for energy efficiency loans. At the same time, the fiduciary obligation owed by all to ratepayers requires us to temper broadening the potential consumer base too

far, with prudent lending criteria. Furthermore, since the LLR is set to a maximum risk ratio of 20 percent and amortized at five years (at the recommendation of CPUC Energy Division staff and the statewide financing consultants), the portion of the LLR encumbered to secure the risk-ratio of enrolled loans would have to remain intact until each loan term hits five years. Recognizing this complex balance, BayREN anticipates unspent, unencumbered LLR funding at the conclusion of the 2013-2014 EE Transition Period, and recommend quarterly reporting throughout 2013-2014; and a post-cycle financing workshop/process to review performance of the various credit enhancements and financing mechanisms, and to reassign or retain LLR based upon that analysis. It is important to note that no leverage dollars are anticipated for the LLR itself. BayREN projects an average of 20 percent energy efficiency improvement across Flex Package projects, and 30 percent energy efficiency improvement across PG&E EUC-SF Advanced projects.

- B2. Residential Multi-Family Capital Advance Program Pilot In Support of Energy Upgrade California Projects (EUC MF-CAP)

$2,000,000 - reserved pending coordination with the multi-family statewide financing pilot and CPUC authorization. The EUC MF-CAP Program will be available for eligible owners of multi-family properties with at least 5 units, who undertake upgrade projects with a scope defined by the bundled measure incentive program (see BayREN02) or the PG&E EUC-MF Path. The EUC MF-CAP Program will advance to participating lenders up to $5,000 per unit or 50% of the total loan principal, at 0%. This arrangement results in an effective interest rate of about half of the lender's interest rate, significantly reducing the cost of capital for the property owner. The underwriting criteria and loan terms are negotiated directly with the lender, which makes the program more attractive to financial institutions, and reduces the administrative burden for program implementation. The property owner is obligated to repay the total principal, and BayREN will receive a pro rata share of each payment. The repaid funds will be available to provide principal capital for additional projects. This model has been successfully implemented by the State of New York under the NYSERDA Multi-Family Home Performance Program, and demonstrates a model that is competitive and attractive to both lenders and multi-family building owners.

The EUC MF-CAP Program is projected to reach a minimum of 1,200 units. Program funds will be used for credit enhancement, further program development, and program administration. The Pilot is designed to work within a larger program offering with minimal additional administration.

Integrated program offering. The Pilot will be offered in direct conjunction with the broader BayREN multifamily program. The Pilot will leverage the outreach, technical assistance (TA) and incentives planned under Energy Upgrade California. Based on experience implementing programs, it is crucial that financing products are not treated as stand-alone tools, but rather as critical components of a comprehensive residential market transformation approach. Offering a simple lending product that can be quickly deployed in conjunction with the bundled measures incentives as one piece of an integrated approach. The addition of financing options will help "close the deal" with

some property owners who might receive incentives but lack up-front capital to fund the balance of upgrade costs. The BayREN anticipates that the on bill repayment (OBR) financing will also be available through the IOUs as an option to which its technical assistance providers can refer property owners during technical assistance phase.

The BayREN Multifamily program and the financing Pilot will be integrated through the following mechanisms:

- TA will include referral to the financing Pilot, among other financing sources
- Bundled measure incentive will define a list of measures that will also be eligible for financing
- TA will pull together bundled measure incentive and Pilot financing to present a scenario combining rebates and financing to fund the upgrades

Simple and quick. The Pilot requires minimal infrastructure development and administration. It utilizes lenders' existing infrastructure and practices. The underwriting criteria and loan terms are negotiated directly with the lender, which makes the program more attractive to financial institutions, and reduces the administrative burden for program implementation. Simple and quick is necessary to have a financing component available to coincide with the rest of the BayREN multifamily program offering. The capital advance or co-financing model was selected because it promises to provide a simple financing product with preferable terms to enable participants in 2013 – 2014 energy efficiency rebate programs to fund retrofits that are:

- Widely available to all ownership, affordability, and metering configuration types
- Fast to implement, requiring minimal infrastructure development and lender negotiations
- Simple to communicate to lenders and property owners

Serves the whole market sector. The Pilot will be available to all multifamily properties within the BayREN/ABAG region that meet participating lenders' underwriting criteria. The Pilot is not limited to a specific sub-sector; rather it is open to serve market rate and affordable housing, master and individually metered, etc. as well.

Serves individually metered, split incentive properties. Opening program eligibility to include individually metered properties allows properties with split incentive issues to choose to invest in their properties. Particularly in unrestricted market rate properties, owners may perceive the improvements as property enhancements that will garner indirect payback through increased rental value and are not motivated by the need to receive direct payback. While the Pilot does not propose a direct solution to overcome the split incentive barrier, it does serve properties with this barrier. The Pilot will yield findings on whether non-direct-payback value propositions exist in individually metered properties.

Repayment reduces actual program costs. The Pilot contains a repayment mechanism. Theoretically, up to 100% of the capital advance pool funds could be repaid by the end of the loan term. As the IOU financing consultants explained in their 11/30/12 response, the standard method of evaluating the leveraging of ratepayer funding is limited to consideration of up-front costs without a mechanism to account for the repayment of ratepayer funds. If considering the value of the repayments, the net present value of the cost of the capital pool could equal half of the upfront capital value of $1.5 million, thereby dramatically improving the cost effectiveness and leverage ratio of ratepayer funds.

The Pilot design is distinct from an interest rate buy-down or loan loss reserve (LLR) program because the funds are expected to be fully regained, less a small default rate. The funds that are regained through borrower repayment must be managed through on-going collection and accounting capacity. If the Pilot is successful the BayREN anticipates proposing on-going administration of the program in future funding cycles. If the Pilot is determined to end at the end of 2014, one solution would be for repayments to be collected into a fund managed by BayREN, PG&E, or other entity to supplement future Energy Efficiency program budgets.

Tests additional objectives. Deployment of a small pilot which requires minimal investment by leveraging the BayREN Multi-Family Subprogram is a cost-effective way to gather feedback from property owners regarding what would make financing attractive to them. This will prime the lending community for engaging in refined multi-family energy efficiency lending products in the future. This Pilot tests the viability of financing product features to inform future product development:

- Is a lower interest rate sufficient to incentivize credit-worthy property owners to take on debt to finance energy efficiency projects?
- Does the availability of low interest financing increase the volume or scopes of rebated energy efficiency projects?
- Gather performance data to provide evidence and confidence in the viability of financing energy efficiency projects.
- Engage lenders in energy efficiency projects and increase their exposure to, familiarity with, and understanding of energy efficiency projects.

Flexibility. The Pilot's design of offering a 50% capital advance at the 0% interest rate is flexible and could be modified in the future to incentivize certain desired outcomes. For example, the capital advance percentage could be tiered to encourage deeper energy savings, so that a 10% energy savings project is eligible for a 20% capital advance while a 20% energy savings project is eligible for a 40% capital advance, proportionally reducing the effective interest rate. For the immediate program launch, BayREN believes it is important to maintain program design simplicity, and will not pursue a tiered structure. These options will be retained for future consideration and demonstrate the financing mechanism's adaptability..

Eligible Measures. The scopes that will be approved for receiving the Pilot's capital advance funds will need to meet the following minimum criteria:

- Measures qualifying for PG&E EUC Multifamily or BayREN MF incentive rebate programs
- Undergone QA through one of the two programs

Market Size. The Bay Area contains approximately 700,000 dwelling units in multifamily buildings with 5 or more units. If the average upgrade is estimated to cost $3,000 per unit, the total market for upgrading all 5+ unit buildings is $2.1 billion. The current pilot targets loan aggregation of $3 million, which would serve approximately 0.14% of this market. The eligible market segment is limited to properties that can take on more debt, and meet lenders' underwriting criteria. The percentage of the total market that is represented by eligible projects is unknown at this time; this will be a finding of the Pilot.

- B3. Support for existing Commercial PACE Options throughout the BayREN Area (Commercial PACE Program)

$450,000. Commercial PACE programs are projected to drive energy efficiency upgrades in large-scale, commercial, industrial, and even agricultural buildings and facilities, and are presently being implemented in the Counties of San Francisco and Sonoma, as well as Los Angeles County. BayREN funds will be used to leverage Commercial PACE programs as part of CaliforniaFIRST efforts. This will include administrative and marketing and outreach support for these programs throughout the Bay Area. The Commercial PACE Program will maintain a current database on Commercial PACE options as part of BayREN's one-stop Energy Efficiency Programs website.

The Commercial PACE Program will assist CaliforniaFIRST to refine and streamline program administration, sustain project momentum, track results, and improve operational efficiency and scale through web-based processes. A web-based programmatic tool will consolidate, in one resource, coordinated databases that provide:

- A directory of capital providers and contractors (continuously updated)
- An automated project financing clearinghouse
- Web-based energy audit tracking
- Clearinghouse of financing options, including opportunities for cash-positive or cash-neutral project scaling
- Reference database for lenders that will cross- reference other REN program indicators and performance

As BayREN Commercial PACE activities will leverage CaliforniaFIRST financing, BayREN cannot offer a projected timeline for the disbursement of loan funds. BayREN will work with CaliforniaFIRST and other regional Commercial PACE programs (e.g. the Sonoma County Energy Independence Program) to establish reporting processes to capture energy savings from BayREN initiated projects. However at this time it is not

possible for BayREN to offer an estimate of expected energy savings per project. Furthermore, it is important to note that there is potential for lenders holding existing mortgages to offer direct loans in lieu of a PACE-repayment, resulting in energy efficiency retrofits and retrocommissioning that is initiated or simulated via a Commercial PACE program even if not consummated through PACE.

- B4. Pay-as-You-Save® Energy/Water Efficiency Pilot

Up to $650,000. The Pay-as-You-Save (PAYS®) Energy/Water Efficiency Pilot creates an innovative program at the water-energy nexus, targeted at measurable strategies that address the substantial energy usage embedded in residential water use. PAYS® is a market-based system in which customers, vendors, and capital providers, acting in their own interests, produce unprecedented resource efficiency investment that is also in society's interest. The Pilot will cover one to three jurisdictions, which will elect either to secure a third-party capital fund partner or to self-fund, to advance the costs of Basic and Basic-Plus packages of bundled measures to eligible, qualifying residential property owners (to serve homeowners and renters), with the option to expand to non-residential properties. This pilot will deploy a Certification Agent to verify eligibility based upon various factors, most importantly whether projected energy/water efficiency improvements will generate monthly bill savings in excess of the monthly project surcharge. Participants will repay project costs though a surcharge that covers the cost of measures, installation, and program administration. The surcharge is applied to water utility bills over a term of years assigned to the bundled package. Advanced measures (e.g., hot water-recirculation pumps and high-efficiency refrigerators) fall under the Pilot but are subject to a co-pay arrangement with property owners. The repayment obligation attaches to the property itself so that subsequent owners or tenants are responsible for outstanding balances, but also reap the water and energy efficiency benefits of the efficiency installations.

This subprogram is forecast to execute 2,000 projects. BayREN has set a goal of having 10% of those customers living in multifamily housing. This is in order to reach customers that for various reasons (including split incentives) are more difficult to reach. Furthermore, depending upon the implementing jurisdiction, the Pay-as-You-Save pilot could be tailored to serve non-residential properties as well. If program participation is lower than expected, BayREN will evaluate whether program design modifications are needed (e.g. modified measures offerings) or whether marketing and outreach efforts should be changed.

While Pay-as-You-Save funding will provide for program design and implementation costs, all capital used to finance program projects will be provided by a third party source to be recruited in the course of program design. This third party may be the implementing jurisdictions or private capital. The program interest rate will depend on the source of this third party capital; however it is anticipated that the interest rate will not exceed 7 percent. Because third party capital will finance any installed Pay-as-You-Save projects, BayREN funds are not impacted by participant defaults. Furthermore, there are no underwriting criteria for participants, as repayment is made through the

customer's surcharge, which is authorized under the implementing jurisdictions municipal code as highlighted in the following paragraph.

The Pay-as-You-Save pilot will be based upon the Better Buildings Program/Department of Energy funded Windsor Efficiency PAYS® pilot. Under the Windsor Efficiency PAYS® pilot, a surcharge is added to the participant's water account to repay the cost of the installed measures. The surcharge is for a basic utility service and the customer is liable for payment of the charges under this surcharge under the same conditions as the underlying Water Rate including, but not limited to, the Customer's service being subject to disconnection for non-payment in accordance with the rules of the Town of Windsor.[39] In the event of a default, after exhausting all reasonable and customary collection efforts the utility will recover any documented Windsor Efficiency PAYS®-related uncollectibles from the Windsor Efficiency PAYS® reserve fund. When this fund has been depleted, a $250,000 security fund from the Sonoma County Water Agency will be used to recover remaining uncollectibles. Should the Security Fund be exhausted, the utility will recover Windsor Efficiency PAYS®-related uncollectibles from all of its Customers or write it off on the water enterprise fund. At no point would bad debt be applied against water district bonds. While a final list of eligible measures will necessarily be determined in conjunction with the implementing jurisdictions, a draft list of residential measures is provided below in Figure 1 based upon the Windsor Efficiency PAYS® program. If existing baseline equipment is different from the newer single family homes in Windsor, additional measures will be added. Eligible measures fall into three categories:

- Basic measures: If eligible in a customer's home or business, must be installed if the participant wants to install any other program measures. Basic measures require no upfront customer co-payment and are permanent measures – they stay with the property when the customer relocates and any remaining surcharges are paid by the next occupant.
- Basic-Plus measures: are optional and also require no upfront co-payment.
- Advanced measures: are resource-saving measures that, based on current rates, are not sufficiently cost effective to qualify for surcharge repayment and therefore require an upfront out-of-pocket customer co-payment to enable the remainder of the measure cost to qualify for the surcharge. The Windsor pilot and existing programs based on the PAYS® system in Kansas and Kentucky have proved many customers will purchase such measures if given the opportunity.

Measures will save water, gas, electricity, or a combination of these resources. In order to qualify for repayment through the surcharge, the surcharge for residential customers must be no more than 75 percent of the estimated water and energy cost savings; for every $7.50 in PAYS® surcharges, customers receive at least $10.00 in utility bill

[39] The surcharge is subject to the terms and condition of the Windsor Water Rate and the Town of Windsor municipal code 12-3-615 — Combined Billing

savings. For commercial customers, the threshold can be raised to 80% of estimated total savings.

BayREN04 Figure 1: Pay-as-You-Save Draft Eligible Measures

Measure	Basic (required if eligible)	Basic Plus	Co-pay (upfront cost)
Showerheads	√		
Aerators	√		
Toilets	√		
Compact fluorescent lights (CFLs)		√	
Clothes Washers		√	
Standard Landscaping		√	
Enhanced Landscaping			√
On-Demand Hot Water Recirculation Pumps			√
Luxury Clothes Washers			√

Specific concerns and gaps addressed by the BayREN Financing Portfolio include:

- **Limited Access to Financing** – Due to loan and funding products, a majority of advanced package energy upgrades during the SEP Period were financed either personally or through pre-existing home equity lines of credit. The BayREN Financing Portfolio provides credit enhancement mechanisms that will act as independent and responsible assurances for banks and other lenders, mitigate risk, and promote expansion of new energy upgrade loan programs among banks, credit unions, and other lending institutions. Moreover, it will provide residential and non-residential property owners with compelling and competitive arrangements for financing energy efficiency.

- **High Interest Rates** – Studies reveal interest-rate ranges that have an inverse effect on consumer uptake of energy efficiency loan products and programs.[40] Energy efficiency LLR programs established in 2011 by the Counties of Santa Barbara and Los Angeles indicate that a LLR acts to mitigate lender risk and counter the existing market's credit barrier. By scaling LLR ratios to energy upgrade performance, the Financing Portfolio Program will drive the dual priorities of increasing demand and program uptake, and stimulating the market in higher efficiency projects. The Multi-Family Capital Advance Pilot is modeled after the Green Jobs Green New

[40] *Energy Efficiency Financing in California*. Rep. The California Public Utilities Commission, Energy Division and Harcourt Brown & Carey , July 2011; Grand Designs Great British Refurb Campaign Survey (2011); Philadelphia ENERGYWORKS Better Buildings Neighborhood Program; "Financing Residential Energy Efficiency: Assessing Opportunities and Coverage Gaps in the American Recovery and Reinvestment Act of 2009; "Report to the Oregon Utility Commission on Pilot Programs for the Energy Efficiency and Sustainable Technology Act of 2009", Energy Trust of Oregon Public Purpose Fund Administrator (October 1, 2010). During the SEP Program, Los Angeles County determined that without a Loan Loss Reserve, the interest rate for an unsecured loan increased by 170 points.

York multi-family low-interest loan program, and pilots an innovative mechanism to reduce the effective interest rate by 50%.

- **Burdensome Loan Processes** – The Financing Portfolio will streamline the loan application and enrollment processes, and offer customers and contractors continuity, consistency, and support, thus enabling a wider, deeper reach for energy efficiency upgrades. In particular, banks and lenders prefer a streamlined, web-based loan application and enrollment process.

- **Lack of Regional Consistency, Continuity, and Economies of Scale Through Aggregation and Leveraging** – Promotion of a centrally financed and administered portfolio will drive broader and deeper penetration of energy efficiency upgrades, capture hard-to-reach consumer markets, and lower energy efficiency project and program costs. This will reinforce and broaden public awareness and understanding of Energy Upgrade California programs, where a complex pattern of customized programs across the State previously frustrated contractors and confused the public.

- **Split Incentive Barrier** (between building owners and tenants) – Commonly, owners are reluctant to pay for building improvements that appear to only benefit tenants. The BayREN Program will address this market barrier by quantifying benefits and co-benefits of whole building upgrades (including water systems), financing options and incentives, and demonstrating cash-neutral or cash-positive outcomes (upgrades that provide cost avoidance volume that surpasses monthly loan expenses). Commercial PACE offers a solution in multi-tenanted buildings since taxes and assessments qualify as a pass-through expense in many leases.

- **External Leverage-Deficit** – The ability of local governments to (1) provide unique government incentives such as fast-track review and permitting, and (2) compound leveraging of district, agency, foundational, and/or federal grant programs, allows for additional inducements to increase demand. Also, local governments will incorporate the BayREN programs into public messaging, marketing, and outreach with other programs, including air quality, climate action, and sustainability programs and projects.

Regarding the BayREN Financing Portfolio Subprogram, in the Decision governing the 2013–2014 cycle, the Commission did refer to Sempra Utilities the responsibility of securing consultant(s) to produce a white paper on financing options and programs that might be implemented on a statewide basis. The BayREN Financing Portfolio Subprogram is based upon existing financing pilots and projects running within the Bay Area region and in other California jurisdictions, as well as in local and state programs throughout the United States. Lessons learned and elements of success have been designed into the BayREN Subprogram, which may provide additional institutional

history to energy efficiency financing programs and serve as a financing laboratory for the Commission's future, more comprehensive plans for the State. BayREN looks to share these lessons learned with the statewide financing consultants.

b) Subprogram Energy and Demand Objectives

BayREN04 Table 2: Projected Subprogram Net Energy and Demand Impacts, by Calendar Year[41]

	Program Years		
	2013	**2014**	**Total**
Energy Efficiency Financing Portfolio			
GWh	0	0	0
Peak MW	0	0	0
Therms (millions)	0	0	0

c) Program Non-Energy Objectives

i. SMART non-energy objectives of the subprogram

- During the period 2013−2014, the BayREN Financing Subprogram will facilitate loans aggregating $16,000,000 in the PG&E EUC-SF and Flex Package Program. Metric Type 2b.
- During the period 2013−2014, the BayREN Financing Subprogram will facilitate loans aggregating $3,000,000 in the Comprehensive Multi-Family Subprogram. Metric Type 2b.
- The Program will serve the other BayREN Subprograms to increase conversion rates by no less than 15%, average energy efficiency improvement by no less than 5%; and number of projects by 20% (as compared to the 2011-2012).

ii. See above.

iii. Relevant baseline data

Compliance baselines are to be developed through this program.

[41] Given that the Single Family Loan Loss Reserve and Multifamily Capital Advance Program will be finalized in coordination with the statewide financing consultant, projected savings for the Financing Subprogram are not offered at this time. Furthermore, while energy savings have been estimated for these Financing Subprogram components, they may be duplicative of energy savings claimed in other programs. Energy savings estimates can be provided upon request of the Commission.

iv. Quantitative Subprogram Targets

BayREN01 Table 3: Quantitative Subprogram Targets

Target	2013	2014
Percentage of Flex Package Projects facilitated through the Financing Portfolio Subprogram	16%	22%
Percentage of PG&E EUC-SF projects facilitated through the Financing Portfolio Subprogram	25%	36%
Number of multi-family projects (and units) served by the Multi-Family-CAP Financing Pilot	10 projects (400 units)	30 projects (800 units)
Number of Projects forecast under the PAYS® Subprogram		2,000 projects

d) Cost Effectiveness/Market Need

Methods used in the Standard Practice Manual.

The framework for the BayREN Financing Portfolio Subprogram combines expanded lending options, risk management mechanisms, conventional incentives, and tiered performance-based incentives aligned to energy improvements to promote centrally-administered, high-yield, and cost-effective programs. Key elements of the Financing Portfolio have been recognized in a number of studies and white papers, as well as programs in other states. In addition, current financing gaps and the downward pressure these gaps impose upon energy efficiency program outputs has been clearly documented, in state, national, and international sources. Among sources for these assumptions, please note:

Scaling Energy Efficiency in the Heart of the Residential Market: Increasing Middle America's Access to Capital for Energy Improvements, Clean Energy Financing Policy Brief. Zimring, M., M.G. Borgeson, I. Hoffman, C. Goldman, E. Stuart, A. Todd and M. Billingsley (Lawrence Berkeley National Laboratories, April 4, 2012).

The Role of Local Governments and Community Organizations as Energy Efficiency Implementation Partners: Case Studies and a Review of Trends, American Council for an Energy Efficient Economy and the Energy Efficiency Strategy Project/ Massachusetts Institute of Technology (February 2012).

Energy Efficiency Financing in California. The California Public Utilities Commission, Energy Division and Harcourt Brown & Carey, July 2011.

Grand Designs Great British Refurb Campaign Survey (2011).

Philadelphia ENERGYWORKS Better Buildings Neighborhood Program.

Financing Residential Energy Efficiency: Assessing Opportunities and Coverage Gaps in the American Recovery and Reinvestment Act of 2009, National Housing Conference and the Center for Housing Policy (September 2009).

Report to the Oregon Utility Commission on Pilot Programs for the Energy Efficiency and Sustainable Technology Act of 2009, Energy Trust of Oregon Public Purpose Fund Administrator (October 1, 2010).

Expanding North Carolina Energy Efficiency and Renewable Lending Programs: Market Snapshot, Environmental Finance Center at University of North Carolina at Chapel Hill (September 2010).

"Recommendations for Energy Efficiency Finance Pilot Programs", Harcourt Brown & Carey, October 19, 2012.

e) Measure Savings/ Work Papers

i. Indicate data source for savings estimates for program measures (DEER, custom measures, etc.).

Given that the Single Family Loan Loss Reserve and Multifamily Capital Advance Program will be finalized in coordination with the statewide financing consultant, projected savings for the Financing Subprogram are not offered at this time..

ii. Indicate work paper status for program measures

BayREN04 Table 4: Work Paper Status

Work Paper Number/Measure Name	Approved	Pending Approval	Submitted but Awaiting Review	Not Yet Submitted
Workpapers not required				

10. Program Implementation Details

a) Timelines

While the launch of the Single Family LLR and the Multi-Family CAP programs is pending coordination with the statewide financing consultant and CPUC authorization of the specific funding for these programs, BayREN offers the timeline found in Table 5 for the Financing Subprogram.

BayREN 04 Table 5: Subprogram Milestones and Timeline (example)

Milestone	Date
Program(s) Initiation Meeting – Steering Committee	Dec. 2012
Single-Family LLR Administrator RFP issued	Pending
Multi-Family CAP Administrator RFP issued	Pending
Marketing RFP issued	1/31/2013
Necessary Jurisdictional Resolutions Adopted	Pending
Consultants and contractors for approved financing components selected and contracted	2/27/2013
Initial Banks/Lenders Enrolled in Program(s)	Pending
PAYS® Utility Enrollment/Program Design Development Launch	02/01/13
PAYS® Program Team Confirmed/Utility Approval(s)	12/01/13
PAYS® Pilot(s) Launch	01/01/14
Installations completed	11/15/2014
Conclude Pilot Program	12/31/2014
Quarterly Progress Reports	3/31/2013 – 12/8/2014

In addition, BayREN offers the following implementation details for the components of the Financing Subprogram. Please note that the timeline in Table 5 above identifies milestones related to the Single-Family LLR and Multi-Family CAP pending CPUC final approval of these programs and their associated budgets. Therefore any timelines presented below reflect potential BayREN activities pending this final CPUC approval.

Single-Family LLR Implementation Details

In addition to the milestones included within Table 5, in regards to the Single-Family LLR, BayREN members have conferred with banks, credit unions, and other lending institutions over the past two years regarding various credit enhancements loan enrollment mechanisms. All have indicated that a LLR stimulates the participation of lending institutions because:

- It lends insurance to a new loan product
- Allows lenders to broaden eligibility, typically in FICO scores
- Represents a commitment by the State to a program that requires a time and resource investment on their part to launch

Lenders have also emphasized that energy efficiency loans products must have streamlined document processes, quality control/assurances processes implemented in a timely and responsible manner by the program implementers, and a robust and compelling marketing campaign to raise awareness and stimulate consumer uptake. Based upon this substantive exchange with lenders, the BayREN has created a plan along the following timeline for activities prior to disbursement:

- January – April 2013: Complete a Master Request for Proposals procurement process to engage quality control/quality assurance and marketing teams working in concert with BayREN Members

- January – April 2013: Formalize lender partnerships for the EUC-Single Family Program (including modified Basic Path), and develop strategic plan for loan product marketing and launch
- January – April 2013: Establish Loan Loss Reserve Account and Loan-Loss Reserve Encumbered Account
- January – April 2013: Formalize documents and mutual processes to coordinate loan enrollment and approval with shift of amount(s) equal to the loan risk ratio from the Loan Loss Reserve Account into the Loan-Loss Reserve Encumbered Account
- January – April 2013: Formalize reporting templates and frequency with Energy Division and PG&E

And timeline for support activities as follows:

- March – July 2013: Completion of Green Labeling Pilot with SoCalREN; liaison with Department of Energy on its Home Energy Score program
- March – August 2013: Progressive development of financing-targeted marketing collateral; potential expansion of case study/white paper on Green Scoring and Labeling pilots, programs and trends; circulation of data on energy efficiency/indoor air quality improvement pilot; marketing green labeling study through real estate trade venues
- August 2013: Launch initial training with real estate professionals and convening of Green MLS groups and workshops

BayREN04 Figure 2: Single Family LLR Budget

PIP Budget Categories	Year		Total
	2013	2014	
Admin	$75,000	$55,000	$130,000
General Overhead	$0	$0	$0
Incentives	$0	$0	$0
Direct Install Non-Incentives	$1,540,000	$1,925,000	$3,465,000
Loan Loss Reserve Commitment	*$1,440,000*	*$1,800,000*	*$3,240,000*
Loan Servicer	*$100,000*	*$125,000*	*$225,000*
Marketing & Outreach	$104,000	$126,000	$230,000
Education & Training	$0	$0	$0
TOTAL BUDGET	**$1,719,000**	**$2,106,000**	**$3,825,000**

BayREN04 Figure 3: Single-Family LLR Projected Expenditures

	2013		2014		Total	
	Number of	LLR	Number of	LLR	Number of	LLR

	Loans	Commitment	Loans	Commitment	Loans	Commitment
Single-Family LLR	390	$1,120,000	955	$2,120,000	1,345	$3,240,000

Multi-Family CAP Implementation Details

The proposed Multi-Family Capital Advance Pilot budget is $2,000,000, $1,500,000 of which are funds directed to the capital pool that is excepted to aggregate $3,000,000 in total loans, leveraging an equal contribution from the private lending market. The Pilot was designed specifically to minimize administrative cost and upfront delays for infrastructure development. By leveraging existing financial institutions' lending practices, the Pilot minimizes the administrative burden to $500,000.

Target Units	1,200
Average Loan Value per Unit	$2,500
Average Pilot Capital Investment per Unit	$1,250
Total Target Loan Aggregation	$3,000,000

The BayREN will undertake activities prior to the launch of the Pilot, and ongoing during the funding cycle to support the Pilot. The expenditure of loan capital is expected to correspond to the expenditure rate of rebate funds from the PG&E EUC Multifamily and BayREN incentive programs. The following milestone dates also assume funding availability as of 1/31/2013 and are subject to alterations based on timelines of fund availability and implementation of either of the two rebate programs.

BayREN04 Figure 4: Multi-Family CAP Timeline

Milestone	**Date**
Project Initiation Meeting	3/1/2013
RFPs Issued – Loan Servicer and Financing Advisor	4/1/2013
Consultants selected and contracted	4/30/2013
Initial participating lender recruitment	4/1/2013 – 6/30/2013
Administrative documents and processes set up	6/30/2013
Program collateral developed	6/30/2013
Loan product roll-out *	7/1/2013
Installations completed *	10/31/2014
Conclude Pilot Program	12/31/2014
Quarterly Progress Reports	3/31/2013 – 12/8/2014

* Tasks which coincide with the BayREN Multifamily Subprogram

The timeline for project participation should track the launch and ramp-up schedules anticipated for the rebate programs. However, expenditure of the capital pool funds should occur at the beginning of an upgrade project, as contracted with the rebates which are expected to be expended at the end of each project. The timeline below assumes an average

project timeframe of 3 – 6 months. The Administration and outreach activities are expected to be heavily loaded at Pilot initiation. The Loan Servicer activity will also be heaviest during Pilot initiation and during loan origination.

BayREN04 Figure 5: Multi-Family CAP Placeholder Budget

PIP Budget Categories	2013				2014				Total
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Admin	$25,000	$30,000	$25,000	$20,000	$12,500	$12,500	$12,500	$12,500	$150,000
General Overhead							$0	$0	$0
Incentives							$0	$0	$0
Direct Install Non-Incentives	$0	$30,000	$240,000	$330,000	$325,000	$325,000	$325,000	$125,000	$1,700,000
Capital	$0	$0	$200,000	$300,000	$300,000	$300,000	$300,000	$100,000	$1,500,000
Loan Servicer	$0	$30,000	$40,000	$30,000	$25,000	$25,000	$25,000	$25,000	$200,00
Marketing & Outreach	$25,000	$40,000	$20,000	$15,000	$12,500	$12,500	$12,500	$12,500	$150,000
Education & Training	$0	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL BUDGET	$50,000	$100,000	$285,000	$365,000	$350,000	$350,000	$350,000	$150,000	$2,000,000

The proposed tasks and expenses under each quarter are as follows:

Q1 – Q2 2013: $150,000 – Set-up of program infrastructure, processes, and paperwork; recruitment and orientation of lenders. Expenses include local government agency staff hours, legal fees, consultant for lender recruitment assistance, IT and data tracking platform license fee, and meeting expenses for lender recruitment, including local transportation, venues, food, and printing.

Q3 2013 – Q4 2014: $350,000 – Ongoing program administration, and loan origination and servicing activities by the loan servicer. Expenses include local government agency staff hours for project management and outreach to lenders; loan servicer contract which may include the following tasks:

- Oversee the loan origination practices of participating lenders
- Perform primary servicing (billing, payment processing, and delinquent account collections) in connection with participating lenders, for BayREN portion of capital
- Serve as back-up servicer for any loan originators approved by BayREN that service their own loans and oversee their collection and monitoring activities
- Collect information on servicing capabilities of loan originators to assist BayREN in determining if requesting loan originators will be authorized by BayREN to service their own loans

— Maintain a comprehensive reporting system to track the payment status of all loans and report to BayREN

Q3 2013 – Q4 2014: $1,500,000 – Capital pool disbursements.

Figure 6 details illustrate total program costs, and costs for an average participating project, and where the distribution of funding from ratepayer or private sources

BayREN04 Figure 6: Multi-Family CAP Program Details

Market & Demand Analysis		
Market Size (units)	700,000	
Pilot Market Penetration Rate	0.17%	
Total units served during Pilot Period	1,200	
Average Per-Unit Project Cost Net of Rebates	2,500	
Total Financing Needed (Capital)	**3,000,000**	
BayREN Proposed Financing Pilot Budget		
BayREN capital as % of Financing Need	50%	
Program Financing Costs	1,500,000	
Admin & Marketing Budget	500,000	
Total Financing Program Costs	**2,000,000**	
BayREN or IOU Program Budget (Rebates + TA)*		
Rebate/Incentive Costs (assumes $750/unit average)	900,000	
Technical Assistance (assumes $200/unit average)	240,000	
Program Administration (5% of program budget)	57,000	
Incentive Program Costs	**1,197,000**	
Total All Program Costs	**3,197,000**	
Project-related Costs (excludes admin)		**As % of Project Costs**
Rebates*	900,000	22%
Technical Assistance*	240,000	6%
BayREN capital	1,500,000	36%
Private capital	1,500,000	36%
Total Project Costs	**4,140,000**	**100%**
Total Project Costs from Ratepayer Programs	2,640,000	64%
Leverage Ratio		
Total Financing / All Program Costs ($3M / $3.197M)	0.94	
Total Financing / BayREN Capital ($3M / $1.5M)	2.00	

* Projects receiving the financing would be utilizing PG&E EUC or BayREN bundled measure rebates. The actual rebate amount per unit will vary depending on which program the project participates in, and at what level in the case of PG&E's EUC rebate. TA is assumed to be provided by BayREN. A portion of administrative costs associated with the rebate programs is included here as an assumption.

As shown above, the ratepayer contribution on a per-project basis is 64%. However, if the NPV of the repayments may be considered to offset the ratepayer costs, this contribution level would be reduced (see discussion on repayments in the program design section). The energy savings gained through the financing Pilot is not additional to the rebate programs, so should not be considered in isolation.

Commercial PACE Implementation Details

The Commercial PACE ME&O Budget has been approved at $300,000. Detail, including allocations, timelines and milestones, are estimated as follows:

- $95,000 (March-June 2013): BayREN geographic area commercial building inventory profiling (based on a number of indicators, including age, size, style and composition, systems, building shell (incl. windows), debt to equity ratio, ownership, upgrade history, and lenders holding existing mortgage(s)
- $35,000 (March 14, 2013): regional Commercial PACE Conference, timed simultaneously with the SoCalREN Conference with audiovisual link-up
- $58,000 (March – August 2013): ROI case studies/white paper covering key EE measures and strategies for commercial buildings
- $50,000 (May – August 2013): design of market-based marketing collateral (e.g,. for banks, building managers and operators, building owners' organizations)
- $62,000 (July 2013 – July 2014): distribution of market-based marketing collateral, paid advertising with Commercial PACE focus in trade and professional trade publications and media venues. Milestones include number of market sector media impressions, direct outreach to BOMA and building managers in each county of the BayREN region, and retrofits facilitated or influenced by Commercial PACE ME&O

Commercial PACE Administrative Budget has been approved at $150,000. Detail, including allocations, timelines and milestones, are estimated as follows:

- $65,000 (March – August 2013): Internal executive processes, certification and court validation for 5 counties in BayREN region not yet formally validated under CaliforniaFIRST.
- $75,000 (March 2013 – August 2014): stakeholder outreach, project facilitation, generation of funding leverage, and project enrollment activities among building inventory targeted in Bay-wide commercial building inventory profile indicated above in the ME&O budget and scheduling breakdown

- $10,000 (March 2013-December 2014): Tracking, recording and reporting of program performance, transformative factors and trends, and obstacles

BayREN04 Figure 7: Commercial PACE Budget

PIP Budget Categories	Year		Total
	2013	2014	
Admin	$85,000	$65,000	$150,000
General Overhead	$0	$0	$0
Incentives	$0	$0	$0
Direct Install Non-Incentives	$0	$0	$0
Marketing & Outreach	$190,000	$110,000	$300,000
Education & Training	$0	$0	$0
TOTAL BUDGET	**$275,000**	**$175,000**	**$450,000**

Pay-as-You-Save Implementation Details

BayREN implementation of the Pay-as-You-Save pilot assumes that the new programs draw heavily from lessons learned in implementing the existing program in Windsor.

At the request of CPUC Energy Division staff, the following project timeline and budget are offered to augment the rolled up Milestones and Timeline located in Table 5 and the Financing budget located in Table 1.

BayREN04 Figure 8: Pay-as-You-Save (PAYS®)Draft Detailed Timeline

Steps to launch program	Date	Responsible Party
PAYS® Utility enrollment/design development launch	2/1/2013	BayREN
Jurisdiction recruitment (RFP & concept paper)	*2/1/2013*	*BayREN*
Consultants and contractors for approved financing components selected and contracted	*2/27/2013*	*BayREN*
Implementing PAYS® Jurisdictions selected	5/1/2013	BayREN
Legal review of existing program contracts, forms, and worksheets	*5/15/2013*	*PAYS Jurisdictions*
Jurisdiction specific design begins	*5/15/2013*	*Consultants/Jurisdictions*
Initial banks/lenders enrolled in program	*pending*	*BayREN*
Draft program design submitted to CPUC and Utilities for comments/approval	*7/1/2013*	*BayREN*
Develop draft marketing plan	*7/15/2013*	*MEO Consultant*
Final program design	8/1/2013	Consultants
Release RFP for: certification agent, certified contractors, bulk program measures, and capital provider	*8/15/2013*	*BayREN*
Develop final marketing plan	*9/1/2013*	*MEO Consultant*
Program design approved	*9/1/2013*	*Jurisdictions*
Necessary Jurisdictional Resolutions Adopted	*pending*	*Jurisdictions*
Proposals from vendors due	*10/15/2013*	*Consultants*
Contracts/Program design ready for vendors	*11/1/2013*	*BayREN/Consultants/jurisdictions*
Contracts with vendors signed	12/1/2013	Jurisdictions/ Consultants

PAYS® Program Team Confirmed/Utility Approvals	*12/1/2013*	*Jurisdictions*
Program start	12/1/2013	All
Training of certification agent, utility staff, and certified contractors	*12/15/13*	*BayREN/Consultants*
Develop and distribute marketing collateral	*12/15/13*	*MEO Consultant*
Program launch	1/14/2014	Jurisdictions
Installations completed	*11/15/2014*	*Contractors*
Quality assurance	*ongoing*	*Consultant*
Quarterly reporting	*ongoing*	*BayREN*

BayREN04 Figure 9: Pay-as-You-Save Detailed Budget

PIP Budget Categories	Year		Total
	2013	2014	
Admin	$32,500	$32,500	$65,000
General Management	*$16,125*	*$16,125*	*$32,500*
Data Management & Reporting	*$16,125*	*$16,125*	*$32,500*
General Overhead	$0	$0	$0
Incentives	$0	$0	$0
Direct Install Non-Incentives	$275,600	$181,400	$457,000
*Program Implementation**	*$50,600*	*$32,500*	*$83,100*
Contractor Recruitment	*$20,000*	*$4,500*	*$24,500*
Design and Scope Development	*$130,000*	*$92,000*	*$222,000*
Utility/Jurisdiction Specific Rate and Measure Analysis	*$60,000*	*$30,000*	*$90,000*
Information Technology	*$15,000*	*$5,000*	*$20,000*
*Quality Assurance**	*$0*	*$17,400*	*$17,400*
Loan Servicer	*$0*	*$0*	*$0*
Marketing & Outreach	$75,000	$50,000	$125,000
Marketing Plan	*$25,000*		*$25,000*
*Outreach Implementation and Support**	*$50,000*	*$50,000*	*$100,000*
Education & Training	$0	$3,000	$3,000
TOTAL BUDGET	**$383,100**	**$266,900**	**$650,000**

*Budgeted funds solely provide for planning and set up costs. Once the program is implemented, the majority of upfront funding for program implementation (oversight, data management, measure installations, quality control) will come from program capital secured by the implementing water utility. This is repaid over time from pilot program participants and successor occupants of these premises.

Financing Allowable Expenses

In addition to standard budget categories and program activities (e.g. program tracking and reporting within Administrative tasks), the following categories are proposed as allowable expenses for the Financing Subprogram. For the Single-Family LLR and the Multi-Family CAP components, BayREN will also leverage the Single-Family and Multi-Family subprograms' marketing budgets to incorporate specific messaging and outreach activities as related to the appropriate financing support component.

BayREN04 Figure 10: Allowable Expense Categories

Identified Sub-Category	Existing PIP Budget Category	Specific Financing Component/Program, if applicable
Market Analysis, including surveys, case studies, and building stock inventory profiling	Marketing	Commercial PACE
Registration/Validation under CaliforniaFIRST	Administration	Commercial PACE
Coordination of Quality Assurance activities	Direct Install	Pay-as-You-Save
Legal Counsel/Review of Contracts and Lending Terms/Conditions	Direct Install	Pay-as-You-Save

b) Geographic Scope

BayREN04 Table 6: Geographic Regions Where the Program Will Operate

Geographic Region	PG&E EUC Support Program	Geographic Region	PG&E EUC Support Program
CEC Climate Zone 1		CEC Climate Zone 9	
CEC Climate Zone 2	X	CEC Climate Zone 10	
CEC Climate Zone 3	X	CEC Climate Zone 11	
CEC Climate Zone 4	X	CEC Climate Zone 12	X
CEC Climate Zone 5		CEC Climate Zone 13	
CEC Climate Zone 6		CEC Climate Zone 14	
CEC Climate Zone 7		CEC Climate Zone 15	
CEC Climate Zone 8		CEC Climate Zone 16	

c) Program Administration

BayREN04 Table 7: Program Administration of Program Components

Program Name	Program Component	Implemented by BayREN staff	Implemented by contractors to be selected by competitive bid process	Implemented by contractors NOT selected by competitive bid process	Implemented by local government or other entity (X = Yes)
Financing Portfolio Program	Program Administration	Supervisory Administration	Primary Program Administrators		X
	Program Quality Control/Quality Assurance		Primary Program Administrators	X	X
	Project Tracking & EMV		Primary Program Administrators		X
	Consumer Eligibility		Primary Program Administrators		X
	Financial Portfolio Tracking		Primary Program Administrators		X
	Intra-Program Leveraging and Tracking		Primary Program Administrators		X
	Financial Portfolio Marketing		Primary Marketing Program Development & Administration		X
	Financial Portfolio Outreach – Target Markets		X		X
	PAYS® Program Administration		X	X	X
	Program Reporting	X	Consulting Program Administrator		X

d) Program Eligibility Requirements

i. Customers

BayREN04 Table 8: Customer Eligibility Requirements (Joint Utility Table)

Subprogram	Eligibility Requirements
PG&E EUC-SF LLR	Single-Family Detached Home
	Located in 9-County BayREN Region
	Meets Responsible Lending Criteria
	Energy Efficiency Improvement Threshold
Multi-Family-Capital Advance Program Pilot	Multi-Family Building of at least 5 Units
	Located in 9-County BayREN Region
	Meets Eligibility Criteria
Single-Family Flex Package LLR	Located in 9-County BayREN Region
	Meets Responsible Lending Criteria
	Energy Efficiency Improvement Thresholds (scaled)
PAYS® Pilot	Located in 9-County BayREN Region
	Meets PAYS® Eligibility Criteria
	Property owner or tenant/renter

ii. Contractors/Participants

BayREN04 Table 9: Contractor/Participant Eligibility Requirements

Contractor Eligibility Requirement
Single Family LLR: Must be a PG&E EUC or BayREN Flex Package Participating Contractor, including meeting all license and certification requirements Multi-Family CAP: Bid Proposals PAYS® Pilot: Certified Contractors pre-qualified pursuant to skills and services, including measures installation, codes, insurance, and bonding

Lender Eligibility Requirement
Multi-Family CAP: Any bank or community development financial institutions (CDFIs) may participate as a lender upon signing the participation agreement that will be developed with participation criteria as part of the initial Pilot set-up. No lenders have been identified as participating lenders at this time.

e) Program Partners

i. Manufacturer/Retailer/Distributor Partners

BayREN04 Table 10: Manufacturer/Retailer/Distributor Partners

Manufacturer/Retailer/Distributor Partner Information	BayREN03
Manufacturers enrolled in program	None
Manufacturers targeted for enrollment in program	None
Retailers enrolled in program	None
Retailers enrolled in program	None
Retailers targeted for enrollment in program	None
Distributors enrolled in program	None
Distributors targeted for enrollment in program	None

ii. Other key program partners – general Financing Subprogram

City and County of San Francisco

City of Suisun City

Community-based Organizations

County of Contra Costa

County of Marin

County of Napa

County of San Mateo

County of Santa Clara

Homeowner Associations

HVAC contractors

Joint Venture Silicon Valley

Lawrence Berkeley National Laboratories

Lenders (including without limitation banks, credit unions, PACE Equity and Wheel Funds)[42]

Local Water Districts

Local Workforce Investment Boards

Marin Clean Energy Authority

Pacific Gas& Electric

Professional Building Operation and Management Companies and Organizations

Professions and trades, e.g., real estate brokers, mortgage officers, appraisers, government building and permitting departments

Professional Building Trade Associations

Real Estate Professional/Associations

Retail/Manufacturer outlets

Sonoma County Energy Independence Program

Sonoma County Regional Climate Protection Authority

Specialized trades contractors

StopWaste.Org (Alameda County Waste Management Authority)

iii. Other key program partners – Multifamily CAP

The Pilot will be integrated into the other BayREN Multifamily program offering, and will benefit from the partnerships that will be leveraged as part of the overall program. Additionally, partners in the lending community will be sought as an initial step in establishing the Pilot. The following types of lenders and organizations will be approached for partnership.

- CDFIs and Loan Funds
- Credit Unions
- Community banks
- National banks
- Fannie Mae

[42] The following list does not currently include specific lenders, as BayREN negotiations with lenders are pending contingent upon final ruling on the BayREN Single-Family LLR and Multi-Family CAP.

— Renewable Funding

iv. Other key program partners – Pay-as-You-Save Pilot

Program Partner	Role	In Windsor PAYS
ABAG	Program Management and Administration	RCPA
BayREN Members	Program Management and Implementation; Counties with jurisdictions participating in the Pilot will work to integrate PAYS within broader BayREN/EUC programs in their jurisdiction.	RCPA
Local Government Water Utilities (TBD)	Program Management and Implementation	Town of Windsor Water Utility
Certified Contractors (TBD)	Customer outreach, installation	Bottom Line Utility Solutions
Certified Manufacturers/Distributors (TBD)	Provide qualified resource efficiency goods and appliances	Standards of Excellence, Niagara Conservation, and Chilipepper
Certification Agent (TBD)	Customer recruitment, Verification of measure eligibility and quality assurance	Sonoma County Energy Independence Program (SCEIP)
Consultants (TBD)	Program Design & Set-Up, Program Administration, ME&O, quality assurance	BKi and The Energy Efficiency Institute, Inc.
Capital Provider (TBD)	Provide capital for jurisdictions unable to self-fund	Town of Windsor

f) Measures and Incentive Levels

No incentives will be offered under this subprogram.

g) Additional Services

Additional services described here will be extended to all single-family subprograms (BayREN01), as well as multi-family and commercial buildings (BayREN02).

BayREN04 Table 12: Summary Table of Measures, Incentive Levels and Verification

Additional Services that the Subprogram Will Provide		**To Which Market Actors**	**BayREN**	
Recipient Subprogram	***Additional Services***	***Recipient Market Actors***	***Expected Charges***	***Incentives***
PG&E EUC-SF	Financial toolkit LLR option	Homeowners	Service fees	Up to 20% LLR ratio for projects estimated to attain more than 35% energy performance improvement, with a repayment term of at least 10 years
Multi-family	Financial toolkit CAP option	Property Owners	Service fees	Capital advance of 50% of loan principal at 0% interest rate
Flex Package	Cross-leveraging with LLR option	Homeowners, Property Owners	Service fees	From 15% to 20% LLR ratio depending upon energy efficiency improvement and loan repayment terms.
PAYS® Pilot	Certification Agent	Property Owners and Eligible Tenants Within Pilot IOUs' Service Areas	Measure Costs and Service Fees	Full set of rebates measures pending utility measures selection[43]

[43] PAYS® participants pay for full cost of measures, installation, and program administration through a water utility surcharge that constitutes 75% of the estimated energy/water savings. Existing rebate programs for landscaping (such as turf removal) may be applied to drought resistant landscaping option, if the participating water utility wants to include drought resistance landscaping and existing rebates funds are already available through the participating water utility.

h) Subprogram Specific Marketing and Outreach

The Financing Portfolio Subprogram has been designed to overcome market barriers erected by a lack of credit and financing options. The Subprogram will be aggressively promoted through marketing, outreach, and education (ME&O) for customers, stakeholders, and partners in the single-family, multi-family, and commercial sectors. Under the Financing Portfolio Subprogram, ME&O will target existing and potential lender clients and customers (conventional, credit union, and foundational) to raise community awareness and define the BayREN Program as a strategically placed driver to increase customer demand, facilitate streamlined (electronic) processes for loan application and enrollment, and provide multiple options (which may cross-cut and leverage each other).

In addition to direct energy efficiency, energy cost, and financing options benefits, the Financing Portfolio Subprogram ME&O will promote:

- Increased inclusiveness under a diversity of Bay Area program options
- Social and environmental co-benefits (e.g., stabilize energy infrastructure, improved indoor air quality and healthier living spaces)
- Economic co-benefits (decreased costs, higher building performance, governmental incentives relating to plan review, permitting and inspection, and new valuations on energy efficiency such as Green MLS ratings)
- Accessible and regionally consistent Financing Portfolio options and contractor/supplier incentives
- Energy efficiency achieved through improvements under the water-energy nexus
- Streamlined loan application and enrollment processes

Under the Multi-Family Capital Advance and Commercial PACE options, ME&O will also target building owners, operators, and managers. Commonly, owners are reluctant to pay for building improvements that appear to only benefit tenants. The BayREN ME&O will address this market barrier with a campaign that demonstrates the benefits and co-benefits of whole building upgrades that achieve energy and water efficiency. The campaign will highlight financing options and incentives, as well as cash-neutral or cash-positive outcomes (upgrades that provide cost avoidance volume that surpasses monthly loan expenses).

i) Subprogram Specific Training

The Financing Portfolio Subprogram will engage skilled consultants, contractors, and implementers, and will not require independent training.

j) Subprogram Software and/or Additional Tools

i. No software or tools will be required.

ii. Indicate if pre and/or post implementation audits will be required for the subprogram. __ Yes _X__ No

Pre-implementation audit required ___ Yes _X__ No

Post-implementation audit required __ Yes _X_ No

BayREN04 Table 13: Post-implementation Audits

Levels at Which Program Related Audits Are Rebated or Funded	Who Receives the Rebate/Funding (Customer or Contractor)
Not applicable	

k) Subprogram Quality Assurance Provisions

BayREN04 Table 14: Quality Assurance Provisions

Program Element	QA Requirements	QA Sampling Rate (Indicate Pre/Post Sample)	QA Personnel Certification Requirements
Financing Portfolio	Property must meet eligibility requirements	100% pre-sampling	None
	Property Owners Must Meet Responsible Lending Criteria	100% pre-sampling	None
	Contractor holds valid license and meets eligibility requirements (Energy Upgrade Participating Contractor or participant in other qualified program)	100% pre/post sampling (initial and routine verification)	None
	PAYS®	100% pre/post sampling	Certification Agent
	Project meets requirements of program	100% pre/post	BPI-BA
	Field Verification of Measures Installed	100% post-sample	BPI-BA
	Field Verification of Combustion Safety Test for Air Sealing (relevant projects)	100%	BPI-BA

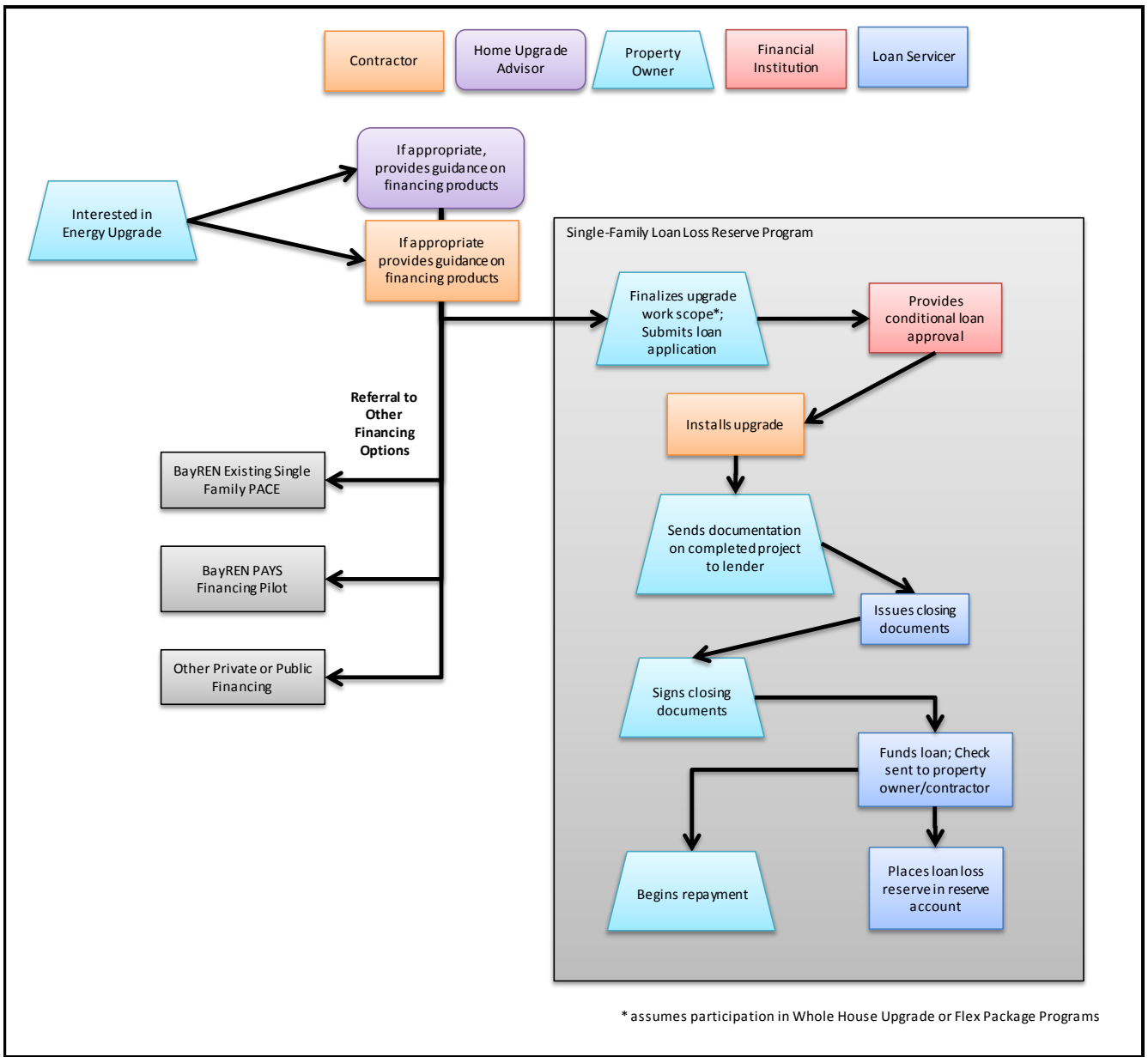
l) Subprogram Delivery Method and Measure Installation /Marketing or Training

No additional marketing or training will be provided; excepting training text manual for the PAYS® Subprogram.

m) Subprogram Process Flow Chart

For the Multi-Family Capital Advance Pilot, Figures 12 and 13 below describe the participation process and party roles.

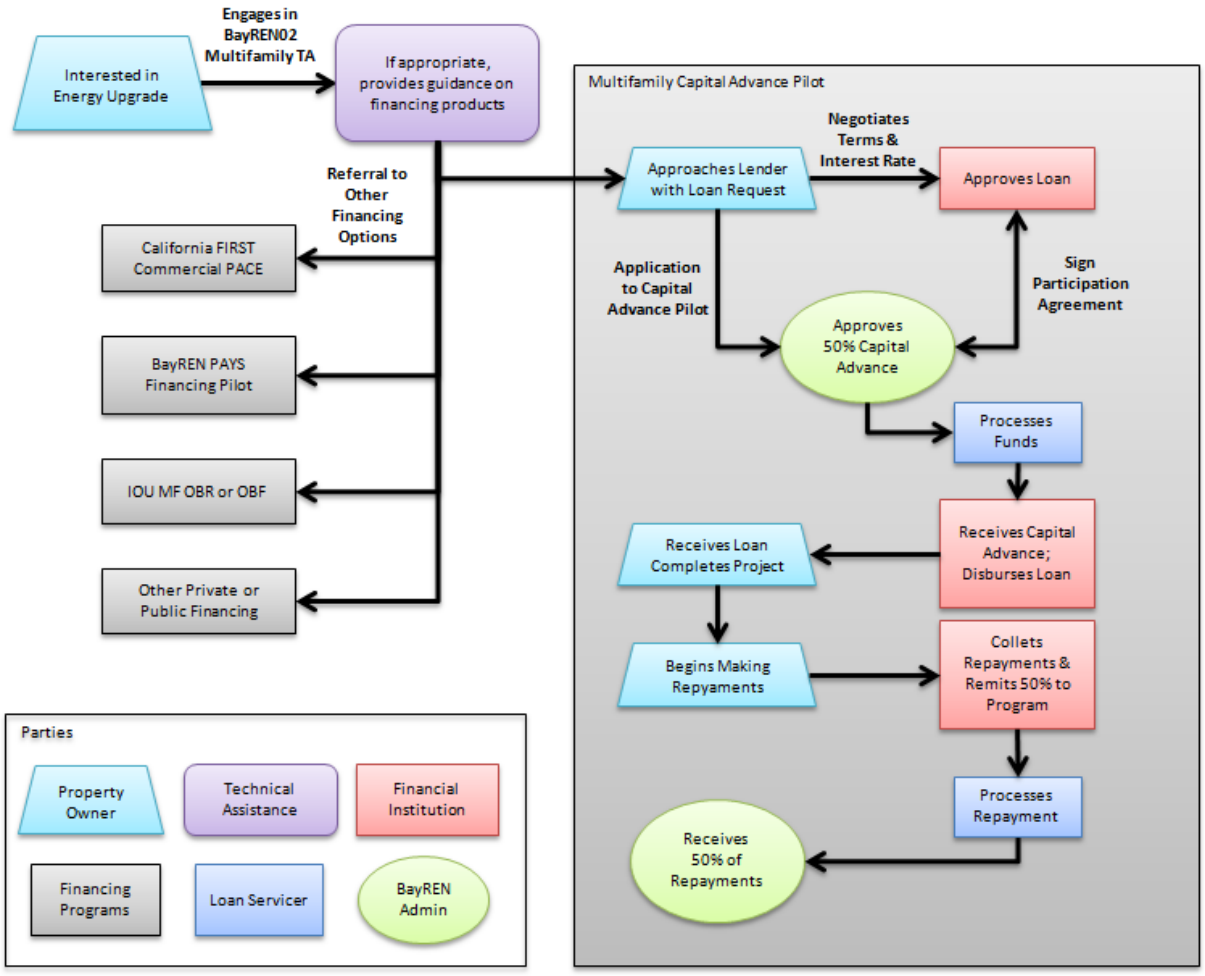
BayREN04 Figure 11: Financing Portfolio Single-Family Loan Loss Reserve Program Process Flow Chart



BayREN04 Figure 12: Financing Multi-Family Capital Advance Pilot Parties and Roles

Party	Roles
BayREN	Program administration and reporting Approval of 50% capital advance Issues participation agreement to be signed by lender
BayREN MF TA Provider	Measure identification assistance and referral to incentive programs If BayREN bundled measure: Project scope definition and payback quantification If PG&E EUC: Direct project to complete audit and define scope through PG&E process
Property Owner/ Borrower	Loan application to lender Loan repayments
Financial Institution	Lender qualification Loan approval Primary loan servicing Signs participation agreement with BayREN
Loan Servicer	Financial institution qualification Oversight over loan origination and payment processing practices Capital disbursement to lender; repayment collection from lender

BayREN04 Figure 13: Financing Portfolio Multi-Family Capital Advance Pilot Process Flow Chart



n) Cross-cutting Subprogram and Non-IOU Partner Coordination

BayREN04 Table 15: Cross-cutting Subprogram and Non-IOU Partner Coordination

Financing Portfolio Subprogram		
Other REN Subprograms	**Coordination Mechanism**	**Expected Frequency**
Single-Family	Project Referrals	All potential projects, either through Energy Advisor, the Local Government, or Contractors
Multi-Family	Project Referrals	All potential projects, either through Energy Advisor, the Local Government, or Contractors
Codes and Standards	Local Governments Marketing of Internal Incentives (e.g., fast-track permitting)	All applicable projects
IOU Program Name	**Coordination Mechanism**	**Expected Frequency**
Statewide Financing Consultants	Meetings, communications	Regular as needed to coordinate statewide and REN financing components
PG&E EUC, energy efficiency rebates, direct install programs, demand response, local government partnerships, etc.	Meetings, communication, participating contractor and QA updates, regional coordination, rebate coordination	Monthly
Coordination Partners Outside CPUC	**Coordination Mechanism**	**Expected Frequency**
Banks, Credit Unions and Lending Institutions	Meetings, regional coordination, cross-marketing, outreach and communications, communications	Monthly
Bay Area Green Business Programs	Regional coordination, cross-marketing, stakeholder forums and communications	Quarterly
CAEATFA Loan Loss Reserve Program partners	Meetings, communication, participating contractor and QA updates, regional coordination,	Quarterly
CALBO	Regional coordination, training collateral, marketing/outreach	Quarterly
California Community Services and Development Dept.	Regional coordination with Weatherization Assistance Programs	Quarterly
Climate Institutions (Bay Area Climate Collaborative, Joint Venture Silicon Valley, Silicon Valley Leadership Group, Sustainable Silicon Valley)	Regional coordination, cross-marketing, stakeholder forums and communications	Quarterly
Workforce organizations and institutions (e.g., NARI, Working Partnerships USA), and PG&E	Regional coordination; cross-marketing; workforce training and collateral	

EUC Participating Contractors		
Water Utilities and Districts	Regional rebate coordination, cross-marketing, and mapping coordination	Bi-Monthly

o) Logic Model

Logic Model provided in Attachment 1.

11. Additional Subprogram Information

The BayREN Financial Portfolio Subprogram advances the following goals, strategies, and objectives of the California Long Term Energy Efficiency Strategic Plan:

a) Advancing Strategic Plan Goals and Objectives

BayREN04 Figure 14: Strategic Plan Alignment

Bay-REN Financing Portfolio Subprogram Alignment With the California Long-Term Energy Efficiency Strategic Plan		
Residential and Low Income		
Strategy Number	**Strategy**	**BayREN Financing Portfolio Subprogram Strategy**
1-4	Develop innovative financing programs for the construction of energy efficient homes	The Financing Portfolio provides a variety of financing options that provide risk assurances to lenders and competitive choices to consumers and building owners.
1-5	Encourage local, regional and statewide leadership groups to support pilots and foster communication among pioneering homeowners and builders	The Financing Portfolio Subprogram's marketing, outreach, and education campaign will expand beyond homeowners associations to lending institutions, builders, building operation and management associations, and other relevant trade and professional groups.
2-1	Deploy full-scale Whole-Home Programs	The Financing Portfolio will drive and facilitate greater demand and uptake in whole-home energy efficiency projects.
2-4	Develop financial products and programs such as on-bill financing to encourage demand for energy efficiency building products, home systems, and appliances.	The Financing Portfolio designs, monitors, implements, and seeks to continuously expand and improve financial products and programs for whole-home energy efficiency.
Commercial Sector		
Strategy Number	Strategy	BayREN Financing Portfolio Subprogram Strategy
2-6	Develop effective financial tools for energy efficiency improvements to existing buildings	The Financing Portfolio promotes and cross-leverages financing instruments for broad market reach.

BayREN04 Figure 14 continued

Local Governments		
Strategy Number	**Strategy**	**BayREN Financing Portfolio Subprogram Strategy**
1-2	Establish expedited permitting and entitlement approval processes, fee structures, and other incentives for green buildings and other above-code developments	This 9-County program allows for systemic implementation throughout the Bay Area of government-driven incentives such as fast-track permitting, reduced fees, etc.
1-3	Develop, adopt and implement model point-of-sale and other point-of transactions relaying on building ratings to increase efficiency in existing buildings	The Financing Portfolio ME&O campaign will feature a full compendium of co-benefits—both social, environmental and economic—including home and building valuation increases through energy efficiency (and water) upgrades, impacts of enhanced home or building performance, and cost-neutral and/or cost-positive options.
4-1	Local governments lead their communities with innovative programs for energy efficiency, sustainability, and climate change	The BayREN jurisdictions led highly-successful upgrade, marketing, and workforce programs during the SEP 2010–2012 cycle. Building upon those successes, the BayREN will expand its work in innovative programs, diverse financing options, and integration of expanding energy efficiency programs and messages (including public health benefits) with its local and regional climate, greenhouse gas, sustainability and adaptation programs, and grant-funded projects (e.g., Strategic Growth Council-funded projects).
4-4	Develop local projects that integrate energy efficiency, DSM, and water/wastewater end uses.	The BayREN program will serve this Strategic Plan through multiple subprograms, including single-family and multi-family, and the PAYS® pilot.
5-1	Create a menu of products, services, approved technologies and implementation channels to guide local governments that currently lack deep expertise in energy efficiency	The 9-County Steering Committee model for BayREN was effectively implemented during 2011-2012 to provide equitable and uniform access by and responsiveness to all cities within the governing area. This model will be expanded during the 2013–4 Energy Efficiency Program Cycle. This approach provides parity of programs, technology, and information regardless of municipal internal resources, and avoids balkanization of energy efficiency among jurisdictions.

b) Integration

i. Integrated/coordinated Demand Side Management

The Financing Portfolio Subprogram represents:

1. An expansion of funding options launched during the initial SEP period
2. Increased cross-leveraging of upgrade programs with compatible financing options
3. Innovative yet cost-effective response to existing market barriers and the unique demands of distinct consumer groups
4. Variable options to promote greater incorporation of reductions in energy use embedded in water consumption and distribution

The Financing Portfolio extends the coordination between the nine Counties of the BayREN Region to achieve programmatic continuity and consistency and increase market scope and saturation for deep energy upgrades. These efforts will be expanded in the 2013–2014 period, as BayREN will continue to identify high-yield, cost-conscious means of driving regional consumer demand by deploying competitive financing options, effective sector marketing, and enhancing contractor-lender relationships. The Financing Portfolio will restate the benefits of other energy efficiency and green building programs to consumers, including benefits such as indoor and outdoor water efficiency, green product rebates, improved building performance, and increased property values. BayREN will cross-market with other programs such as California FIRST and CAEATFA's Loan Loss Reserve Program and will optimize program performance through added government incentives such as fast-track review and permitting.

BayREN04 Table 16: Non-Energy Efficiency Subprogram Information (TBD)

Financing Portfolio		
Non-Energy Efficiency Subprogram	**Budget**	**Rationale and General Approach for Integrating Across Resource Types**
Water Utility Indoor Water Efficiency Incentive Programs	Vary	Cross promotion, integration into Energy Advisor services
Local Government Outdoor Water Efficiency Programs (e.g., Lawn Conversion Rebates, Bay-Friendly Landscaping and Gardening)	Vary	Cross promotion, integration into Energy Advisor services
Local and Regional Government Green Business Programs	Vary	Cross promotion; sector profiling for energy and water use
EPA WaterSense	Unavailable	Promotion of brand, installation of products (e.g., aerators) by Energy Advisor
Green Point Rated Existing Home	Unavailable	Cross promotion of label, incentives offered through BBP pilots

ii. Integration across resource types

See above for a description of intended program and cross-marketing partners and efforts, which bring together actors in the lending, local government, contractor, utility, water agency, professional realty and other trades, and commercial and residential sectors.

c) Leveraging of Resources:

The Financing Portfolio program leverages the following programs:

- CPUC/CEC Energy Upgrade California Brand
- Sonoma County Energy Independence Program
- San Francisco County's PACE Program
- Energy Upgrade California Statewide Marketing Program (California Center for Sustainability Energy)
- Weatherization Programs
- California Solar Initiative
- Technology Credit Union's Green Home Loan Program

- Matador Credit Union's Loan Loss Reserve Program
- City of Windsor Efficiency PAYS® Program
- PG&E Whole House Incentive Program-Basic Contractor Credentials Quality Assurance Support, Marketing Channels
- PG&E Local Government Partnerships and Energy Watches-Co-Marketing Channels
- Other local government energy and sustainability efforts and campaigns
- Other local government programs within relevant agencies and bureaus, such as building, permitting, and inspection departments
- Water Districts and Agency Programs
- Regional and local BBP Programs
- Additional grant and alternative funds leveraging by BayREN jurisdictions

Specific to the Pay-as-You-Save Pilot, the following table outlines anticipated leveraged funding amounts.

BayREN04 Figure 15: Pay-as-You-Save leveraged funding

Funding Sources	Purpose	Anticipated Amount
Third party capital	Initial capital provided by third party or implementing utility for purchase of efficiency measures and appliances, and other program costs. Repaid by participating customer surcharges.	$4,000,000
Customer co-payment	Some enhanced landscaping and advanced measures which pass the total resource cost test or offer non-quantifiable benefits to participants but do offer significant immediate savings require an up-front out-of-pocket payment to enable the rest of the measure to qualify for the cost-effectiveness threshold applied to the surcharge. This allows the customer flexibility in measure selection (in recognition of non-energy benefits associated with some measures and some customers' commitment to climate change and understanding of life cycle economics).	TBD; depends on measures installed
Better Buildings Program PAYS Grant	The Windsor Efficiency PAYS® pilot currently running in Sonoma County was funded by a Department of Energy BBP grant. The BayREN PAYS® will borrow aspects of this program design and capitalize on lessons learned	$655,000
Existing water and energy utility rebates	Depending on the participating water utilities selected, any existing rebate programs may be reallocated to save funds no longer needed to motivatee customer installations and used to target desired measures which are not sufficiently cost effective to qualify for the tariff. Additionally, all PAYS® participants must be eligible for the same rebates available to	TBD; depends upon eligible measures and installation totals

	other gas, electric and water customers for the pilot to succeed.	
Total Leveraged Funding		**>$4,655,000**

d) Trials/ Pilots

The MF-CAP and PAYS® Pilots described above will be implemented 2013–14.

e) Knowledge Transfer

BayREN staff and members will regularly assess program outcomes, benchmarks, and milestones, and will track challenges, lessons learned, and necessary adjustments for all technical, administrative, and marketing aspects of program implementation. These data sets will be organized and transmitted to local government partners operating similar programs (e.g., County of Los Angeles). Knowledge transfer will occur through: regular meetings of local government forums (such as the Governor's Office of Planning and Research, the LGSEC, Local Government Commission, Urban Sustainability Directors Network, etc.); meetings with regional NGO and institutional partners (e.g., Joint Venture Silicon Valley, Los Angeles Regional Collaborative for Climate Action and Sustainability, the Bay Region Joint Policy Council, the Bay Area Climate Collaborative); and through program updates provided to the Commission and program partners.

12. Market Transformation Information:

a) Market Transformation Objectives

The market transformation objectives of the BayREN Financing Subprogram are the following:

- Decrease the number of households unable to participate in whole-house program due to lack of available financing
- Deliver integrated demand-side energy management options that include efficiency, demand response, energy management, and self-generation measures through coordinated marketing and regulatory integration
- Increase general knowledge and awareness amongst property owners and managers of energy efficiency practices and benefits, and encourage a long-term transition toward energy efficient property improvements
- Increase awareness of energy efficiency among relevant professional industries, including central system contractors, industry associations, and other multi-family service providers
- Create streamlined coordination of DSM programs across IOUs, local governments, and other organizations

b) Market Description

Market actors include:

- **Banks, Lenders, Credit Unions (Lending Institutions)** – To work with the BayREN Program Administrators to offer, market, and cross-leverage the financing choices, incentives, and customer-group tailored funding options for installation of single- and multi-family residential and commercial energy and "energy system" (e.g., water) efficiencies.
- **Other Energy Efficiency and Renewable Programs** – Such as CFI, BBP, and Weatherization Programs, as leveraging partners in energy and energy system upgrades.
- **Water Agency/District Programs** – To maximize energy efficiency outcomes through partnering with water agency programs and promoting improvements in the efficiency of energy embedded in water distribution, collection, and processing.
- **Building Performance Auditors –** Partner with the BayREN Program to increase residential and commercial building owner awareness of energy efficiency's return-on-investment, cash-positive and cash-neutral energy efficiency improvements, and benefits of whole-building improvements.
- **Building Performance Contractors** – Deliver information to residential and commercial customers on financing options and incentives.
- **General Contractors —** Oversee delivery of residential upgrades and other installation work. May perform direct installation or subcontract to specialty contractors. Assist in data gathering of customer and upgrade information.
- **Green Building Professionals —** Building professionals, including general and specialty contractors, who are trained to deliver or assess technical work that incorporates additional green building concerns beyond energy efficiency, such as outdoor water efficiency, indoor air quality, resource conservation, and low-impact development/site water management. Serve as private contractors or on behalf of green building rating and incentive programs.
- **Single-Family Residential Property Owners**
- **IOUs —** Run energy efficiency incentive programs, especially EUC. Conduct contractor management, quality assurance, program administration for EUC.
- **Local Governments —** Set greenhouse gas emissions, energy savings, and other sustainability goals and implement programs to meet those goals. Support IOU energy efficiency programs through professional and customer outreach, coordination amongst local actors, enforcement of code. Pilot energy efficiency programs.
- **Other Energy Efficiency Programs —** IOU third party and local government partnership programs that implement direct install, weatherization, and other incentive programs.
- **Non-Energy Efficiency and Conservation Programs —** Water utility, local government, green building, Green Business, and other programs that

promote and incent resource conservation, air quality, green products, and other non-energy efficiency efforts.

- **Other Relevant Professional Trades —** This includes all professional industries and associations that may affect property owner and building professional choices, including real estate professionals, product manufacturers, and suppliers. These actors affect behavior of their clients through the services they offer and products they provide.
- **Organizations, Foundations, and Institutions —** This includes CBOs, as well as organizations implementing community, climate action, sustainability, adaptation, and economic development missions.

c) Market Characterization and Assessment

In order to develop a Program Implementation Plan that addresses key market barriers, the BayREN members have referred to a number of sources that have characterized and assessed challenges to the State's principal energy efficiency long-term transformative goal. These resources include *Recommendations for Energy Upgrade California in the Bay Area Final Report* April 2012 (ABAG Report), the White Paper on Financing from the Home Performance Resource Center, March 2010 (HPRC Financing White Paper), and Recommendations filed by the California Center for Sustainable Energy with the Commission on February 22, 2012, following the February 2012 Energy Upgrade California Financing Workshop (CCSE Financing Comments). These considerations have informed the BayREN's approach to developing a responsive Program Implementation Plan:

ABAG Report. The ABAG Report identified limited upgrade options, limited financing options, and lack streamlined, reliable processes as key impediments to greater uptake in the PG&E EUC. Based on these findings, it made the following recommendations:

- **Launch regional financing strategies that make Energy Efficiency Affordable and Accessible.** Offer financing mechanisms, including both Property Assessed Clean Energy (PACE) and alternative financing, to address the high upfront cost of energy upgrades. More specifically, the ABAG Report recommends a regional program of affordable financing to fund building upgrade projects such as credit enhancement tools (e.g., loan loss reserve), interest rate buy-down programs, and PACE programs. Contractor financing/growth capital to purchase equipment and manage cash flow problems caused by IOU rebate processing times was also recommended.
- **Pilot "a la carte" menu-based incentive program.** Local governments are in the best position to launch a pilot program using an "a la carte" menu approach of energy-savings-based point-weighted measures such as Flex Path in Los Angeles County. Local governments can be more flexible than PG&E and can streamline and implement efficiencies by quickly launching a simpler program design, which reduces overall administrative burden and job processing time. A menu-based incentive program can replace the existing IOU Basic Package, allowing the IOUs to focus their efforts on a performance-based program that offers higher levels of incentives.
- **Increase incentive offerings and conduct research on effectiveness.** Offer regional audit rebates and evaluate their effectiveness. Offer rebates for audits or project

"kicker" to encourage participation in the IOUs PG&E EUC and evaluate how effective the rebates are in leading to completed upgrades. By administering audit rebates (for test-in and test-out), local governments have access to real-time feedback on project participation, which enables fine-tuning of consumer marketing strategies and contractor support. Until broader data sharing obstacles with the IOUs are resolved, the only way for local governments to conduct meaningful program EM&V is by using the project data obtained by administering a rebate.

- **Provide "third party" property owner and contractor support.** Provide neutral "third party" assistance and advice to property owners as they enter and navigate the energy upgrade process and apply for associated rebates. Provide the same type of assistance and advice to contractors applying for local government rebates. This role could be served by local governments or non-profit organizations.
- **Streamlined Processes** for participants, contractors, lenders, and administrators in order to reduce transaction costs and build a quality green workforce. Reduce duplicative paperwork and data entry for incentive and other program processing.
- **Address Split-Incentive Issues** with multiple approaches including Green Labeling, return-on-investment analyses, and quantification of benefits and co-benefits.
- **Utilize local government incentives to complement the utility program design and incentive.** Local government incentives can best promote existing utility programs and/or improve the value proposition of upgrades incentivized by utility programs by requiring no additional property owner and contractor burden.

HPRC Financing White Paper: The HPRC Financing White Paper also focused its recommendations on the variety of financing options (including low-interest mechanisms), clarity and simplicity of processes, strategic layering of options with incentives, and greater support to performance-based, deep upgrades over upgrades motivated by products or services. The BayREN Financing Portfolio has addressed each of these market barriers with a diverse, accessible, layered and performance-based menu of funding choices.

CCSE Financing Comments: CCSE's comments below represent its responses and recommendations to direct questions posed in the *Administrative Law Judge's Ruling Regarding Energy Efficiency Financing (R. 09-11-014),* including the three-day workshop held at the Commission on February 8-10, 2012, regarding energy efficiency financing. Queries raised in the Ruling deal directly with financing market barriers, audits, and options. CCSE's responses have also influenced the concept and design of the BayREN Financing Portfolio, which has been similarly structured as curative measures to the challenges reflected in the ALJ's interrogatories:

B3. ***Should IOUs be able to propose to be loan originators? Why or why not? For what types of customers?*** "IOUs should not be allowed to originate loans, as this is a task that falls well outside of the core skill set of IOUs and could create any number of limitations on participation in the program."

B10. ***Should there be some advantageous underwriting or interest subsidy for projects that involve "deeper" levels or more "comprehensive" efficiency improvements?***

"The Commission should definitely provide some form of funding assistance to encourage deeper retrofits, as this is crucial to developing the whole building performance market, which is needed to meet California's energy and climate goals. As evidenced by the input given by various financial institutions at the workshops, interest rates for projects with long payback periods will not even be in the single digits without major credit enhancements. Therefore, any EE financing mechanism implemented by the Commission should make credit enhancements available for these deeper retrofit projects such that interest rates are closer to 7%, or lower, to attract participation."

B19-22. ***Questions regarding use of ratepayer dollars for credit enhancement purposes***

"Ratepayer support for credit enhancements of various flavors (loan-loss reserve, underwriting, interest rate buy-downs, etc.) are a vital component of any EE loan mechanism, as currently available EE mortgages and other EE loan products are not offering the necessary terms to spur widespread participation in deeper energy retrofit projects. In order to reach significant participation levels, credit enhancements will be needed to support projects undertaken by customers with lower credit scores (650 and below) in order to secure reasonable terms for these projects. A number of workshop participants recommended specific tiered credit enhancement levels based on a customer's FICO score, and these could serve as a model for ratepayer supported credit enhancement program."

C4. ***What entity or entities should be sought to administer a loan loss reserve form of subsidy or an interest rate write-down subsidy? (e.g., a state agency, nonprofit, governmental, utility, or private financial entity? Or a specific entity such as CAEATFA?)***

"Administration of any ratepayer funded loan loss reserve, interest rate buy-down, or other financing subsidy *should be overseen at a local/regional level by local government and nonprofit entities (emphasis added)*. The Ruling identifies a number of tasks such as contractor training, marketing and outreach, quality assurance, and others that are not core competencies of IOUs and which must be done at the local level in order to respond and adapt to conditions on the ground. Local governments and mission-driven organizations are already doing this through ARRA-funded programs including Energy Upgrade California, PACE, and loan-loss reserve programs. There are existing examples of this third-party approach in coordination with local governments already underway. . . .Through partnerships with state and federal agencies, local governments, financial institutions, community based organizations, workforce developers, residents and utilities, this regional approach has developed a strong foundation and remains the ideal vehicle for further program administration and integration.

"This model is successful and should be further supported as this industry continues to develop and the need for greater program and resource integration becomes necessary. As evidenced in CCSE's approach to the Building Performance industry, continued coordination and integration of local, statewide and federally based programming will

ultimately result in a more efficient and less overlapping set of resources available to our communities. This includes not only the coordination of technical standards broadly, but specifically the additional involvement of existing services such as PACE and local loan-loss reserve programs."

C5. ***What roles, if any, should utilities play in informing customers about financing available and/ or actively promoting specific or all financing mechanisms?***

"Experience with EUC efforts across the state have shown that the IOUs cannot be expected to market programs that are not directly related to their own core programs. Certainly utility inclusion of information and messaging on financing would be welcome, but it should not be the core channel. Marketing and outreach related to EE financing should be handled by local governments and mission-driven organizations."

C19. ***How should private or local government entities be encouraged to offer loans not otherwise available (e.g., to reach target markets)?***

"As previously stated in these and other comments within this proceeding, there are many local and regional energy financing efforts underway throughout California. These programs are being driven by local governments and non-profit organizations that are closely connected to the communities they serve. . . . The Commission should recognize these efforts and funnel ratepayer money to support local PACE programs, loan-loss reserves, and other EE financing mechanisms currently being set up by local governments. . . . EE financing is still needed and the Commission should take advantage of the local and regional infrastructure that has been established to help spur further participation in these programs and maximize the energy savings resulting from such programs. Such funding could be used for credit enhancement at the local level and for standardization of programs across regions in order to ensure consistency and lessen confusion for participants throughout the state. Through credit enhancements and marketing and outreach funds, local governments and non-profits could reach out to appropriate target markets with a variety of financial options to achieve greater penetration of whole building retrofits."

d) Proposed Interventions

Proposed interventions have been described throughout this program description, and are focused on securing the success of Energy Upgrade California by expanding financing options to address market barriers specific to multiple consumer groups, establishing cost-effective performance-based incentives, and reducing technical, cost, and process barriers. A summary is provided in the table below.

BayREN04 Figure 12: Market Transformation Barriers and Interventions

Barrier	Proposed Intervention
Program design barriers-Required audit, program complexity, lack of program options	Audits incentives for completed PG&E EUC-SF Advanced Projects, Flex Package incentive, Energy Advisor
Lack of Lender Uptake in Energy Efficiency Programs	LLR and DSR accounts that attract lender participation and promote deployment of credit enhancements
Program Cost Barriers	Audits incentives for completed PG&E EUC-SF Advanced Projects, Flex Package incentive, financing (BayREN04) options and credit enhancements
Ledger Sheet Barriers to Commercial Projects	Promotion of Commercial PACE options allow commercial building owners to carry improvements as annual operational costs rather than debt
Limited customer awareness of benefits, co-benefits and return-on-investment	Broad and targeted marketing campaign, contractor sales training; and audit incentives
Lack of professional/industry awareness	Professional outreach as part of marketing campaign
Contractors limited by financing options	See above under Program Cost Barriers; Home Upgrade Advisor to support contractor sales

e) Program Logic Model: See Program Logic Model in Attachment 1

f) Market Transformation Indicators (MTIs) and Evaluation Plans

Resolution E-485 (December 2, 2010) Appendix B, lists adopted Market Transformation Indicators for the 2010–2012 Energy Efficiency Portfolio, which were then amended by Energy Division in 2011 at the direction of the Commission. To ensure consistency with adopted Market Transformation Indicators and Program Evaluation strategies, BayREN proposes the following Market Transformation Indicators, based upon the proposed amended Whole House Upgrade and IDSM MTIs proposed by Energy Division in 2011:

- Commercial/Industrial/Agricultural Combined (CEI) MTI 1: Number and percent of Calculated Incentive participants who go on to implement a long-term energy plan under the Continuous Energy Improvement program. Metric Type 3.
- Commercial/Industrial/Agricultural Combined (NRA) MTI 4: Percent of NRA participants that implement recommended measures without receiving an IOU incentive. Metric Type 3.
- Whole-House MTI 2: Proportion (%) of households that elect not to perform comprehensive energy upgrades due to various barriers such a slack of available financing, lack of qualified contractors, undesirable payback period, lack of urgency, "hassle" of upgrade, or uncertainty that the upgrades will provide appreciable benefit. Metric Type 3.
- Whole House MTI 3: The number of IOU customer households that undergo a deep upgrade (Advanced and/or IDSM) audit through IOU programs. Metric Type 3.
- IDSM MTI 2b: Percent of customers in each customer class who have received an integrated audit and percent of these customers (by audit type) who have implemented one or more of the audit recommendations (indicate how many incentivized vs. non-incentivized). Metric Type 3.
- IDSM MTI 3: Percent of customers in each customer classes who are aware of integrated programs or incentive opportunities. Metric Type 3.
- IDSM MTI 5: Water conservation and waste reduction strategies are incorporated into integrated program offerings. Metric Type 3.
- Program evaluation will be conducted in coordination with EM&V activities conducted on behalf of the Commission and PG&E. BayREN members will participate as possible in all data collection and interpretation activities, as directed by the Commission. At this time, BayREN proposes the following metrics for evaluating its success in meeting the above objectives:
    - Volume of deal flow generated through the program

- Difference in lender interest rate for program participants versus non-participants of similar lending qualifications
- Number of lenders participating or accepting the capital advance product, and qualitative feedback on experience and potential outcomes of participation on future processes
- Number of property owners participating
- Increase in project scope for participating property owners
- Data gathered through market testing of product

These metrics will be tracked for EM&V purposes, and will be integrated with the BayREN Multi-family program processes. The BayREN will engage in on-going coordination with the Energy Division to ensure appropriate data collection for EM&V needs.

13. Additional information as required by Commission decision or ruling or as needed: N/A

Attachment A6.2: BayREN EUC Enhanced Basic/Modified Flex Path PIP (Clean)

San Francisco Bay Area Regional Energy Network (BayREN) Program Implementation Plan

Revised April 2, 2013

This page intentionally left blank.

I. SAN FRANCISCO BAY AREA REGIONAL ENERGY NETWORK (BayREN)

1. Program Description

To meet the aggressive goals set by the California Public Utilities Commission (Commission) as part of the Long Term Energy Efficiency Strategic Plan, the Commission has recognized the need for expanded collaboration with and participation by local governments to achieve market transformation toward energy efficiency. In Decision 12-05-015, the Commission recognized the role of Regional Energy Networks (RENs) in achieving the following goals:

- Provide missing technical resources that will get more projects implemented
- Include more public agencies in project implementation
- Leverage existing local government partnerships to implement these resources
- Provide centralized, regional program management and administration by local governments

Additionally, it is the opinion of the BayREN that local governments can play key roles in the market penetration of energy efficiency programs through the following activities:

- Identifying market barriers that are only evident through local and grassroots program implementation; and mitigation or preemption of those barriers
- Increasing the cost-effectiveness of market transformation programs (such as Energy Upgrade California™) in the long term by identifying and testing pilots that address market barriers
- Integration of energy efficiency goals and outreach in to existing and future local government initiatives for sustainability, adaptation, climate response, resource conservation, and public health (for repetitive, consistent, and continuous messaging, branding and education of the public and government agencies)
- Broader and deeper saturation of energy experience and expertise in energy efficiency program design, implementation and assessment among local governments statewide
- Partnering with IOUs for program implementation, especially on outreach and education activities

The proposed BayREN Subprograms are designed to address key cost, process, workforce, and other market barriers that adversely affected the market penetration of the Energy Upgrade California Programs in 2010–2012.[1] These activities include:

[1] Pursuant to Ordering Paragraph No. 5, BayREN is submitting herewith a revised implementation plan for BayREN01 – Single Family Energy Upgrade California subprogram only. The other subprograms within BayREN are not part of this Advice Letter process and therefore will not be discussed.

- Enhance the Investor Owned Utility (IOU) Energy Upgrade California for single-family (EUC-SF) properties through marketing efforts, incentives, alternative upgrade packages, increased homeowner decision making support, and options for greater saturation across socio-economic consumer bases

- Enhance IOU-offered single-measure rebates programs and Energy Upgrade California for multi-family properties through targeted outreach and technical support to multi-family property owners, offering new incentives to support deeper multi-measure upgrades, and provide technical assistance to address the split-incentive divide that currently exists between property owners and renters

- Leverage local governments' unique position to influence adoption and enforcement of local codes and standards to ensure upgrades comply with existing energy efficiency codes, as well as providing "reach codes" to increase energy savings

- Standardize training and enhance enforcement skills for intra- and inter-government agency personnel

- Provide implementation of statewide and local financing programs to ensure that upgrades are financially accessible to more homeowners. The BayREN Financing Subprogram will not only provide a variety of financing mechanisms but will reach across various consumer bases and allow for inter-option leveraging to promote competitive consumer options.

- Create regionalized energy efficiency programs for ready recognition among the public, consistency of major programs that avoid public and contractor confusion associated with discrete programs from jurisdiction-to-jurisdiction, and uniform access to and responsiveness of EE programs (regional-facing programs, to complement existing Local Government Partnerships that are commonly IOU-facing and designed pursuant to specific and differing community priorities)

- Enhanced implementation of energy efficiency objectives, policies, and programs across all sectors, including neighborhood, commercial, academic, agricultural, municipal and county government agencies,

The members in the BayREN are well positioned to deliver on these subprograms. Through the management of American Recovery and Reinvestment Act (ARRA) programs, including Energy Efficiency Block Grant (EECBG) and State Energy Program (SEP) grants through the California Energy Commission (CEC) and Department of Energy (DOE), the BayREN members have already taken the initial steps to effectively develop and deliver energy efficiency programs to support the Commission's long-term strategic goals through a San Francisco Bay Area REN. These steps include:

- Developed and refined the governance structure to manage a regional energy program

- Gained experience managing a variety of energy efficiency incentive programs and pilots

- Established models for successful programs, including program delivery, participant recruitment, contractor development, training, and mentoring, and customer marketing and leads generation program elements

- Developed robust partnerships with IOUs, state agencies, and key local and regional stakeholders such as workforce and real estate organizations, and lending institutions
- Developed solid relationships with local building professionals and trade associations
- Identified market barriers associated with whole-house energy efficiency upgrades

The BayREN will build upon this initial effort to effectively deliver all subprogram elements in the 2013–2014 period.

2. Total Program Budget: $ 26,567,750

3. Total Program Savings:

BayREN Intro Table 1: Total Projected Program Budget and Savings by Subprogram

Subprogram	Total ($)	Kwh	KW	Therms
Single-Family Energy Upgrade	$9,000,000	2,128,378	3,438	293,803
Multi-Family	$7,293,750	1,365,019	1,111	152,850
Codes and Standards	$3,349,000	7,627,455	953	190,686
Financing[2]	$6,925,000	0	0	0
Total	**$26,567,750**	**11,120,853**	**5,502**	**637,340**

BayREN Intro Table 2: Total Projected Program Savings by IOU

Subprogram	BayREN Kwh	BayREN KW	BayREN Therms
Single-Family Energy Upgrade	2,128,378	3,438	293,803
Multi-Family	1,365,019	1,111	152,850
Codes and Standards	7,627,455	953	190,686
Financing[3]	0	0	0

4. Short description of each subprogram

a) Single-Family Subprogram

The BayREN Single-Family Subprogram consists of two offerings, designed to increase the number of customers performing both advanced and basic energy efficiency. It will

[2] The Financing Subprogram includes reserved Single-Family Loan Loss Reserve and Multi-Family Capital Advance Program funding reserved under D. 12-11-015 to the BayREN; but may not be spent or encumbered until final authorization under the Statewide Energy Efficiency Financing proceeding.

[3] Given that the Single Family Loan Loss Reserve and Multifamily Capital Advance Program will be finalized in coordination with the statewide financing consultant, projected savings for the Financing Subprogram are not offered at this time.

build upon the successful Advanced Path Program deployed by the BayREN counties during ARRA, and implement a modified Basic Path (referred to herein as Flex Path) program redesigned to meet criteria established by D. 12-11-015, reflect guidance from the Energy Division and a rigorous statewide stakeholder process, and attract the largely-untapped moderate income market. The Flex Path subprogram applies tiered incentives, mandatory Base/Shell Measures, and full component of Flex Measures to boost the number of multi-measure upgrades. By lowering logistical costs and overcoming technological and education barriers for participants, as well as by reducing costs for participating contractors through streamlined program design and implementation, , Flex Path is poised to broaden participation of skilled, specialty contractors and deliver a highly-accessible upgrade product to market. Key Single-Family EUC Subprogram elements include the addition of an alternative and multiple upgrade package incentive, enhanced marketing efforts, development of targeted audit incentives (Advanced Path), streamlined enrollment and reporting systems, integration of improvements related to the water-energy nexus, and the implementation of Home Upgrade Advisors to support homeowners through the Energy Upgrade process.

b) Comprehensive Multi-Family Subprogram

The BayREN Comprehensive Multi-Family Subprogram will conduct targeted outreach to multi-family property owners to promote participation. First, property owners will enroll in a technical assistance program designed to lower barriers to multi-measure upgrades by providing technical and financing assistance. The technical assistance will cover a multiple-benefit approach, including opportunities for water efficiency and indoor air quality improvements during upgrades. Projects with larger scopes of work will be referred to the utility whole-building program rebates. The Bundled Measures Incentive Program will serve as a complement to a whole-building utility rebate program and will reduce cost barriers for multi-family property owners who wish to conduct energy efficiency upgrades. The program will also conduct workforce development for specific multi-family building trades, such as Heating ,Ventilation, and Air Conditioning (HVAC).

c) Codes and Standards Subprogram

The BayREN Codes and Standards Subprogram consists of three components: enforcement of existing codes, training, and sharing best practices for reach codes. The enforcement effort will focus on establishing a baseline for current code compliance within each county in the Bay Area, creating metrics for ongoing measurement and identifying mechanisms for improving the current levels of compliance. Simultaneously, the program will enhance the enforcement of existing codes through training for local government personnel and building professionals. The menu of training opportunities will be targeted to specific functional areas and will be made more accessible to building departments than prior utility offerings. BayREN intends to work closely with key industry associations, such as the California Building Officials (CalBO), in delivering these trainings and creating forums for local government staff to share and align their enforcement activities. BayREN will also establish a regional forum for leveraging and disseminating the work of leading Bay Area jurisdictions in adopting innovative new policies, such as energy labeling and disclosure and other reach codes.

d) Financing Subprogram

The BayREN Energy Efficiency Financing Portfolio (the Financing Portfolio) will be implemented in coordination with programs proposed by the single-family statewide financing consultant and the multi-family statewide pilot to provide a variety of financing options to diverse consumers (residential and non-residential) across the 9-County BayREN region (see detail below). In addition, the Financing Portfolio has been structured to facilitate leveraging of financing options, which will increase competitiveness in the lending market and extend more compelling finance mechanisms to consumers. Further, the Financing Portfolio will streamline loan application and enrollment processes, offers customers and contractors continuity, consistency, and support to a wider, deeper reach for energy efficiency upgrades, and will itself be leveraged with other BayREN subprograms and subprogram elements (such as Workforce Education and Training, deployment of Home Upgrade Advisors, and other customer incentives). Another fundamental objective governing the development of the Financing Portfolio is utilizing and leveraging these mechanisms as financing options for underserved communities and attaining greater socio-economic equity in the implementation of energy efficiency programs.

II. SUBPROGRAM BAYRENO1

1. Subprogram Name: BayREN Single-Family Energy Upgrade Subprogram

2. Subprogram ID number: BayREN01

3. Type of Subprogram: Regional Energy Network

4. Market sector or segment that this subprogram is designed to serve:

a) _X_Residential

Including low-income? __ Yes _X_ No

Including moderate-income? _X_ Yes __ No

Including or specifically multi-family buildings? __ Yes _X_ No

Including or specifically rental units? _X_ Yes __ No

b) __ Commercial (List applicable NAIC codes: _____)

c) __ Industrial (List applicable NAIC codes: _____)

d) __ Agricultural (List applicable NAIC codes: _____)

5. Is this subprogram primarily a:

a) Non-resource program ___Yes _X_ No

b) Resource acquisition program _X_ Yes ___ No

c) Market transformation program _X_ Yes __ No

6. Indicate the primary intervention strategies:

a) Upstream ___ Yes _X_ No

b) Midstream ___ Yes _X_ No

c) Downstream _X_ Yes ___ No

d) Direct Install _X_ Yes __ No

e) Non Resource__ Yes _X_ No.

7. Projected Subprogram Total Resource Cost (TRC) and Program Administrator Cost (PAC)

TRC 0.56 PAC 1.29

8. Projected Subprogram Budget

BayREN01 Table 1: Projected Subprogram Budget, by Calendar Year

	Program Year		
BayREN 01 Single-Family	**2013**	**2014**	**Total**
Admin ($)[4]	$194,052	$291,078	$485,130
General Overhead ($)	$0	$0	$0
Incentives ($)[5]	$712,950	$3,435,750	$4,148,700
Direct Install Non-Incentives ($)[6]	$638,025	$1,270,165	$1,908,190
Marketing & Outreach ($)[7]	$1,103,990	$1,103,990	$2,207,980
Education & Training[8]	$125,000	$125,000	$250,000
Total Budget	$2,774,017	$6,225,983	$9,000,000

9. Subprogram Description, Objectives, and Theory

a) Subprogram Description and Theory

The goal of this subprogram is to address key market barriers and increase the number of Advanced and Flex Path customers who undertake multi-measure energy upgrades in the Bay Area. The subprogram addresses the following market barriers:

- Narrow Scope of Consumer Awareness

The BayREN government members launched an ambitious marketing and outreach campaign under SEP, which successfully plumbed early adopters and penetrated the retrofit-ready market. This process confirmed minimal public awareness of energy efficiency benefits, and the prevalence of false expectations about the cost and process of a whole house energy upgrade. The combination of these handicaps generated a confused market, one that was frustrating to contractors and consumers alike.

The key objectives of the BayREN marketing and outreach program are to expand awareness, support contractors, and to communicate the full suite of energy efficiency direct and co-benefits in a manner that dynamically

[4] Admin is defined as contract development, internal partner coordination, administration, reporting, and other non-program activities.

[5] Includes direct incentives only. Incentive program administration activities included in "Direct Install Non-Incentives."

[6] Defined as all incentive processing, program design, set up, and evaluation activities not included directly under "Marketing and Outreach" or "Education and Training."

[7] Includes all expenses and program labor associated with marketing and outreach activities.

[8] Includes all expenses and program labor associated with education and training activities.

translates energy efficiency as a physical, economic, public health, and environmental value proposition for consumers. The ability to penetrate further into the retrofit-ready consumer sector and engage the retrofit-persuadable markets is dependent upon consumer-sensitive program design, and a marketing campaign that responsibly connects consumers to the diverse, tangible and substantive personal gains possible through home energy improvements.

This subprogram will provide a regional awareness campaign, outreach to industry stakeholders, and local marketing and outreach efforts to reinforce the Energy Upgrade California brand and increase customer participation.

In addition, the alternative Flex Package upgrade approach addresses customer confusion by providing a much simpler program design that meets homeowner expectations and is easier for contractors to explain. This dramatically reduces lead qualification times. Because Flex Package offers a very clear choice to homeowners, they can see how any particular measure will affect their incentive and energy savings.

- High Up-Front Costs

  The high cost of the initial comprehensive audit can put off potential consumers from a whole-house upgrade before they have a chance to assess the total cost and benefits of energy efficiency improvements. The audit approach is inconsistent with standard customer decision making processes, and may have a chilling effect on the market.

  This subprogram will address this barrier by providing a number of audit incentives that will reduce audit costs for projects that completed a PG&E EUC-SF Advanced Upgrade. During the ARRA SEP period, local governments tested a variety of audit incentive programs and were able to dramatically increase the number of audits and conversion rates on upgrades undertaken.[9]

  In addition, Flex Package will provide an alternative upgrade package with predetermined and pre-engineered savings for each measure, removing the need for a pre-audit in most cases. This will enable customers to immediately discuss work options and bids with contractors, and even to switch contractors with no cost repercussions.

- Customer Mistrust of Contractors

[9] Santa Clara County's ARRA-funded EUC Program featured no other incentive (other than PG&E installation incentives) outside a whole-home audit rebate. That design, combined with a dynamic marketing campaign, attained a 43% conversion rate, which increased to 49% under additional funding awarded by the California Center for Sustainable Energy in October 2012 for Most Innovative Program Practice in Northern California.

A limiting factor to the success of Energy Upgrade California in 2011–2012 was the lack of a trusted third party to educate consumers about energy efficiency options, help them choose an appropriate contractor, and provide conflict mediation and resolution should the need arise. In addition, contractors displayed varying levels of ability to support customers during the decision making process, which often resulted in long lead qualification times and lost leads. Under SEP, Bay Area local governments effectively served as a trusted advisor and motivated enhanced uptake of the Energy Upgrade California program.

Based on that experience, this subprogram will provide a "Home Upgrade Advisor" to act on the homeowner's behalf. The Home Upgrade Advisor service will feature a dedicated advisor for individuals, contractor representation and mediation, and other support as necessary to help homeowners feel supported during the upgrade process. This approach has been demonstrated to increase participation in energy efficiency upgrade programs to 50% of all leads.

- Contractor Participation

The design of the Advanced Package offered through the PG&E EUC-SF has required most Participating Contractors to fundamentally alter their business models to qualify for the utility program, which has had the effect of limiting the number of Participating Contractors, increasing costs of projects, and creating technical and customer service challenges with project delivery.

Flex Package is designed to be easily incorporated into existing contractor business models, while encouraging contractors to pursue additional energy efficiency measures. For example, Flex Package can be easily incorporated into HVAC upgrades or window replacement projects. Administrative requirements are designed to fit into the contractor standard process, and contractor qualifications for the program mean that contractors are not preemptively burdened with mandatory investments in equipment and additional certification but still meet the level of professional licensure and expertise necessary to ensure first-class retrofits and consumer protections. In addition, Flex Path is structured to enroll and engage whole-home as well as specialty contractors, increasing the pool of direct marketing contacts with the public.

- Low Conversion Rates

The design of the PG&E EUC-SF program favors large-scale contractors who have strong customer sales skills and business practices to attract and convert leads, and help homeowners navigate the energy upgrade process. Many contractors, however, focus on the technical delivery of projects, which the BayREN local governments identified as a market-response model and not the market-driver model needed to create an energy

efficiency economy in California. Thus, during ARRA and continuing into the 2013-2014 Energy Efficiency Transition Period, the BayREN governments have developed a convenient and effective resource for training that would enhance contractor marketability, and support business model changes that allow specialty and medium/small contractors to compete and produce in the whole-house upgrade market.

This subprogram will address this barrier by providing the Home Upgrade Advisor services (described above), which will allow contractors to focus more on delivering projects and less on qualifying leads.

Responding to Commission direction, BayREN will also provide training and mentoring opportunities to Participating Contractors to address key skills gaps, including sales, customer relations, messaging, financing options, energy efficiency benefits and co-benefits, business practices, and job sequencing.

- High Cost of Energy Upgrades

  In the period of 6/2011–6/2012, the average out of pocket cost of a whole-house upgrade in the Bay Area was approximately $10,000, and one third of all upgrades were priced above $15,000. With this large initial investment and few long-term financing products available, whole-house upgrades are out of reach for many customers.

  In D 12-05-015, the Commission determined that a key role for local governments was to "address hard-to-reach customer segments such as low- to moderate-income residential households and small- to medium-sized businesses." With a lower cost investment, the Flex Package program encourages moderate-income homeowners to undertake energy upgrades. As demonstrated in the Los Angeles County Flex Path pilot, the average out of pocket cost was approximately $3,000, a third of the cost of an Advanced Upgrade. Market research conducted during the SEP period identified $3,000 as the highest out-of-pocket costs that would be amenable to a majority of Bay Area homeowners.[10]

- No Alternative to Advanced Path Upgrades

  The Basic Package offered through the PG&E EUC-SF was originally intended to be a low-cost, accessible, and simple on-ramp to performing residential upgrades. Initial estimates were that Basic Package jobs would compose more than half of all upgrades. However, the inflexibility and limited measures menu of the final Basic Package design resulted in an indifferent public response, an unprofitable model for contractors, and

[10] In the Bay Area, 50% of homeowners were willing to spend $3,000, 29% would spend $5,000, and the percentage drops off to just 17% willing to spend $7,000. From *Energy Upgrade California Market Research Report*, 2011. Association of Bay Area Governments.

negligible uptake. This can be demonstrated through the PG&E 2013–2014 initial EUC-SF Program Implementation Plan, which set a Program Performance Metric (PPM) of 220 Basic Package jobs territory-wide, versus 6,700 Advanced Package jobs.

The BayREN Flex Package program offers the viable alternative to the Advanced Package that the Basic Package was meant to fulfill. The successful pilot in LA County received 1650 applications in just ten months, with essentially no homeowner outreach. Additionally, the Flex Package design is currently being piloted in the Bay Area by Alameda and Sonoma counties. The Flex Package therefore stands as a successful model ready to be expanded and take the place of the Basic Package for at least 2013–2014, driving energy savings in a program that is simple for both homeowners and contractors.

Under the SEP Program, BayREN members worked closely with the IOUs and the CEC to implement the local government Energy Upgrade California programs. Under the BayREN, these same members see opportunity for even closer coordination with the IOUs directly under the CPUC to allow for a more common "Market Transformation" Vision to be established amongst all parties. BayREN believes the CPUC directives in Decision D.12-11-015 to establish an Energy Upgrade IOU/non-IOU working group and to hire a market transformation consultant will support this work.

For the IOU/non-IOU working group, the RENs request at least SoCalREN and BayREN representation in the group. The group would serve as an advisor and a coordinator of activity. However, BayREN believes that only the RENs in conjunction with the CPUC should have ultimate authority to determine REN program offerings.

For the hiring of the market transformation consultant, the RENs should be represented as an equal partner in the hiring process. The RENs should also continue as an equal advisor throughout a deliberative, creative and results-oriented development of a market transformation strategic plan. The RENs appreciate and value the role and perspective of the utilities in this process; they bring a corporate culture and approach to the process that is meaningful. At the same time, RENs are composed of local governments, entities that by their nature communicate, educate, and advocate with the public (defined to include constituents as well as commercial, civic, foundational, workforce, academic, and special interest citizenry) on a daily, direct basis. While the relationship between consumers and utilities is created by reason of a quasi-monopoly, local governments succeed through responsiveness, communication, and service to the public.

Also, during the ARRA-funded cycle of Energy Upgrade California, member governments of the RENs (both BayREN and SoCalREN) produced marketing, outreach and education campaigns that garnered state recognition and awards, and attained national distinction in communications for energy campaigns.

The RENs are confident that an equal and dynamic partnership of the utilities and the RENs has the potential to exceed their individual efforts in the area of market transformation.

For both the working group and the market transformation consultant process, the REN presence has promise, combined with the corporate perspective of the IOUs, to engage a more meaningful process with a diverse and more-encompassing perspective. Given that the 2013-2014 Energy Efficiency Transition Period will commence well before the market transformation specialist and advisory group are deployed, their relevance to and influence on the modified Basic Path – as well as all other EE programs – will occur in the 2nd year of the Transition Period. This is not ideal timing for the entirety of the Transition Period, but is well-timed for a mid-cycle program assessment, evaluation and adjustment, if necessary. This timing also allows for the Market Transformation Specialist to incorporate actual program and market performance into its deliberations and activities. Specifically, the RENs would like the working group to develop strategies and approaches for all market sectors, not only gateway consumers sought to be engaged through a more affordable and accessible, "modified basic path" program; and, also, to identify any additional co-benefits, trigger events, partnerships, and messaging that could drive more robust public interest in energy efficiency and greater value(s) the public consciousness may attribute to energy efficiency. The RENs believe that socio-economic and other obstacles to market expansion are surmountable if the public is assured and becomes savvy of multiple values and benefits to energy efficiency. Layers of benefits and value allow the public to construct its own business case for prioritizing energy efficiency.

BayREN also looks to work with current Energy Upgrade Contractors like SolarCity, specialty and trades contractors currently not participating in Energy Upgrade, and industry stakeholder groups (e.g. CBPCA and BPI) to streamline program design and specifically address HVAC emergency replacements and high performing contractor criteria. Once the initial program design stakeholder process has been concluded, BayREN would propose engaging the stakeholders on a regular basis (quarterly or as otherwise determined by the stakeholders) to evaluate progress through the course of the 2013-14 cycle. BayREN proposes that these stakeholder groups include specialty and trade contractor groups (e.g. IHACI and NARI) which are meant to be the target contractor audience for the Flex program and are not represented by BPI or CBPCA. Prior stakeholder outreach in this area has not been inclusive of special and trade contractors, and the RENs seek parity and comprehensiveness in future stakeholder processes.

b) Subprogram Energy and Demand Objectives

BayREN01 Table 2: Projected Subprogram Net Energy and Demand Impacts, by Calendar Year[11]

Program Years	

[11] Net energy savings calculations were based upon the weighted to date energy savings generated through the BayREN Single-Family E-3 calculator.

	2013	2014	Total
Single-Family Advanced Support			
GWh	0.48	1.65	2.13
Peak MW	0.71	2.73	3.44
Therms (millions)	0.06	0.23	0.29

c) Program Non-Energy Objectives

i. SMART non-energy objectives of the subprogram

- During the period 2013–2014, the number of contractors registered as Energy Upgrade Participating Contractors participating in the 9-County Bay Area will increase by 10%. Metric type 2b.
- During the period 2013–2014, the Home Upgrade Advisor will consult with 1,500 customers and have a lead conversion rate of 35%into PG&E EUC-SF and Flex Package projects. Metric type 2b.
- During the period 2013–2014, 250 individuals will be trained in one of the following: sales and customer relations, small business best practices, marketing and messaging, job sequencing, and green real estate certifications. Metric type 2b.
- Establish 10% brand awareness for green labeling (i.e., GreenPoint Rated, HERS, Energy Star, LEED) among recent home buyers and/or real estate professionals. Metric type 2b.

ii. See above.

iii. Relevant baseline data

Average project costs and rebates for PG&E EUC-SF jobs have been provided by PG&E to ABAG, based upon completed PG&E EUC-SF jobs to date.

Statistics on Energy Upgrade Participating Contractors are provided by PG&E and the California Energy Commission, and the total number of Participating Contractors in a county is available at www.energyupgradeca.org.

d) Quantitative Subprogram targets (PPMs)

BayREN01 Table 3: Quantitative Subprogram Targets (PPMs)

Target	2013	2014
Number of PG&E EUC-SF Advanced Package projects incented in the Bay Area	1,320	1,380
Number of audit incentives funded through BayREN	586	743
Number of participants in Home Upgrade Advisor Program	500	1,000
Number of trained Contractors and Real Estate Professional	125	125

Target	2013	2014
Number of units incented through Flex Package	360	2142
Percentage of Home Upgrade Advisor participants that complete a Flex Package project	15	25
Number of Participating Contractors who have completed one or more Flex Package projects[12]	30	70

e) Cost-Effectiveness/Market Need

Cost-effectiveness was established using the E-3 Calculator. To generate savings estimates per project per climate zone, the methods described below under "Measures Savings/Work Papers" was used.

For Flex Package savings, average project savings per climate zone were generated for two house vintages.

As this is identified as both a resource and market transformation program, TRC was expected to be lower than 1.0.

f) Measure Savings/ Work Papers

i. Indicate data source for savings estimates for subprogram measures (DEER, custom measures, etc.).

Single-Family Flex Package: To determine the expected energy savings for a typical package with the Flex Package program, we adapted the calculation methodology recommended by the Commission reviewer during work paper development for the 2010–2012 Whole House Retrofit Program (now the EUC-SFEUC-SF). For energy savings estimation purposes, the Whole House Retrofit Program is similar to Flex Package in that multiple measures are to be completed under each project, and thus, the interactive effects of the measures need to be taken into account. During that 2010–2012 work paper/methodology review, the Commission reviewer, Marlin Addison, allowed the use of EnergyPro to determine the modeled energy savings, provided that the simulation model of a pre-retrofit house could be shown to generate energy usage similar to that of a corresponding home in the DEER database defaults. Once such a model was created for a given vintage and climate zone, we could apply values from the statewide Residential Appliance Saturation Survey (RASS) database for the target population in each climate zone and vintage expected to participate.

To determine the average Flex Package project energy savings, we used the distribution of packages from the current Flex Path program running in Los Angeles County. That program has over 1650 packages within the past year, and it was assumed that a Flex

[12] Calculation-Assume 20% of contractor complete 80% of jobs. 80% * 715 estimated completed applications=570 jobs in first year done by 20% of contractors. Assume 10 jobs max per month per contractor means that 6 contractors are the 20% of total contractors. 6/.2=30 contractors in 2013. Assume 10 months of program operation for 2013 due to program ramp up and 10 months of program operation in 2014 due to program wrap up.

Package program in the BayREN program would encounter a similar distribution of projects. An EnergyPro model was created for each climate zone and vintage range (pre-1978 and 1978–1992), and calibrated against the DEER database specifications for such single family homes. We then used the RASS database to determine the average square footage and insulation levels for these homes based on the characteristics of participants in the program. Then, each of the possible Flex Package upgrade measures was calculated independently in EnergyPro.

The kWh, therms, kW, and overall BTU percent savings were determined for each upgrade measure. To determine the effect of a combination of measures, the second measure would apply its percent savings to the expected remaining household annual kWh, annual therms, or average avoided kW from the first measure. If there are additional measures, each measure's savings is applied to the expected remaining savings after the previous measure's savings had been applied.

To determine the average energy savings for the program from a given climate zone and vintage combination, the average total package savings was weighted by how common the package was in the Los Angeles County Flex Path program. A weighted average was calculated for the four Bay Area climate zones, using the number of detached single-family units per climate zone to weight the savings for each zone (as provided by the 2010 U.S. Census).

Single-Family Advanced Energy Upgrades: Savings estimates for projects pursuing the PG&E EUC-SF Advanced Package are based upon PG&E EUC-SF savings from the "PG&E subprogram E3 Calculator Without Spill Over for the 01_Statewide Residential Program,". BayREN has based these savings on an additional 475 Advanced Package upgrades that BayREN activities will drive within the PG&E EUC-SF in 2013-2014. This increased market penetration is based upon:

Reported monthly average of PG&E Advanced Projects in ABAG Territory:

PG&E has reported an average of less than 100 completed Advanced Package upgrades per month since local government activities funded through the CEC Retrofit Bay Area program ceased in March, 2012; total completed jobs as of March, 2012: 1029; total ccompleted jobs as of July, 2012: 1378.

This yielded a projected baseline for the PG&E Advanced Package of 1125 upgrades in 2013 and 1100 upgrades in 2014 at existing levels of uptake for the PG&E Whole House Program.

BayREN program components not currently a part of the PG&E Whole House Program that will drive increased participation, include:

BayREN Single Family subprogram marketing activities proven to be effective during the CEC Retrofit Bay Area State Energy Program that will support the PG&E Advanced Package

BayREN Home Upgrade Advisor activities that will directly facilitate increased customer participation in the PG&E Advanced Package; PG&E's current Whole House Program does not offer this direct one-on-one customer interaction

BayREN Financing subprogram initiatives being available in 2013 Q3; PG&E's current Whole House Program does not provide accessible financing options

Audit incentives for eligible PG&E Advanced Package upgrades proven to effectively drive increase upgrade participation through the CEC Retrofit Bay Area State Energy Program.EUC-SF

ii. Indicate work paper status for subprogram measures

BayREN01 Table 4: Work Paper Status

#	Work Paper Number/Measure Name	Approved	Pending Approval	Submitted but Awaiting Review	Not Yet Submitted
1	Flex Package Energy Savings		X		

10. Program Implementation Details

a) Timelines[13]

BayREN offers the timeline found in Table 5 for the Single Family Subprogram.

[13] The timeline may vary based on the approval date of the Advice Letter.

BayREN01 Table 5: Subprogram Milestones and Timeline

Milestone	Date
Project Initiation Meeting	Dec. 2012
RFP Issued for Home Upgrade Advisor, Audit Incentive, Flex Package, and Marketing Consultant, Training Organizations	1/28/2013
All Subcontractors Selected	4/1/2013
Regional Marketing Strategy Developed	5/1/2013
Flex Package Program Design Created	5/1/2013
Home Upgrade Advisor Program Design Created	5/1/2013
Audit Incentive Setup and Launch	5/1/2013
Local, Regional Marketing Launch	5/1/2013
Flex Package Program Systems Setup and Launch	5/1/2013
Home Upgrade Advisor Program Launched	5/1/2013
Contractor Trainings Initiated	5/1/2013
Final Home Upgrade Advisor New Participants	9/30/2014
All Incentives Closed to New Applications	10/31/2014
Final Training	11/15/2014
Final Projects Completed	11/30/2014
Final Incentives Issued	12/8/2014
Quarterly Progress Reports	3/31/2013 – 12/8/2014

In addition, BayREN offers the following implementation details for the components of the Single Family Subprogram.

BayREN01 Figure 1: BayREN Incentive and Direct Install Allocations

Incentive Component	Location in PIP Budget	Amount		
		2013	2014	Total
Flex Incentives	Incentive Category	$537,000	$3,213,000	$3,750,000
Flex Implementation	Direct Install Category	$232,400	$642,540	$874,940
Audit Incentives	Incentive Category	$175,950	$222,750	$398,700
Audit Incentive Implementation	Direct Install Category	$184,125	$185,625	$369,750

BayREN01 Figure 2: BayREN Single Family Incentive Milestones and Timeline

Milestone	Date
RFP Issued for Home Upgrade Advisor, Audit Incentive, Flex Package, and Marketing Consultant, Training Organizations	1/28/2013
All Subcontractors Selected	4/1/2013
Flex Package Program Design Created	5/1/2013
Audit Incentive Setup and Launch	5/1/2013
Flex Package Program Systems Setup and Launch	5/1/2013
All Incentives Closed to New Applications	10/31/2014
Final Projects Completed	11/30/2014
Final Incentives Issued	12/8/2014

BayREN01 Figure 3: BayREN Home Upgrade Advisor Direct Install Allocations

Program Component	Location in PIP Budget	Amount		
		2013	2014	Total
Home Upgrade Advisor	Direct Install Category	$232,400	$642,540	$874,940

BayREN01 Figure 4: BayREN Home Upgrade Advisor Milestones and Timeline

Milestone	Date
RFP Issued for Home Upgrade Advisor, Audit Incentive, Flex Package, and Marketing Consultant, Training Organizations	1/28/2013
All Subcontractors Selected	4/1/2013
Home Upgrade Advisor Program Design Created	5/31/2013
Home Upgrade Advisor Program Launched	5/1/2013
Final Home Upgrade Advisor New Participants	9/30/2014

BayREN01 Figure 5: BayREN Program Participation Scenarios*

Below are BayREN's low, medium and high scenarios for Single Family Program customer participation and budgets, based on the assumptions shown.

BayREN									
Scenarios	Single Family Flex Package			Single Family Audit Incentives			Budget			
	2013	2014	Total	2013	2014	Total	2013	2014	Total	
Low	192	798	990	307	391	698	$ 2,321,492	$ 3,613,488	$ 5,934,980	* Final Flex Package base measures (de * Program launch d design coordinatio * Divergent contrac PG&E WHUP and Ba enrollment (decrea * Impact of potenti (decrease)
Medium	358	2,142	2,500	586	743	1,329	$ 2,773,742	$ 6,226,258	$ 9,000,000	* Final Flex Package base measures * Single contractor BayREN and PG&E V * Net impact of fina MIST, CAEATFA) (in * Net impact from and marketing activ
High*	404	3,276	3,680	862	1,084	1,946	$ 3,008,178	$ 8,455,068	$11,463,246	* Net impact of fina MIST, CAEATFA) (in * Net impact from and marketing activ * Impact from real (increase) * Impact of potenti (increase)

* The High Scenario would require additional funding above the already allocated $9,000,000 BayREN Single Family budget.

b) *To the extent that a number of critical responses and decisions on the April 1, 2013 Advice Letter filing are pending, the BayREN notes that it is prepared to work diligently with the Energy Division and the Commission to adjust High-Medium-Low EUC Participation Scenarios, where necessary upon resolution of open issues that are or have the potential to affect these forecasts. Geographic Scope

BayREN01 Table 6: Geographic Regions Where the Subprogram Will Operate

Geographic Region	Single-Family Subprogram	Geographic Region	Single-Family Subprogram
CEC Climate Zone 1		CEC Climate Zone 9	
CEC Climate Zone 2	X	CEC Climate Zone 10	
CEC Climate Zone 3	X	CEC Climate Zone 11	
CEC Climate Zone 4	X	CEC Climate Zone 12	X
CEC Climate Zone 5		CEC Climate Zone 13	
CEC Climate Zone 6		CEC Climate Zone 14	
CEC Climate Zone 7		CEC Climate Zone 15	
CEC Climate Zone 8		CEC Climate Zone 16	

c) Program Administration

BayREN01 Table 7: Program Administration of Subprogram Components

Program Name	Subprogram Component	Implemented by BayREN staff	Implemented by contractors to be selected by competitive bid process	Implemented by contractors NOT selected by competitive bid process	Implemented by local government or other entity (X = Yes)
Flex Package Incentive Program	Program Administration	X			
	Contractor Recruitment and Engagement		X		X
	Program Design and Setup		X		
	Marketing/Outreach/ Professional Engagement		X		X
	Program Implementation: Desktop and Quality Assurance		X		
	Program Reporting	X	X		
PG&E EUC-SF Support Program	Program Administration	X	X		
	Home Upgrade Advisor		X		
	Marketing/Outreach/ Professional Engagement		X		X
	Audit Incentive Program Implementation		X		
	Contractor Training Management		X		
	Contractor Training: Implementation		X	X	
	Program Reporting	X	X		

d) Program Eligibility Requirements

i. Customers

BayREN01 Table 8: Customer Eligibility Requirements

Customer Eligibility Requirement
Single-Family Detached Housing
Property located in the 9-County Bay Area
Homes must meet pre-upgrade standards, which vary by measure (e.g., to qualify for points for the attic insulation measure, a home must have less than R-11 prior to installation)

ii. Contractors/Participants

Contractors seeking to participate in the BayREN Single Family subprogram offerings will need to be either a PG&E Energy Upgrade California Single Family participating contractor or will need to become a BayREN participating contractor. Contractors must meet the eligibility requirements listed in Table 9 below.

To specifically participate in the BayREN Flex Package, contractors must complete the following enrollment process:

Contractors participating in the PG&E Energy Upgrade California Single Family Program that attend a BayREN Participation Workshop and sign the BayREN Contractor Participation Agreement will automatically be eligible for BayREN Flex Package. PG&E Energy Upgrade California Single Family Program contractors will be recruited to attend the Participation Workshops through email and phone follow up as conducted by BayREN program administrators. These contractors will submit required documentation (including Contractors License and Insurance) to be reviewed and verified by BayREN staff.

All BayREN enrolled contractors will be tracked , and Quality Assurance processes consistent with Energy Star protocols shall be applied. . Energy Upgrade California Single Family Program participation and all other required documents will be reviewed regularly for needed renewals. Contractors failing the Quality Assurance program will be un-enrolled from the program and barred from future enrollment.

BayREN01 Table 9: Contractor/Participant Eligibility Requirements

Contractor Requirements	Eligibility Question	BayREN Response
Licensing EUC-SF	What CSLB licenses are required to do the work?	License according to local code and installed scope of work, and at a minimum either a B, C-2, or C-20
Training	What training is required to perform work? Who must attend (company leadership, crew leads, crew, etc.)	Flex Package Technical Training included within Participation Workshop. Crew Leads required.
Participation Workshop	Is a participation workshop required? Who must attend (company leadership, crew leads, crew, etc.)	Participation Workshop will have two components: 1) Flex Program Overview, including key program documentation, processes and protocols, messaging, and support. Company Leadership required. Crew Leads recommended. 2) Technical Training. Crew Leads required. Crew recommended.
Contractor Participation Agreement	Does the contractor need to sign a participation agreement?	Yes
Test in / Test Out Diagnostics	Are these required? If so, who does the diagnostic tests? What qualifications does the person need to possess in order to conduct the test?	Test In/Test Out as appropriate for installed scope of work. Test In can be conducted on the 1st day of work. Test In/Test Out must be performed by BPI-BA, on staff or subcontracted. BayREN will study the impact of this on job penetration and would request that this could be amended pending job uptake.
Combustion Appliance Safety Tests	Who does the CAS testing?	Test In[14] and Test Out by BPI-BA, on staff or sub contracted; stakeholder process underway to open the market to additional qualified providers.

As directed by the March 18, 2013 Guidance Letter, both CAS test-in and test-out are new requirements to the Flex Path program. While the BayREN appreciates the thoughtfulness in this decision process and will comply as directed, we believe that the test-in requirement is not necessary to address the collective safety concerns of the CPUC, the RENs and other stakeholders. BayREN is committed to limiting market barriers to program participation by non-BPI certified contractors or homeowners, while at the same time ensuring the utmost safety to property owners, their neighbors and the contractors.

[14] The March 18, 2013 Guidance Letter, directed that CAS test-in be a required program element. BayREN 's objections to this requirement are discussed below.

The following problems and mitigation are identified:

1. A surprising number of homes have pre-existing, behind-the-meter, undetected natural gas leaks at appliances or joints in the gas line. A concern that has been expressed is that shell measures will reduce air exchange in the home such that a pre-existing undetected leak will no longer be sufficiently diffused by air exchange, gas will build up in the home before the test-out (one to ten days after end of construction) thereby creating a fire hazard. BayREN supports requiring leak detection prior to construction, utilizing one of these options:

i. PG&E's existing free leak detection service. Currently, PG&E immediately responds to any call about a possible gas leak. BayREN can require participating contractors to call PG&E and ask that they come to the property before any construction begins, and provide the leak detection service, regardless of the selected shell measure. This would have many benefits, including improving overall safety and helping to reduce fugitive natural gas emissions, a very potent greenhouse gas, and further contributing to the CPUC's goals for GHG reductions. The customer would benefit as no additional costs would be imposed, and the contractor will avoid having to bring in a potential competitor or someone who may have a different opinion on what should be addressed in the home causing customer confusion.

ii. Each contractor can be required to perform a leak detection test. The detector costs approximately $300 and will pay for itself in the resultant leak repair work. Any leak found at Test-Out will be repaired by the contractor at no charge to the customer. Contractors will need training but this could be included in the program intake training BayREN is already scheduled to provide. BayREN can bulk purchase a quantity of detectors and offer them to contractors on a monthly repayment plan at little net cost to the budget. This solution avoids the complication of bringing in a second contractor before the lead contractor can start work. It also avoids the cost in both the time to schedule and the money out of the homeowner's pocket to pay for the second contractor. This eliminates the danger while avoiding the market barrier.

2. A significant number of homes have carbon monoxide (CO) problems. The concern is that shell measures will reduce air exchange in the home such that a pre-existing undetected CO problem will no longer be managed by natural air leakage in the home, CO will build up and someone may become seriously ill or worse, die. Fortunately, California recognizes this danger and now requires all homes to have a working CO sensor set to detect a level that might create either death or serious illness. The NEMA definition of the alarm standard is "CO devices must sound alarm signal before most people experience adverse effects but not at long-term, low-level or short-term CO exposures that are not a health threat". NEMA further recommends ANSI/UL 2034 or ANSI/UL 2075, the same standard adopted by California in the Carbon Monoxide Poisoning Prevention Act of 2010. To address this issue, BayREN will require all participating contractors, before any construction begins, to properly install new CO alarms or install new batteries in existing properly installed CO alarms, and provide an affidavit to BayREN signed by the contractor and the homeowner and filed with the rebate reservation application. This will address any serious health hazard for the brief time between construction and Test-Out when more subtle problems may be discovered. This also addresses the serious health risk and avoids the cost in both contractor's time to schedule and the money out of the homeowners pocket to pay for the second contractor's scheduling and travel time.

3. Customers can be surprised by added costs discovered at Test-Out. It is particularly difficult for moderate-income participants (that this program is likely to attract) to suddenly have to find hundreds and maybe thousands of dollars to address a problem that would have been discovered at Test-In. BayREN agrees that a customer should not be unduly surprised. However, the EUC program already experiences over 20% of cases where the Test-Out fails and mitigation costs are incurred. This proves that Test-In is not a real solution to the surprise problem. It is a problem already recognized by experienced contractors and the potential is usually brought to the homeowner's attention before a contract is signed. BayREN proposes to enforce that as a best

practice and require contractors to provide a BayREN authored notice that includes program statistics on Test-Out failures, cost ranges, and a clear statement that any CO or natural gas problems discovered during the project will require the shut off of any affected combustion appliance and must be resolved at the customers expense prior to renewed operation of the equipment. An affidavit of receipt of the notice, signed by contractor and customer would be filed with the rebate reservation application. The burden to this paperwork is much less than the burden of a Test-In.

While this eliminates the surprise, BayREN recognizes it does not eliminate the post Test-Out cost. However, BayREN also recognizes that no market driven CPUC/IOU program, not even EUC, has any method of helping customers who lack ready funds to fix the surprises. It would be unfair to place on one program a new requirement when no other market rate program is expected to fix the problem.

Finally, the Energy Division has offered a solution that alternative certifications may be allowed. If NATE or other certifications are allowed for Test-In and Test-Out, certified contractors will be able to in-house the work avoiding the market barriers. There is likely to be a large enough pool of such contractors who will be interested that the pilot program can meet its goals for 2013-14; however, it will limit the program to those with pre-existing certifications and may not be a scalable solution for this program to grow in future years. Further, any stakeholder process to settle on additional acceptable certifications will further delay the start of this program, already seriously delayed by the lengthy decision-making processes. BayREN appreciates being given the opportunity for stakeholder engagement and are committed to creating a process to open the market to additional qualified providers. Evaluating more CAS protocols that may increase the number and types of providers is consistent with a desire to transform the market for deep energy reductions, and may reduce any appearance of unfairly privileging one provider over others. Doing so may also positively influence the number of jobs and providers able to perform the work in California.

e) Program Partners

i. Manufacturer/Retailer/Distributor partners

The BayREN hopes to continue successful retail partnerships originally established under SEP as part of program marketing efforts, including relationships with Whole Foods, Sears, Kaiser Permanente, and Home Depot.BayREN01 Table 10: Manufacturer/Retailer/Distributor Partners (Not Included)

Manufacturer/Retailer/Distributor Partner Information	**BayREN01**
Manufacturers enrolled in program	None
Manufacturers targeted for enrollment in program	None
Retailers enrolled in program	None
Retailers enrolled in program	None
Retailers targeted for enrollment in program	None
Distributors enrolled in program	None
Distributors targeted for enrollment in program	None

ii. Other key subprogram partners

Building Operators and Managers Associations

City and County of San Francisco

City of Suisun City

Community Based Organizations

County of Contra Costa

County of Marin

County of Napa

County of San Mateo

County of Santa Clara

Green Building Associations/Green Building Labeling Programs

Joint Venture Silicon Valley

Lending Institutions (to be announced when program is launched)

Local Workforce Investment Boards Marin Clean Energy Authority

Marin Clean Energy Authority

Pacific Gas & Electric Company

Professional Building Trade Associations

Professional Training Organizations

Real Estate Professional/Associations

Sonoma County Regional Climate Protection Authority

Sonoma County Energy Independence Program

StopWaste.Org (Alameda County Waste Management Authority)

Water Utility Districts

Working Partnerships USA

f) Measures and Incentive Levels

The Single-Family Subprogram will offer two incentive programs:

- Whole-House Audit Incentive Program

During the SEP period, BayREN members identified the initial cost of an energy audit as a key market barrier to market penetration of whole-house upgrades, and Bay Area programs premised on audit incentives drove conversion rates as high as 43%. To reduce this barrier, the BayREN will provide incentives to offset the cost of test-in energy audits for customers that complete a PG&E EUC-SF Advanced Upgrade within the BayREN territory. The Audit Incentive Program will provide incentives for audits that follow Building Performance Institute (BPI) and PG&E EUC-SF protocols, and are performed by Energy Upgrade Participating Contractors.

When a homeowner has started an Advanced Upgrade, they or their contractor will be eligible to submit an Audit Incentive Application that reserves their incentive funds. Once an Advanced Upgrade is completed, homeowners or contractors will then submit a Completion Form, along with required documentation. Instructions for this process will be maintained online and will be shared with PG&E Energy Upgrade California Single Family Program participating contractors in the BayREN region All applications will undergo desktop quality assurance to ensure the property is eligible for an incentive. Since field verification for the upgrade will occur under the PG&E EUC-SF, no additional field verification will be conducted through this BayREN program.

- Flex Package Incentive Program:

To complement the Basic and Advanced Package upgrade options currently offered through the PG&E EUC-SF, the BayREN will offer the Flex Package Upgrade Incentive to single-family customers within the BayREN territory. The Flex Package Program is designed to fill a gap in the current PG&E EUC-SF design, offering an on-ramp for homeowners and contractors to pursue multi-measure energy upgrades at an accessible cost through a simple to understand program. The Flex Package has been successfully piloted in Los Angeles County, and is outperforming the Advanced Package program (1650 applications between January and October 2012), demonstrating its simplicity, accessibility, and potential.

The Flex Package Incentive allows homeowners to receive an incentive by installing three or more measures in their home. The measures are selected by the homeowner and contractor from a list of measures that have been modeled for energy savings and assigned a certain "points" value. Points values reflect the pre-modeled energy savings, as well and scope and process considerations of installing the measure. Homeowners are required to install are least one of three "Base" measures (attic air sealing and insulation, duct sealing and insulation or replacement, or whole house air sealing) and at least two additional measures ("Basic" or "Flex"). If a home already meets requirements for all three base measures, they may install only "Flex" measures. When homeowners have selected enough measures to reach a certain points value (summed amongst all selected measures), they are eligible to receive the incentive. In this way, homeowners have flexibility to choose measures that fit their energy and comfort needs. This simple, menu-driven, flexible design is expected to greatly increase the volume of projects over the original Basic Path. Contractors will be trained and encouraged to develop work scopes that include more building envelope measures and go beyond core systems.

As the program design for Flex Package is finalized, BayREN feels any requirement that eligible Flex projects must install "2 of 3" Base Measures is too restrictive and will limit participation in much the same way as the 2010-2012 Basic Path model. In a contractor engagement meeting conducted by SoCalREN with 10 Flex Path contractors, the REN team was told by specialty contractors (HVAC, insulation, and plumbing) that they could not sell the "2 of 3" approach to homeowners. If the REN Flex program is forced to require 2 of 3 Base Measures, the REN would drastically reduce its target for completed Flex projects, as reflected in the Low Scenario presented Figure 5 above.

The IOUs' have indicated in Attachment A to this Advice Letter that they will accept the 1 of 3 Base Measure approach as adequately "supporting" the Loading Order; therefore, the BayREN and IOUs' are in agreement on a single program design. The Flex Package program offers a balanced approach intended to produce a high volume of retrofits while maintaining a reasonable level of technical rigor and quality assurance. The proposed program will:

- Link Base and Flex Measures together to support building shell and core system upgrades

- Provide a tiered incentive level from $1,000 to $2,500 in $500 increments which still allows the contractor to upsell to the Advanced Path if desired by the homeowner
- Penetrate the lower-middle and middle-income homeowner markets to greatly increase the volume of projects
- Maintain high standards of Quality Control consistent with IOU and industry best practices
- Maximize ratepayer benefits while minimizing lost opportunities

Many Flex Measures require a specific Base Measure to support the Energy Efficiency Loading Order and Core System upgrades as shown in the examples in Figure 1 below. In many projects this will result in the homeowner installing two or more building shell measures. BayREN feels the required Base Measure design combines complementary measures in a way that adequately supports the Loading Order without introducing unnecessary restrictions on the contractor and homeowner. This systems oriented design will help to ensure that each building system will be installed properly and provide the maximum benefit to the ratepayer.

BayREN01 Figure 6: BayREN Examples of Required Base Measure by Flex Measure

Flex Measures	**Required Base Measure**
Wall Insulation or Windows	Whole House Air Sealing
Crawlspace Insulation	Whole House Air Sealing
Attic Radiant Barrier	Attic Air Sealing and Insulation
HVAC Equipment Replacement	Duct Sealing and Insulation or Duct Replacement + one additional Base Measure or envelope Flex Measure

Of 1273 homeowners participating in the LA Flex Path program 60% implemented one or more shell measures without being required to do so. BayREN estimates that the 1 of 3 Base Measure approach will result in up to 75% of homeowners implementing at least one shell measure. This simple, flexible design will also greatly increase the volume of projects over the Basic Path. The remaining homeowners will focus on completing core system upgrades. Contractors will be trained and encouraged to develop work scopes that go beyond core systems and include building shell measures. The 2013-2014 transition period gives the Commission the opportunity to test a program design that will achieve a higher volume of retrofits and reasonably support the Loading Order. Flex Package also introduces a bonus measure for right-sizing of HVAC equipment to support the EE loading order for core systems and test market acceptance of this approach outside a formal Quality Installation requirement. Again, BayREN wishes to use the transition period to try an innovative program design to see what works and what does not, and one that does not limit participation. The challenge in any program design is finding the right balance between volume and home performance priorities. Lessons learned will be few if homeowner participation is low. The Commission cannot afford another two years of learning only what does not work.

Furthermore BayREN believes that the "Duct Sealing and Insulation/Replacement" base measure does qualify as a shell improvement. Duct sealing reduces infiltration to unconditioned space. Ducts in past California whole house programs have been found to have on the order of 30% leakage. Duct sealing not only reduces wasted conditioned air (thereby reducing time to run HVAC appliances), it also reduces the air infiltration to outside of the conditioned space. If needed, the program can implement a duct leakage to outside requirement, which requires the test to be conducted with blower door at 25Pa when doing the duct leakage test. Applications for Flex Package Incentives will be handled online, where homeowners will complete a simple form, which provides homeowner consent, property and project details, and proof of eligibility. Once projects have been completed, contractors will submit post-installation documentation to prove the job was completed according to the required specifications and that combustion safety testing was performed at project initiation and completion. Desktop quality assurance will be conducted on all jobs, and field verification will be conducted based upon Home Performance with Energy Star Protocols to ensure property installation, and compliance with health and safety code. BayREN's Flex Package program design will mirror the SoCalREN Flex Path program as approved by the CPUC, with points updated to reflect energy savings that will be achieved by each measure within the Bay Area climate zones.

The Commission has directed the IOU's to implement a 10-year declining incentive structure that is based on the number of retrofits achieved by the program. BayREN agrees in principle with the declining incentive structure provided it includes a clearly defined market transformation plan with targets for the number and distribution of retrofits, number of participating contractors, and number of low interest loans. The declining incentive structure must have some flexibility to account for the pace of market transformation, and there are a number of critical factors that must be

considered. BayREN recommends that the development of the declining incentive structure be assigned to the Energy Upgrade Working Group that includes the IOUs, RENs, and other interested stakeholders. This timeframe will also allow for the work necessary to establish emerging co-benefits of energy efficiency (e.g., formal Green MLS that sets a standard for assigning increased property values in the marketplace, ground-truthing and valuation of positive health impacts such as improved indoor air quality, etc.). Established, recognized and validated co-benefits have the ability to supplant incentives.

BayREN01 Table 110: Summary Table of Measures, Incentive Levels, and Verification Rates

<table>
<tr><th rowspan="2">Measure Group</th><th rowspan="2">Market Actor Receiving Incentive or Rebate</th><th colspan="2">BayREN01</th></tr>
<tr><th>Incentive Level</th><th>Installation Sampling Rate</th></tr>
<tr><td>Audit Incentives for completed PG&E EUC-SF Advanced Upgrades</td><td>Property Owner (can sign for direct payment to contractor)</td><td>$300</td><td>Field verification will not be included in program.</td></tr>
<tr><td>Insulation and Air Sealing</td><td rowspan="6">Property Owner (can sign for direct payment to contractor)</td><td rowspan="6">$1,000 for projects earning 100 points
$1,500 – 150 points
$2,000 – 200 points
$2,500 – 250 and above points</td><td>Follows Home Performance with ENERGY STAR Protocols[15] as minimum</td></tr>
<tr><td>HVAC</td><td rowspan="5">Follows Home Performance with ENERGY STAR Protocols as minimum</td></tr>
<tr><td>Window Replacement</td></tr>
<tr><td>Water Efficiency and Hot Water Heating</td></tr>
<tr><td>Lighting</td></tr>
<tr><td>Pool Pump</td></tr>
</table>

BayREN Flex Package points for each eligible measure will be consistent across the Bay Area, regardless of climate zone or building vintage. This simplifies contractor and consumer messaging. As outlined in Section F) Measure Savings/Work Paper, BayREN points are based upon average total package savings. This was weighted by how common the package was in the Los Angeles County Flex Path program, and then weighted again for the four Bay Area climate zones, using the number of detached single-family units per climate zone to weight the savings for each zone (as provided by the 2010 U.S. Census). It is important to note that while the points (public facing to homeowners and contractors) will be consistent across the Bay Area, final BayREN energy savings for Flex Package

[15] "The minimum on-site job inspection rate is set at 5% (1 in every 20 jobs). NOTE: It is recommended that the Partner establish an adjustable on-site inspection rate for contractors based on job experience and performance. This inspection rate reduces as the contractor gains experience in the program and as on-site inspections show the contractor is performing well. Contactors may drop down a tier if performance slips. Here is the recommended set of tiers: a. Tier 1 Contractor - The first 3-5 jobs will be inspected on-site or mentored; b. Tier 2 Contractor - 20% of the next 20 jobs are inspected on-site (4 out of 20); c. Tier 3 Contractor - 5% of all jobs inspected on-site (1 in 20)." Protocols are available at http://www.energystar.gov/ia/home_improvement/downloads/HPwES_Partnership_Agreement.pdf?3b67-80af

projects reported to the CPUC could be specific to the building vintage and climate zone for each installed project.

BayREN plans to develop a simple, non-proprietary Excel tool to allow a contractor to calculate (and communicate to the customer) the total Flex Package points that may be awarded for eligible Flex Package measures that are installed as part of a customer's final project scope. BayREN will evaluate the proposed IOU web-enabled tool to see if this product could meet such needs if and when that tool is released.

BayREN01 Figure 7: BayREN Flex Package Measures and Draft Points

BASE Measures – Select ONE (1) or more Base Measures

Base Measure ID	Base Measure	Existing Condition	Post-Upgrade Condition	Diagnostic Testing	Point[16] Value
BASE Measures The Attic Insulation & Attic Air Sealing measure requires that HVAC ducts be sealed or separated from the insulation material. It is also highly recommended that all incandescent recessed can lighting fixtures be replaced with ENERGY STAR® CFL fixtures or ENERGY STAR® LED fixtures.					
1A	**Attic Insulation & Attic Air Sealing**	≤ R-11	≥ R-44; Sealed Attic Top Plate	BD Test-In/Out; CAZ Test-Out	80
1B	**Duct Insulation & Sealing OR Duct Replacement**	Leakage ≥ 28%; Insulation ≤ R-4	Leakage ≤ 6 %; Insulation ≥ R-8	DuctBlaster Test-In/Out; CAZ Test-Out	90
		15% ≤ Leakage < 28%; Insulation ≤ R-4	Leakage ≤ 6 %; Insulation ≥ R-8		45
1C	**Whole House Air Sealing**	ACHn ≥ 130% ASHRAE 62.2	ASHRAE 62.2 ≤ ACHn ≤ 130% ASHRAE 62.2	BD Test-In/Out; CAZ Test-Out	35

FLEX Measures – Select additional FLEX Measures for a minimum of three total measures.

Note: Some FLEX Measures may require a specific Base Measure be implemented

Required Base Measure	FLEX Measure	Existing Condition	Post-Upgrade Condition	Diagnostic Testing	Point Value
FLEX Measures – Building Shell					
1C	**Floor Insulation**	No Insulation	≥ R-19		80
1C	**Wall Insulation**	No Insulation	≥ R-13	See Base Measure 1C	90
1C	**High Performance Windows**	Single or Double Clear Pane	EnergyStar or equivalent; U-factor ≤ 0.40; SHGC ≤ 0.25	See Base Measure 1C	90
1A	**Attic Radiant Barrier**	No Radiant Barrier	Continuous Rolled or Prelaminated Radiant Barrier	See Base Measure 1A	45

[16] All point values are preliminary pending further collaboration with PG&E and the Energy Division.

Required Base Measure	FLEX Measure	Existing Condition	Post-Upgrade Condition	Diagnostic Testing	Point Value
FLEX Measures – Heating, Ventilation, & Air Conditioning					
1B	**Gas Furnace**	Gas Furnace; ≤ 0.80 AFUE	Gas Furnace; ≥ 0.95 AFUE	See Base Measure 1B	90
			Heat Pump; ≥ 8 HSPF; 15 SEER; 11 EER	See Base Measure 1B	TBD
1B	**Electric Heat Pump**	Heat Pump; ≤ 5.6 HSPF; 8 SEER; 6 EER	Heat Pump; ≥ 8 HSPF; 15 SEER; 11 EER	See Base Measure 1B	90
1B	**High Efficiency Air Conditioning**	≤ 10 SEER	Central AC; ≥ 15 SEER; ≥ 11 EER	See Base Measure 1B	20
N/A	**Right-Size HVAC Kicker**	New Air Conditioning	AC Unit	N/A	10 per 1/2 ton; 30 max
		New Heat Pump	Heat Pump	N/A	10 per 1/2 ton; 30 max
1B	**Buried Ducts Kicker**	≤ R-4	Fully Buried Ducts*	See Base Measure 1B	35

Required Base Measure	FLEX Measure	Existing Condition	Post-Upgrade Condition	Diagnostic Testing	Point Value
FLEX Measures – Water Heating					
N/A	**Gas Water Heater**	Gas Storage Heater; ≤ 0.575 EF	Gas Storage Heater; ≤ 0.67 EF	CAZ Test-Out	45
			Gas On-Demand Tankless Heater; ≤ 0.88 EF	CAZ Test-Out	90
N/A	**Electric Water Heater**	Electric Storage Water Heater; ≤ 0.88 EF	Electric Storage Water Heater; ≤ 0.93 EF	N/A	10
			Electric Heat Pump Water Heater; ≥ 2.0 EF	N/A	85

Required Base Measure	FLEX Measure	Existing Condition	Post-Upgrade Condition	Diagnostic Testing	Point Value
Additional FLEX Measures					
N/A	**Variable Speed Pool Pump**	Single-Speed Primary Pump	Title-20 Compliant Variable Speed Pump & Controller	N/A	75
		Two-Speed Primary Pump	Title-20 Compliant Variable Speed Pump & Controller	N/A	25
N/A	**EnergyStar Lighting**	Incandescent Fixture(s)	N/A (Upstream Incentive Program)	N/A	2 per Fixture; 10 Max

All five-point measures offered in the ARRA Flex Path program will be eliminated. However, these measures do offer value to homeowners as best practices and the chart below describe the proposed disposition of each five-point measure. Required measures below will not get any points but savings will be claimed by the REN.

Flex Path Five-Point Measures to be Removed	Flex Path Requirement	Proposed Disposition
Programmable Thermostat	Energy Efficient Programmable Thermostat(s); Serves Entire Conditioned Area	Add the following statement to all HVAC equipment measures and duct sealing and insulation measure(s): "Recommend replacement of a manual thermostat with digital, setback programmable model"
Low Flow Showerheads with TCV	Low Flow Showerheads ≤ 1.5 gpm; Bathroom Faucet Aerators ≤ 1.5 gpm; Kitchen Faucet Aerators ≤ 2.2 gpm	Add the following statement to program participation requirements (1 of 3 Base Measures; minimum three measures, etc.): "All projects require installation of a thermostatic shut-off valve on all showers in the home except when installing a tankless water heating system"

Hot Water Pipe Wrap	Minimum First 5ft of Hot Water Pipe Wrapped	Add the following statement, consistent with code: "Must include pipe wrap for first five feet of exposed pipes"
Sealing of can lights or Replacement with Sealed ENERGY STAR Fixtures	EnergyStar CFL or LED Fixture(s); Permanently Installed	Add the following statement to Attic Insulation and Sealing: "It is highly recommended that all incandescent recessed can lighting fixtures be replaced with ENERGY STAR® CFL fixtures or ENERGY STAR® LED fixtures"

The Modified EUC Flex Path program also proposes to provide a bonus to the homeowner for installing more than one Base Measure. The first additional Base Measure (2 of 3) will receive a bonus of 15 points and the second additional Base Measure (3 of 3) will receive a bonus of 20 points. The measure point values and bonuses are cumulative. Figure 8 below summarizes how the Base Measure Bonus will add value to a project and drive more envelope measures.

BayREN01 Figure 8: Example of Base Measure Bonus Structure

Number of Base Measures	Base Measure Description	Base Measure Points	Bonus Points Added	Measure Points	Cumulative Total Points
1 of 3	Attic Air Sealing and Insulation	70	Base Measure Points Only	70	70
2 of 3	Duct Sealing and Insulation or Duct Replacement	70	Base Measure Points + 20 Bonus Points	70+70+15	155
3 of 3	Whole House Air Sealing	30	Base Measure Points + 20 Bonus Points	155+30+20	205

g) Additional Services

Home Upgrade Advisor Service

To fill a significant gap in the current Energy Upgrade California model, BayREN will provide a free, objective, unbiased third-party "Home Upgrade Advisor" (HUA) service that will act as a facilitator, educator, and advocate for homeowners pursuing upgrades. HUAs will provide a high-level of dedicated support to participants before, during, and

after an upgrade, using, but going well beyond, such services as the PG&E Energy Advisor service (see below). The HUA service will be developed in coordination with Participating Contractors to ensure that services provided flow seamlessly within the standard bid and contracting process and relieve existing contractor burdens.

The Home Upgrade Advisor model is based upon various energy advisor programs, including the Boulder County Better Buildings Program EnergySmart/Energy Advisor program (http://www.energysmartyes.com/index.php). The EnergySmart Energy Advisor program has served over 2,646 owner-occupied homes since 2011, and has achieved a conversion rate of 58 percent for owner-occupied homes making investments in energy efficiency. EnergySmart's Energy Advisor services are similar to those to be provided by the BayREN Home Upgrade Advisor: site visits with efficiency education resources and one-on-one assistance evaluating contractor bids and navigating project installation and financing processes. Communications with Boulder County program administrators attributed the hands-on approach as the critical factor in fostering its high upgrade participation rates.

The HUA will be able to serve as a first point of contact for leads through a call center, and will use that first point of contact to provide basic energy efficiency and other "green home" education to the interested homeowner, including enrolling the participant in the PG&E Energy Advisor online services. If the participant requests more information and goes through pre-screening, education and initial outreach may include a site visit and initial home survey, whereby the HUA will provide the homeowner with an energy efficiency kit and perform installation of basic measures (e.g., CFL, faucet aerators), walk the homeowner through the various energy efficiency and green program and financing options (in coordination with PG&E Energy Advisor), including those options offered through the BayREN program (see BAYREN04 for details). In this manner, the HUA program will integrate all utility, local government, and other Demand-Side Management program (DSM) offerings, following guidance provided by the Commission to the IOUs to integrate plug load, appliance, and other DSM programs into Energy Upgrade California.

If the homeowner proceeds with work, either through the PG&E EUC-SF or Flex Package programs, the HUA may act as a customer advocate to (1) interface with the contractor, financing, and incentive program administrator, (2) provide incentive application assistance, and (3) perform other functions that facilitate the process for the homeowner. A key to the entire process is that each homeowner will have a dedicated HUA, which will allow the Advisor and customer to develop a relationship of trust, thereby significantly improving the likelihood of program participation, as well as efficiency behaviors following the program.

Following the upgrade process, the Advisor will continue to act as a source of information, conflict resolution, and support for the homeowner. Importantly, the HUA will leverage the homeowner relationship to encourage and increase post-upgrade efficiency behavior on the part of the homeowner.

It is important to note the differences between the PG&E Energy Advisor and the BayREN Home Upgrade Advisor programs. PG&E's Energy Advisor program is focused largely on

surveys, especially online surveys, to provide behavioral and program recommendations to customers based upon their energy usage. There may be some phone and in-home work conducted by PG&E's Energy Advisors, but the expectation is that this service is largely online and requires the completion of a home energy survey to initiate the service. In contrast, the BayREN Home Upgrade Advisor program is a full-service customer support experience designed to provide education and options to homeowners as well as trusted third-party advocacy and guidance throughout the upgrade process should homeowners have concerns or issues with their contractor. The HUA service, by filling a key gap in PG&E's program offerings, has the potential to dramatically increase uptake of projects by interested homeowners.

BayREN will actively work with the PG&E Energy Advisor program to ensure that HUAs can use the Energy Advisor tools to support customers and as a lead-generation platform. BayREN also proposes that PG&E direct their in-home and call center efforts outside of the Bay Area region, to ensure as little duplication as possible.

Real Estate Partnerships and Green Labeling

In 2011–2012, BayREN members made significant progress toward engaging real estate professional communities' agents as part of the ARRA SEP efforts. Also, Alameda, San Francisco and Los Angeles Counties have been collaborating on a statewide Green Building Labeling pilot with Department of Energy Better Buildings Program grant funding. The goal is to further the market recognition of green building and energy efficiency labels during real estate transactions. BayREN local governments are therefore uniquely positioned to lead future real estate partnership building in 2013–2014 to solidify industry support for energy efficiency and green upgrades:

- Local governments have a vested interest in the health and resource consumption (energy, water, IAQ, etc.) of their community's buildings
- Local governments have a vested interest in the valuation of their buildings and how that can be increased through green labeling
- As the main actor in marketing efforts for Energy Upgrade California, BayREN local governments have and will continue to access real estate professionals as a key outreach channel
- BayREN members developed and delivered trainings for 164 real estate professionals
- BayREN members are currently facilitating a real estate committee to discuss issues related to green labeling, market valuation, and adding green labels to the Multiple Listing Service
- Additionally, BayREN members have funded a rigorous academic study to understand the relationship between green labels and market valuation in residential properties (released July 19, 2012), which demonstrates a 9% price premium for homes that have received green labels in California

BayREN partners have not yet developed detailed budget breakdowns for green building labeling, part of the Single Family regional marketing activity. However we anticipate that that the following activities will be included:

- Real estate education and certification

Update curriculum for real estate professionals developed through the State Energy Program to include new data and lessons learned, and also new formats. Develop new curriculum that targets home inspectors and helps them incorporate education about energy efficiency and green building labeling in their business models.

- Real estate industry outreach

Continue to sponsor a Bay Area Real Estate Forum that provides real estate professionals with an opportunity to provide input on the promotion of retrofit programs and the "greening of the MLS." The Bay Area has a much more fragmented MLS market than Southern California, so additional outreach is needed to help change local industry norms.

- Promoting the value of green labels

StopWaste and SF Environment funded the first academically rigorous residential green valuation study in the US, which showed that there is additional value for building with green ratings. The marketing release of the study gained significant coverage in major media outlets both in California and nationally. BayREN would continue to promote the green labeling study through real estate trade venues.

- Rebates for green building ratings

Offer selected rebates to projects that complete a third-party verified green building or home energy rating, following the PUC's direction about how these funds should be used. These rebates, in conjunction with the promotion of the green labeling value study, can accelerate greater consumer awareness in certain markets. For example, they could be used as case studies or in outreach campaigns or offered as part of Flex Package test out. An ultimate goal is to make it easy and inexpensive for homeowners to obtain a label during the Flex Package test-out process.

Green Building Labeling is planned to be incorporated into the overall single-family marketing activities, rather than only as a part of the Flex Package program. Due to the smaller scopes of work in Flex Package projects, it does not make sense for them to pursue HERS II ratings. However, BayREN partners have been collaborating with the Department of Energy on its Home Energy Score program. This, or another similar, simplified energy rating tool is less expensive and more feasible for smaller projects. This scope of work could include contractor training so that EUC contractors can offer a green or energy label on test-out, if a label can be completed with minimal additional cost.

In their 2013–2014 Residential Portfolio, PG&E has proposed that the IOUs lead real estate outreach and engagement efforts for 2013–2014. BayREN argues that in the Bay

Area, for the reasons indicated above, the BayREN is in a much better position to continue real estate industry engagement and discussion regarding market valuation, and has a stronger vested interest in having this partnership succeed. BayREN would welcome coordination with PG&E and all other relevant market actors.

BayREN01 Table 12: Additional Services

Additional Services that the Subprogram Will Provide	**To Which Market Actors**	**BayREN**
Home Upgrade Advisor	Single-Family Property Owners	Fully incented
Post-upgrade services for behavior change and savings maintenance (as part of Home Upgrade Advisor)	Single-Family Property Owners	Fully incented
Premium contractor list (through Home Upgrade Advisor)	Single-Family Property Owners	N/A
Real Estate Partnerships and Green Labeling	Real Estate Industry (Brokers, Realtor Associations, etc.)	N/A

h) Subprogram Specific Marketing and Outreach

As part of the SEP program, BayREN participants have previously coordinated targeted marketing and outreach efforts at both the county and regional level. Combined with local government incentives offered in addition to IOU rebates, these efforts have been successful in creating awareness and driving upgrades. For 2013–2014, BayREN will continue the successful marketing and outreach tactics piloted in 2011–2012.

The key elements which will contribute to future success include:

- Message consistency and **brand awareness** through targeted regional advertising
- Accessible and compelling translation of the full suite of energy efficiency benefits and co-benefits
- Outreach teams conducting **local, targeted outreach**
- Collaboration with **local contractors** to expand marketing reach
- **Local customization of the Energy Upgrade website** to create a more useful tool supporting homeowners' engagement and education
- **Outreach through relevant market actors,** especially real estate professionals and associations, residential green labeling organizations, renewable energy and other direct install programs
- Coordination of marketing approaches with PG&E EUC-SF

- **Coordination with the Statewide Marketing agency, the California Center for Sustainable Energy**, to orchestrate effective branding of the Energy Upgrade California program with regional marketing efforts targeted at driving action

BayREN is ready to increase customer awareness and drive participation in the Flex Package and the PG&E EUC-SF. Strategic plans for the placement of advertising in coordination with outreach are still relevant to the current market, and the BayREN members have existing marketing and outreach assets in place that can be deployed quickly and effectively.

Local Outreach and Education

Marketing and outreach funds will support localized community outreach activities in participating counties. Outreach efforts will be broad and will include, but not be limited to:

- In-home open houses
- Homeowner workshops (coordinated with PG&E workshops as appropriate)
- Contractor outreach and support
- Community events participation and presentations to local organizations
- Leveraging local Better Building Program (BBP) pilots, including:
  - Energize for the Prize: a school and nonprofit pilot in Alameda County promoting upgrades through local community based organizations.
  - Green Labeling: a time-of-sale pilot promoting green and energy efficient upgrades

Online Advertising and Search Engine Marketing

In the first phase of Energy Upgrade California, BayREN members committed funds to promote the program through online media outlets and channels. This successful tactic will be expanded and will include:

- Online display ads
- Pandora ads
- Google Adwords
- Search engine marketing

Audiences and messages are highly targeted and can be adjusted on an ongoing basis. It is anticipated that online ads could be launched within two weeks of receiving funds and show immediate results.

Social Media and Marketing

Under SEP, the BayREN governments successfully deployed FACEBOOK®, Twitter and other social media campaigns.

Broadcast (Radio and Television)

In 2011–2012, BayREN members developed relationships with local and regional television and radio channels enabling them to increase both earned and paid media time, both of which are critical to building demand. BayREN proposes to continue a regional approach to reaching consumers through these channels.

Effective 30-second television ads, case study vignettes, PSAs and radio ads are in place and will be reused. Previously, the local TV stations were exceptionally innovative and able to offer a great deal of additional exposure. We anticipate being able to launch a broadcast campaign within several weeks of receiving funds.

Website Content Customization

The Energy Upgrade website is a critical tool for transitioning consumers from being merely interested in energy upgrades to actually contacting a contractor. Local governments must be able to make the information on their county pages dynamic, up-to-date, and relevant, or funds spent on driving consumers to the website will be wasted. Each county will be allocated a set amount of funds to update their section of the site as necessary.

Retail and Corporate Partnerships

The BayREN hopes to continue successful retail partnerships originally established under SEP, including those with Whole Foods, Sears, Kaiser Permanente, and Home Depot.

Branding with Energy Upgrade California

BayREN will market all of its Single Family program components under Energy Upgrade California. Additionally, the Flex Package program will establish that Energy Upgrade California offers a program for everyone, regardless of socio-economic and other differences. Flex Package will serve as the gateway to energy efficiency for consumer groups inadvertently discouraged by the Energy Upgrade's launch under ARRA (Basic Path's inherently rigid structure excluded much of the public it was intended to serve). Flex Package will expand Energy Upgrade's accessibility and responsiveness to a culturally and economically diverse public.

BayREN01 Figure9: BayREN Marketing Activities

Task	Description	Objective
Locally implemented homeowner outreach	Range of outreach activities including in-home workshops, community events, contractor/ homeowner events, real estate industry partnerships and outreach.	Connect directly with homeowners to inspire them to conduct an upgrade; provide close-to-home outreach through trusted agents, leveraging existing local government and

	Public relations efforts to secure earned media placement.	community networks.
Online advertising and Search Engine Marketing (SEM)	Targeted online advertising connected to key words related to the program.	Increase awareness, website visits, and connection to specific search activities, i.e., HVAC replacement.
Social Media and Marketing	Messaging and outreach through electronic venues such as FACEBOOK® and Twitter	Sound-bytes and targeted messaging to a mass public forum
Broadcast advertising	Targeted local advertising using existing ads and successful media outlets.	Increased brand awareness, drive demand and website visits.
Website customization	Provide funding for local governments to update and customize local county pages with new promotional and event information.	Provide local, custom flavor to website; provide forum for local programs and ideas to be promoted.
Retail and Corporate Partnerships	Promotional partnerships that access large consumer and client bases with program information, messaging, and promotions	To take advantage of shared interests large, prominent retail and corporate players have with energy efficiency programs

i) Subprogram Specific Training

The success of the whole-building upgrade industry and Energy Upgrade incentive programs depends upon Participating Contractors' ability to navigate and excel within an evolving marketplace and deliver high quality upgrades.

In the SEP period, BayREN members coordinated with training organizations such as the California Building Performance Contractors Association, Build It Green, EnergySoft, and others to develop and deliver in-class trainings and field mentoring that addressed gaps in contractors' skills and practices, as well as delivered green building certifications, and BPI-BA certification. As a result of these efforts, 780 professionals were trained during 2011 and 2012.

In 2012, BayREN members identified the need to build upon prior training efforts to increase contractor training and mentoring in building modeling and non-technical skills to efficiently deliver high-quality upgrades.[17] Additionally in 2011, the University of California, Berkeley, conducted a statewide workforce needs assessment for the energy efficiency sector that identified significant issues with the quality of installations in residential energy efficiency projects, especially related to HVAC equipment installations.

[17] *Recommendations for Energy Upgrade California in the Bay Area*. ABAG, 2012.

Proper training, code enforcement (addressed through BayREN03), and proper incentive program design, were identified as keys to addressing installation quality.[18]

In 2013–2014, BayREN will expand the training and mentoring efforts started during the SEP period to address the gaps identified above. BayREN will collaborate with workforce and training organizations to identify needs and will use existing or new trainings to fill critical skills gaps. Trainings will be delivered in concert with the PG&E trainings, and announced through BayREN and IOU contactor outreach channels. Using this approach, BayREN will be able to train a minimum of 250 building professionals and realtors in the 2013–2014 period in the following areas:

- Quality Installations
- Sales and Marketing
- Client Management Before, During and After a Project
- Business Management and Administration
- Energy Pro Modeling
- BPI Field Mentoring—job sequencing, proper equipment use
- Green Real Estate Certifications

BayREN's contractor and building professional training objectives are consistent with a market transformation program in the following ways:

- Establishing contractor credentials and enrollment protocols that effectively deliver customer protections and energy savings while integrating Trade Contractor (HVAC, Insulation, etc.) into the program will transform the market by greatly expanding the pool of eligible contractors. These trade contractors must be participating in the program so that the program can demonstrate sufficient "added value" to these contractors of moving customer work scopes to more complete whole house upgrades.
- Training objectives must include sales and marketing training so that contractors can effectively:
- Market whole house upgrades (a new market concept) to customers
- Bundle available rebates and financing to make projects (especially deeper retrofits) affordable
- Expand their messaging capabilities

[18] Zabin, C. et. al. *California Workforce Education & Training Needs Assessment For Energy Efficiency, Distributed Generation, and Demand Response.* Donald Vial Center on Employment in the Green Economy, Institute for Research on Labor and Employment, University of California, Berkeley. 2011.

- Become sufficiently familiar with co-benefits to serve as compelling ambassadors for energy efficiency among consumers

j) Subprogram Software and/or Additional Tools

i. Software Tools Required

The BayREN supports the IOUs in their development and testing of a software tool that a contractor can use to calculate project points and percentage of energy savings based on basic characteristics of each home, vintage, and climate zone, provided the RENs are not required to use it. The currently proposed REN data management system will not support the use of this tool.

In addition, the RENs feel this approach is too complicated for homeowners to understand, as it is technically a calculated method that could result in different energy savings values and incentive amounts for each home. The RENs would prefer to offer the same simple, prescriptive, points based menu approach to all homeowners and do virtually the same calculated energy savings approach on the back end for the purpose of claimed savings and to provide project specific data to Energy Division staff. The reason the ARRA Flex Path program was successful is because it was very simple and easy for homeowners to understand. The Modified EUC Flex Path measures in Figure 7 above include existing and post-upgrade conditions, diagnostic testing (if required), and estimated point values.

Lastly, the BayREN understands the gravity of the energy savings demonstration and performance, have confidence in a fair and effective outcome to questions surrounding the calculation and reporting of energy savings, and trust that a fair and equitable solution may be achieved which permits REN programs to proceed in a timely, successful, and responsible manner.

ii. Audit Requirements

Flex Package Program:[19]

Pre-implementation audit required ___ Yes _X_ No

Post-implementation audit required ___ Yes _X_ No

Audit Incentive Program

[19] Flex Package does not require a traditional audit, but does require diagnostic test in/test out for installed measures and a combustion safety test out for all projects.

Pre-implementation audit required _X_ Yes __ No

Post-implementation audit required ___ Yes __ No _X_ N/A

iii. Audit Incentives

BayREN01 Table 13: Audits resulting in completed PG&E EUC-SF Advanced Upgrades

Levels at Which Program Related Audits Are Rebated or Funded	Who Receives the Rebate/Funding (Customer or Contractor)
$300	Customer or Contractor (Customer may sign incentive over to contractor)

k) Subprogram Quality Assurance Provisions

BayREN01 Table 14: Quality Assurance Provisions

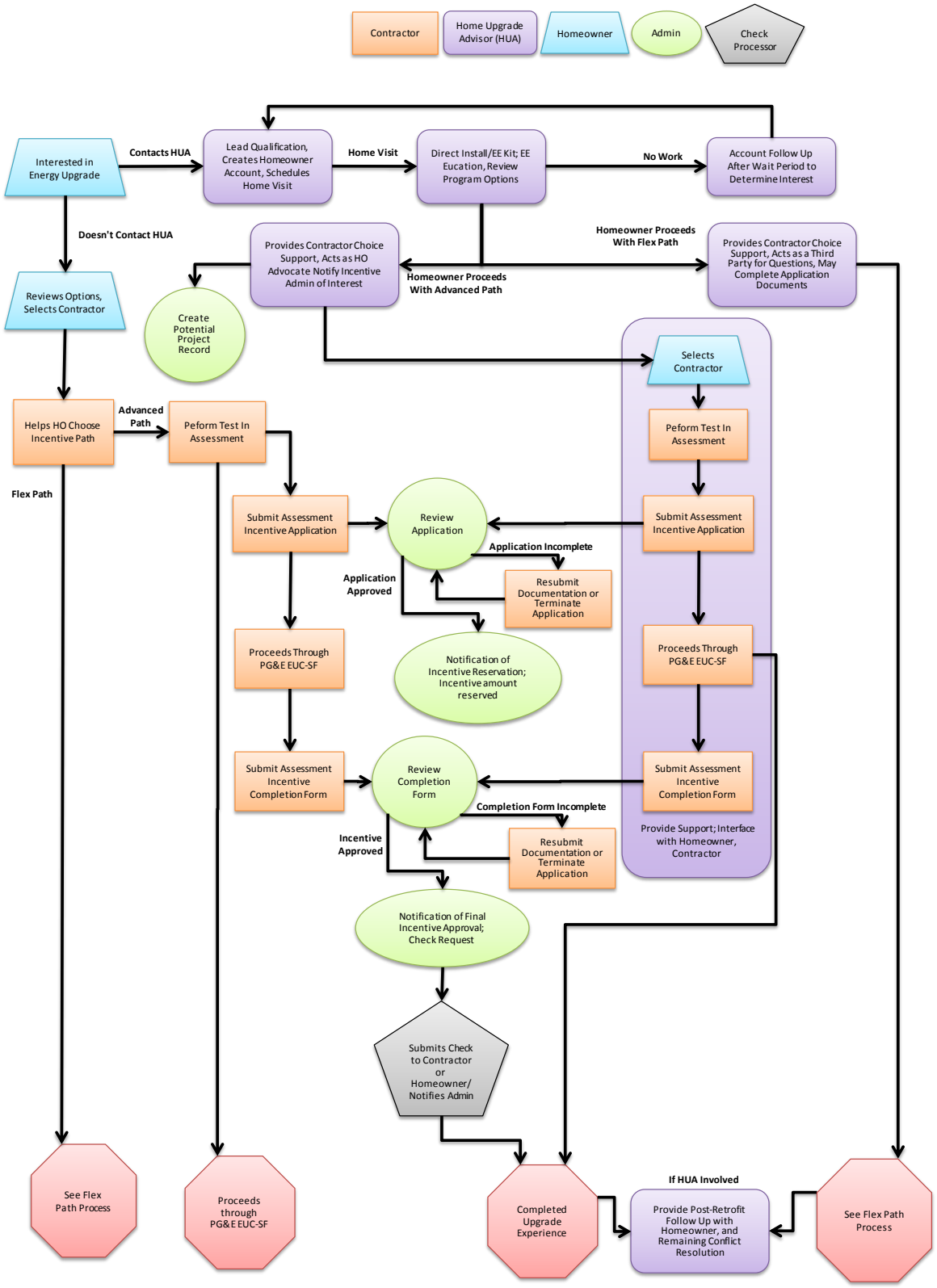
Program Element	QA Requirements	QA Sampling Rate (Indicate Pre/Post Sample)	QA Personnel Certification Requirements
Flex Package Incentive Program	Property must meet eligibility requirements for measures installed	100% pre/post	BPI-BA
	Contractor holds valid license and meets eligibility requirements	100% pre/post	None
	Project meets requirements of program	100% pre/post	BPI-BA
	Field Verification of Measures Installed and performance of Combustion Safety Test	Post: Home Performance w/ENERGY STAR Protocols (3 of first 5, 5% after initial jobs assuming initial three projects pass field inspection)	BPI-BA
Audit Incentive Program	Property must meet eligibility requirements	100% pre	None
	Contractor holds valid license and meets eligibility requirements (Energy Upgrade Participating Contractor or participant in other qualified program)	100% pre	None

l) Subprogram Delivery Method and Measure Installation/Marketing or Training

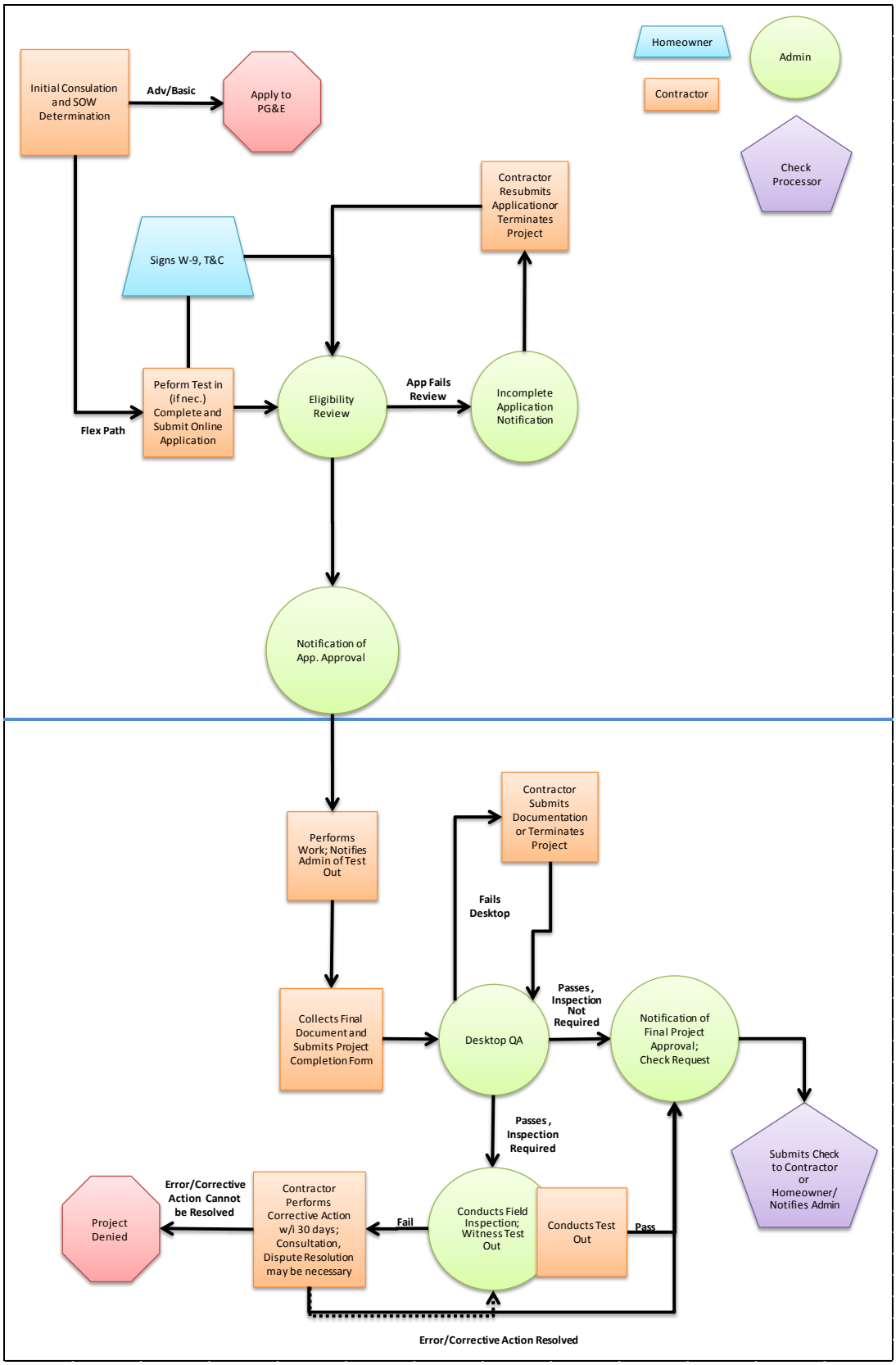
Home Upgrade Advisors will be qualified and trained to provide high-quality services and advice to homeowners by the implementing organization. Training and qualifications will be determined based upon final program design.

m) Subprogram Process Flow Chart

BayREN01 Figure 9: PG&E EUC-SF Support Program Process Flow Chart



BayREN01 Figure 10: Flex Package Incentive Program Process Flow Chart



n) Cross-Cutting Subprogram and Non-IOU Partner Coordination

BayREN01 Table 15: Cross-Cutting Subprogram and Non-IOU Partner Coordination

BayREN Single-Family Subprogram		
Other REN Subprograms	**Coordination Mechanism**	**Expected Frequency**
Financing	Project referrals	As requested by contractor/homeowner or determined by Home Upgrade Advisor or co-marketed through banking/lending partners
Codes and Standards	Meetings, other regular communication	As needed to ensure consistency of message and increase efficiency of local government outreach
IOU Programs	**Coordination Mechanism**	**Expected Frequency**
PG&E Whole-House Energy Upgrade Program (Energy Upgrade California)	Meetings, communication, participating contractor and QA updates	Monthly
Coordination Partners Outside the Commission	**Coordination Mechanism**	**Expected Frequency**
Flex Package/PG&E EUC-SF Contractors	Meetings/Forums, other regular communication	Quarterly or as needed
Low-Income Weatherization Programs	Project referrals	As requested by contractor/homeowner or determined by Home Upgrade Advisor
Non-BayREN Financing Programs	Project referrals, meetings, other regular communication	Quarterly or as needed
Local Workforce Investment Boards	Meetings, other regular communication	Quarterly or as needed
Building Trade Associations	Meetings, other regular communication	As needed as part of marketing efforts
Real Estate Associations	Association meetings, trainings	As needed as part of marketing efforts
Green Building Labeling Organizations	Meetings, other regular communication	As needed as part of marketing efforts
Local Retailers, Suppliers	Meetings, other regular communication	As needed as part of marketing efforts
Community Based Organizations, Religious Institutions, Educational Institutions	Meetings, other regular communication	As needed as part of marketing efforts

o) Logic Model

Logic Model provided in Attachment 1.

The BayREN Single-Family Upgrade Subprogram builds largely upon experience of local governments conducting activities and pilots in support of Energy Upgrade California from 2009–2012. In this time, local governments supported the PG&E EUC-SF through marketing, contractor training, customer support, incentives, professional outreach, and a host of other activities. Through these activities, the BayREN members identified strategies for addressing market barriers in the next iteration of Energy Upgrade California. The market barriers are described above. These strategies were identified in the *Recommendations for Energy Upgrade California in the Bay Area*, and included many of the strategies described in this subprogram and the other BayREN subprograms.

As described above, the desired outcome of the BayREN Single-Family Subprogram is to address these significant market barriers by:

- Lowering cost, education, and process barriers to boost participation in the PG&E EUC-SF by providing audit incentives, conducting broad awareness and targeted customer outreach, and providing an independent third party to advocate for the customer.
- Providing a viable alternative to the Advanced Package incentive that is inexpensive, simple to understand, and easy to sell, to act as an on-ramp to whole house upgrades for both customers and contractors.
- Through training and mentoring activities, equipping contractors with the skills to successfully penetrate the market and navigate the complicated energy efficiency program landscape while providing quality services to clients.

11. Additional Subprogram Information

a) Advancing Strategic Plan Goals and Objectives

BayREN01 Figure 11: Strategic Plan Alignment

BayREN Single-Family Subprogram Alignment with CA Long-Term Energy Efficiency Strategic Plan		
Residential		
Strategy Number	**Strategy**	**BayREN SF Subprogram Strategy**
1-5	Encourage local, regional, and statewide leadership groups to support pilots and foster communication among pioneering homeowners and builders	BayREN will conduct contractor, other building professional, real estate, and other trade outreach to spread brand awareness and facilitate dialogues among industry partners to support the program.
2-2	Promote effective decision making to create widespread demand for energy efficiency measures	BayREN will conduct broad outreach and awareness campaigns to customers and provide support around decision making through Home Upgrade Advisor, including potential for home energy ratings and green labels.
3-2	In coordination with Strategy 2-2 above, develop public awareness of and demand for highly efficient products	See strategy 2-2 above.
DSM Coordination and Integration		
Strategy Number	**Strategy**	**BayREN SF Subprogram Strategy**
1-1	Carry out integrated marketing of DSM opportunities across all customer classes	BayREN marketing efforts will be coordinated with IOU Whole House Program, Local Government Partnerships, Weatherization Programs, etc. Home Upgrade Advisor to conduct free mini-audits and support customer through DSM program offerings.
Marketing, Education and Outreach		
Strategy Number	**Strategy**	**BayREN SF Subprogram Strategy**
1-3	Use social marketing techniques to build awareness and change consumer attitudes and perceptions	BayREN marketing campaign will include use of community based organizations, schools, religious institutions and other organizations as drivers of energy efficient behaviors. Campaign will also use online social networking platforms.
1-5	Conduct public communications campaigns, alongside longer-term supporting school education initiatives to deliver the efficiency message	BayREN will coordinate with BBP Pilots that activate schools as "Energy Ambassadors" to spread energy efficiency message to students and parents.
Local Government Goals		
Strategy Number	**Strategy**	**BayREN SF Subprogram Strategy**
4-4	Develop local projects that integrate energy efficiency, DSM, and water/wastewater end uses	Home Upgrade Advisor service will promote cross-resource DSM offerings and promote green labels (e.g., Green Point Rated Existing Home), as well as perform direct installations of water conservation measures. BayREN marketing will be coordinated with cross-resource BBP pilots such as the Pay-As-You-Save® on-water bill pilot in Sonoma County.
5-2	Develop model approaches to assist local governments participating in regional coordinated efforts for energy efficiency, DSM, renewables, green buildings, and zoning	BayREN members will engage local governments at multiple levels to support outreach campaigns and ensure local government is aware of BayREN and other DSM program offerings. Will be coordinated with Codes & Standards program (BayREN03).

b) Integration

i. Integrated/Coordinated Demand Side Management

Through efforts conducted during the SEP period, BayREN members strengthened existing and developed new relationships with water efficiency and green building programs to help cross-promote services and increase customer awareness of all efficiency options. These efforts will be expanded in the 2013–2014 period, as BayREN will continue to identify opportunities to promote indoor and outdoor water efficiency, green product rebates, and other programs to consumers. BayREN will also promote green building upgrades, which focus on additional concerns such as indoor air quality and resource conservation, as a viable long-term strategy for increasing property value and occupant health and quality of life.

BayREN will promote cross-program services through two efforts. First, the Home Upgrade Advisor services offered through BayREN will provide an integrated, one-stop service for customers to learn about all IOU, local government, water utility, and other DSM offerings. Advisors will be well positioned to engage with customers when they are most receptive to hearing about how to improve their home, and will provide them with options for any upgrades they are interested in pursuing. In addition, a significant part of homeowner marketing will be cross promotion efforts by various DSM programs to ensure that, whether through media, collateral, or targeted outreach, homeowners are made aware of all program options and provided with opportunities to participate in all relevant DSM programs.

BayREN01 Table 16: Non-Energy Efficiency Subprogram Information

Single-Family Upgrade Subprogram		
Non-Energy Efficiency Subprogram	**Budget**	**Rationale and General Approach for Integrating Across Resource Types**
Water Utility Indoor Water Efficiency Incentive Programs	Vary	Cross promotion, integration into Home Upgrade Advisor services
Local Government Outdoor Water Efficiency Programs (e.g. Lawn conversion rebates, Bay-Friendly Landscaping and Gardening)	Vary	Cross promotion, integration into Home Upgrade Advisor services
EPA WaterSense	Unavailable	Promotion of brand, installation of products (e.g., aerators) by Home Upgrade Advisor
Green Point Rated Existing Home	Unavailable	Cross promotion of label, incentives offered through BBP pilots

ii. Integration across resource types

See above for a description of cross-marketing efforts to be conducted by BayREN. In addition to marketing activities, contractor training opportunities will integrate cross-resource consideration and promote awareness among building professionals of water conservation, air quality, and other considerations, as well as customer offerings.

The Flex Package Incentive Program will include measures associated with non-energy savings, especially those related to indoor water conservation. Points will be awarded to measures including such water efficiency measures as low-flow showerheads, faucet aerators, high efficiency toilets, etc. In addition, Home Upgrade Advisors will perform free installations of faucet aerators and other simple water efficiency devices when conducting home visits and supporting the customer in their energy efficiency choices.

c) Leveraging of Resources

In D 12-05-015, the Commission determined that a key role for local governments was to "leverage additional state and federal resources so that energy efficiency programs are offered at lower costs to ratepayers." To that end, the BayREN Single-Family Upgrade Subprogram program leverages the following programs:

- Local government ARRA-funded programs (BBP Pilots)
- CPUC/CEC Energy Upgrade California Brand
- PG&E EUC-SF
- PG&E Local Government Partnerships and Energy Watches
- Water utility incentives and programs
- Other local government energy and sustainability efforts and campaigns
- Other local government agencies and bureaus, such as building, permitting, and inspection departments

d) Trials/Pilots

Flex Package pilots are currently complete or have been launched throughout the State using ARRA funds provided by DOE. The County of Los Angeles recently completed a 1,650-application pilot in October, achieving this total in 10 months. The Los Angeles County Flex Path Program allowed for multiple applications, and aggressively enrolled specialty contractors as a market force for their program. In the San Francisco Bay Area, Sonoma County and Alameda County (through StopWaste.Org) offer nearly identical programs, launched in October and September 2012 respectively. Both pilots engage contractors previously certified as Energy Upgrade California Advanced contractors. AlamedaFlex offered a single flat incentive of $1,500 for a 2-measure minimum package that accounted for at least 100 points. Sonoma Flex also applied a 2-measure minimum,

with a qualifying threshold of 150 points (for a $1,500 incentive), and progressive additional incentives based upon incremental measure and point increases.[20] Uptake of these programs has been modest, with observations in both that Advanced Path contractors seek to scale up their recommendations to a level more indicative of Advanced Path retrofits. This may indicate that specialty contractors, forming new business models and alliances, may not only serve as critical indicators in a moderate-income program, but also represent a potential migration of those contractors toward whole-home capacity and aptitude.

For the PY 2013–2014, it is expected that the Flex Package Incentive Program will take advantage of the lessons learned from these pilots. For this reason, it is expected that Flex Package will not need a pilot phase. The Flex Package program implemented by BayREN will mirror the SoCalREN Flex Path program as approved by the CPUC, with points updated to reflect energy savings that will be achieved by each measure within the Bay Area climate zones.

In addition, the efforts conducted through BayREN will be coordinated with 2013 pilot efforts to be conducted by BayREN members under BBP. These include the Pay-As-You-Save® (PAYS®) On-Water-Bill Pilot conducted in Sonoma County (www.windsorefficiencypays.com), and the community-based social marketing program Energize for the Prize in Alameda County (www.energizefortheprize.org). Results from these pilots will inform marketing and other offerings to be conducted in 2014 and beyond.

e) Knowledge Transfer

BayREN staff and partners will regularly track challenges, lessons learned, and necessary adjustments for all technical, administrative, and marketing aspects of program implementation. These challenges will be transmitted to local government partners operating similar programs (e.g., County of Los Angeles) through regular meetings of local government forums (such as LGSEC, Local Government Commission, Urban Sustainability Directors Network, etc.), regional NGO and institutional partners (e.g., Joint Venture Silicon Valley, etc.), and through program updates provided to Commission and program partners.

12. Market Transformation Information:

a) Market Transformation Objectives

The market transformation objectives of the BayREN Single-Family Upgrade Subprogram are the following:

- Increase general knowledge and awareness among homeowners of energy efficiency and green upgrade practices and benefits, and encourage a long-term transition toward energy efficient behaviors and purchases.

[20] These pilot programs will continue pending approval of the Advice Letter, as allowed by D.12-11-015: "We see no reason to allow BayREN to conduct a wide-scale rollout of a program where we already know improvements are needed**, but they may continue to offer the program in Sonoma and Alameda counties in the interim**." (Emphasis Added.) D.12-11-015, Section 3.3.1.1, page 37. *See also* Conclusion of Law, para11, page 118 .

- Complete the public and professional knowledge base of energy efficiency through a marketing and outreach campaign that takes advantage of all benefits and co-benefits and creates tangible value propositions for all consumers
- Raise awareness of energy efficiency and green upgrades among relevant professional industries, including real estate, building trades, manufacturing/supply, and other industries.
- Streamline coordination of DSM programs across IOUs, local governments, and other organizations.
- Develop a skilled and motivated professional building workforce that incorporates energy efficient and green upgrade best practices into standard service delivery.
- Active participation in the process directed under D. 12-11-015 for the engagement of a market transformation specialist
- Close coordination with the Statewide Marketing agency, the California Center for Sustainable Energy, to greater establish the Energy Upgrade California brand and complement statewide awareness campaigns with local outreach that drives action in the marketplace

b) Market Description

Market actors include:

- **Building Performance Contractors —** Deliver whole-house energy upgrades and green upgrades to residential property owners
- **General Contractors —** Oversee delivery of residential remodels, other installation work. May perform direct installation or subcontract to specialty contractors. May be associated with whole house performance upgrades and Energy Upgrade California.
- **Specialty Contractors —** Have specialty license in HVAC and insulation. Deliver specialty installations, and may also perform whole house and general contracting duties. May be associated with whole house performance upgrades and Energy Upgrade California.
- **Green Building Professionals —** Building professionals, including general and specialty contractors, who are trained in delivering or assessing technical work that incorporates additional green building concerns beyond energy efficiency, such as outdoor water efficiency, indoor air quality, resource conservation, and low-impact development/site water management. Serve as private contractors or on behalf of green building rating and incentive programs.
- Single-Family Residential Property Owners

- **IOUs —** Run energy efficiency incentive programs, especially Energy Upgrade California. Conduct contractor management, quality assurance, program administration for Energy Upgrade California.
- **Local Governments —** Set greenhouse gas emissions, energy savings, and other sustainability goals and implement programs to meet those goals. Support IOU energy efficiency programs through professional and customer outreach, coordination among local actors, and enforcement of code. Conduct or support pilot energy efficiency programs.
- **Other Energy Efficiency Programs —** IOU third party and local government partnership programs that implement direct install, weatherization, and other incentive programs.
- **Workforce Training Organizations —** Community colleges, professional training organizations, workforce investment boards, and nonprofit programs that provide job training and placement services for new professionals.
- **Non-Energy Efficiency and Conservation Programs —** Water utility, local government, green building, and other programs that promote and incent resource conservation, air quality, green products, and other non-energy efficiency efforts.
- **Other Relevant Professional Trades —**All professional industries and associations that may affect property owner and building professional choices, including real estate professionals, product manufacturers and suppliers. These actors affect behavior of their clients through the services they offer and products they provide.

c) Market Characterization and Assessment

Many of the market barriers associated with the single-family energy efficiency and whole house markets are described above in the Subprogram Description and Theory. The following market characterization and assessment is adapted from the analysis provided by BayREN members in the *Recommendations for Energy Upgrade California in the Bay Area* report.

i. Homeowner Awareness and Behavior

While the Energy Upgrade California website and local marketing campaigns have achieved an initial measure of homeowner education, most homeowners are not aware of how their homes work or the economic and environmental benefits of energy efficiency. Building broader awareness and deeper knowledge will be a key to future program implementation and market transformation.

Homeowners vary in their motivations for undertaking energy efficiency work in their homes, including saving money, increasing comfort and health, and protecting the environment (among others). Given these different motivations, as well as

demographic, geographic, economic, and ethnic diversity in the BayREN region, there is no one single marketing approach that will reach or resonate with everyone. Thus, there is a need to market to different segments with different strategies — social media, print, radio, TV, tabling events, workshops, etc. Such multi-faceted marketing should be employed in future programs. Additionally, marketing and outreach are inherently local, and marketing success in generating leads must leverage the character of a community, local events, and trusted messengers.

Currently, most marketing efforts for single-family energy upgrade programs are relatively uncoordinated, with PG&E providing little direct marketing and Participating Contractors varying significantly in their messaging and focus, as well as the veracity of their information regarding program options and incentives. Additionally, awareness amongst other industry actors is relatively low, and energy efficiency considerations have not yet entered into standard business practice for any relevant market actors.

Additionally, market barriers as described in the Subprogram Description and Theory, including high cost, lack of adequate financing, program complexity, and customer distrust of the contracting community, have dissuaded many interested customers from participating in the PG&E EUC-SF. As of yet, no simple coordinated solution has been provided to address many of these barriers.

ii. Professional Industry Awareness

Successful program implementation depends on a robust partnership between program administrators (IOUs or local governments) and those working in the industries related to those programs. Through the services these industries provide, they have a dramatic effect on homeowner and professional valuation of energy efficiency products and services. In D 12-05-015, the Commission directed the IOUs to take a strong role in engaging industry partners, especially those in the real estate industry. Local governments have been performing this work for several years, and stand poised to continue strengthening connections in these industries in partnership with the IOUs.

In 2011–2012, BayREN members conducted a concerted effort to make inroads into the real estate sector, and, to a lesser extent, the supplier market. Through the SEP period, BayREN members have engaged these actors, developed and delivered trainings for realtors, discussed approaches for listing and valuation of energy efficient and green-labeled homes, coordinated on strategic marketing approaches with local retailers, and developed pilot approaches for securing reduced costs for energy efficient and green products for Participating Contractors.

This work has created inroads into industries that are vital for long-term market transformation. That said, energy efficiency and green upgrades are still tangential considerations for most professionals in these industries, and are not yet part of the central message conveyed to customers and clients. In order to ensure that opportunities created within the last few years are not lost, local governments and IOUs must continue outreach and engagement, and develop models and messages

that serve the core needs of these industries while promoting energy efficiency and other cross-resource conservation options. Through the Single-Family Upgrade Subprogram, BayREN members will continue to engage these actors through cross-promotion and marketing efforts, so energy efficiency can be a core consideration of these actors.

iii. Coordination of DSM Programs

Similarly, the ARRA period dramatically expanded the role of local governments within energy efficiency, and provided an unprecedented opportunity for collaboration and streamlining between local government actors, IOUs and third-party program providers (third-party providers, water utilities, nonprofit advocates, etc.). The ARRA period was successful in more firmly establishing relationships between these actors, and led to some successes in collaboration and streamlining between actors, most notably through the use of a common program brand and statewide website.

The ARRA period also demonstrated the significant challenges associated with coordination among large bureaucracies, and the marketplace confusion that can result from the involvement of so many actors. Notable examples include the coordination of marketing and outreach messages, coordination of incentive program offerings and messaging around those offerings, and sharing of program data amongst organizations for program evaluation. It is clear that continued coordination, as well as the long-term development of governance structures that can effectively manage such issues, is required for the market to mature and effectively penetrate into professional and customer awareness.

iv. Professional Building Workforce

To successfully penetrate the market, Energy Upgrade California needs to provide a distinct, consistent, and long term advantage to building industry professionals over business as usual. In its current program design, Energy Upgrade California fails to make a convincing case for professionals to provide energy efficiency services and develop the systems necessary to work with Energy Upgrade California. Because of this fundamental challenge, efforts to recruit, train, and place new professionals have been impaired.

Energy Upgrade California's failure to provide a strong business case to building professionals has significant impacts that go beyond the success of the program. As identified by UC Berkeley in 2011,[21] proper incentive program design is a key to increasing the overall quality of any installation in the residential sector (especially HVAC installations) and shifting the "low-road" environment of residential energy efficiency to one that values the quality of installations over the cost of the

[21] Zabin, C. et al. *California Workforce Education & Training Needs Assessment For Energy Efficiency, Distributed Generation, and Demand Response*. Donald Vial Center on Employment in the Green Economy, Institute for Research on Labor and Employment, University of California, Berkeley. 2011.

installation. In the energy efficiency sector, since the quality of installations affects the energy use of a building, it becomes vital to the long-term mission of the Commission to ensure that Energy Upgrade California and other incentive programs are attractive to residential building professionals.

To increase the business proposition of Energy Upgrade California, program implementers need to remove the market barriers that stand in the way of market penetration. This would include such coordinated actions as a re-evaluation of the program design and introduction of accessible upgrade packages, more effective marketing, strong consumer advocacy and support, targeted contractor support, introduction of viable financing mechanisms and reduction of other cost and process barriers.

If implementers can remove these barriers in the coming years, consumer interest will create a demand for qualified and trained professionals, which can be filled by trainers and other workforce actors, working alongside program implementers.

d) Proposed Interventions

Proposed interventions have been described throughout this subprogram description. Along with the Financing Subprogram (BayREN04), all proposed interventions are focused on reducing the technical, cost, and process barriers to making Energy Upgrade California a successful program. A summary is provided in the table below.

BayREN01 Figure 12: Market Transformation Barriers and Interventions

Barrier	Proposed Intervention
Program design barriers—required audit, program complexity	Audit incentives, Flex Package incentive, Home Upgrade Advisor
Program cost barriers	Audit incentives, Flex Package incentive, financing (BayREN04)
Lack of customer awareness	Broad and targeted marketing campaign that incorporate all energy efficiency benefits and co-benefits, contractor sales training
Lack of professional/industry awareness	Professional outreach as part of marketing campaign
Contractor skills gap	Contractor sales, administrative, installation, and other technical trainings; Home Upgrade Advisor to support contractor sales

e) Program Logic Model: See Program Logic Model in Attachment 1

f) Market Transformation Indicators (MTIs) and Evaluation Plans

Resolution E-485 (December 2, 2010) Appendix B, lists adopted Market Transformation Indicators for the 2010–2012 Energy Efficiency Portfolio, which were then amended by Energy Division in 2011 at the direction of the Commission. To ensure consistency with adopted Market Transformation Indicators and Program Evaluation strategies, BayREN proposes the following Market Transformation Indicator (based upon the Adopted Whole House Retrofit MTIs, adapted for multi-family properties, and PG&E's 2013–2014 EUC-SF Subprogram PIP):

- Whole House MTI 2: The proportion of households that elect to perform comprehensive energy upgrades. Metric Type 3.

Program evaluation will be conducted in coordination with evaluation, measurement, and verification (EM&V) activities conducted on behalf of the Commission and PG&E. BayREN members will participate as possible in all data collection and interpretation activities, as directed by the Commission and in coordination with the guidance offered by the statewide market transformation consultant.

13. Additional information as required by Commission decision or ruling or as needed: N/A

III. SUBPROGRAM BAYREN02

1. Subprogram Name: BayREN Comprehensive Multi-Family Subprogram

2. Subprogram ID number: BayREN02

3. Type of Subprogram: Regional Energy Network

4. Market sector or segment that this subprogram is designed to serve:

a) _X_ Residential

Including Low Income?	_X_ Yes __ No
Including Moderate Income?	_X_ Yes __ No
Including or specifically multi-family buildings	_X_ Yes __ No
Including or specifically Rental units?	_X_ Yes __ No

b) __ Commercial (List applicable NAIC codes: _____)

c) __ Industrial (List applicable NAIC codes: _____)

d) __ Agricultural (List applicable NAIC codes: _____)

5. Is this subprogram primarily a:

a) Non-resource program ___ Yes _X_ No

b) Resource acquisition program _X_ Yes ___ No

c) Market Transformation Program _X_ Yes ___ No

6. Indicate the primary intervention strategies:

a) Upstream ___ Yes _X_ No

b) Midstream ___ Yes _X_ No

c) Downstream _X_ Yes ___ No

d) Direct Install ___ Yes _X_ No

e) Non Resource ___ Yes _X_ No

7. Projected Subprogram Total Resource Cost (TRC) and Program Administrator Cost (PAC)

TRC 0.67 PAC 0.97

8. Projected Subprogram Budget

BayREN02 Table 1: Projected Subprogram Budget, by Calendar Year[22]

	Program Year		
BayREN02 Multi-Family	**2013**	**2014**	**Total**
Admin ($)	$132,500	$132,500	$265,000
General Overhead ($)	$0	$0	$0
Incentives ($)	$937,500	$2,812,500	$3,750,000
Direct Install Non-Incentives ($)	$1,416,875	$1,416,875	$2,833,750
Marketing & Outreach ($)	$250,000	$75,000	$325,000
Education & Training	$72,000	$48,000	$120,000
Total Budget	**$2,808,875**	**$4,484,875**	**$7,293,750**

9. Subprogram Description, Objectives and Theory

a) Subprogram Description and Theory

The goal of the BayREN Comprehensive Multi-Family Subprogram is to increase the number of multi-family upgrades for energy efficiency and other resource conservation measures. The subprogram will achieve this goal by providing customized technical assistance, supporting participation in a wide range of existing programs, and providing a low-cost multiple-measure incentive to fill an existing gap in energy efficiency incentives available to the multi-family sector. The program components consist of:

- Targeted outreach

[22] See BayREN01, Table 1- Projected Subprogram Budget, by Calendar Year for category definitions.

- Customized technical assistance (see Additional Services section below)
- Bundled measure incentives — requiring two or more measures, yielding an average of 12% energy savings (see Measures and Incentive Levels section below)
- Workforce development support for multi-family-specific trades

Through these components, the BayREN Comprehensive Multi-Family Subprogram addresses the following market barriers to comprehensive upgrades:

Market confusion around which programs will apply to the various multi-family building subsectors and upgrade scopes. Technical assistance (TA) will walk properties owners through the steps of initiating an energy upgrade, and introduce them to the appropriate programs. TA will refer projects to the PG&E single-point-of-contact, as well as relevant non-IOU energy and non-energy programs. In particular, the TA will leverage low-income government programs and water utility programs. The TA providers will be familiar with the eligibility requirements and program offerings of the wide variety of available programs, and will coordinate closely with program administrators to ensure a seamless referral experience to the property owner.

Lack of utility data tracking and analysis by property owners/managers. TA will include entering properties into utility tracking and benchmarking software, in order to inform project-specific decision making and add to the development of a robust database of local multi-family energy use profiles.

Lack of accessible analytical methodologies, which leaves property owners ill-equipped to evaluate the technical and economic potential for upgrading their properties. TA will use energy savings analysis software specifically designed for the multi-family sector to identify each project's opportunities.

Lack of access to affordable capital to pursue upgrading opportunities. TA will connect property owners interested in upgrades to financing options and incentives that can offset the capital requirements. TA will assist property owners in evaluating financing options, including PG&E on-bill financing or MF financing products (when available), BayREN Multi-Family Capital Advance Pilot, commercial PACE programs, BayREN PAYS® Financing Pilot, and other public or private sources of financing.

Lack of long-term energy planning with property owners/managers. Create a long-term investment plan for each client to achieve the full energy efficiency potential. The plan may extend beyond the program cycle, in order to show how full implementation of the plan will continue to provide positive cash flow for the owner. BayREN will provide post-

installation guidance to encourage property owners to undertake further upgrades. BayREN will track and maintain contact with customers about continued implementation of the plan beyond the program cycle (assuming there is continued funding).

Lack of energy efficiency knowledge in the multi-family-specific building trades. Training will be provided to the key multi-family-specific trade of central HVAC and DHW contractors.

Diversity of building types, which prevents a single approach for all buildings. This program features customized TA that will offer guidance specific to each building's particularities.

Diversity of upgrade triggers within the lifetime of a multi-family building. During a multi-family building's lifecycle, there are specific times when it is most cost-effective and convenient for the owners to make energy and green upgrades. TA providers will be cognizant of these trigger times and will recommend approaches that effectively leverage these opportunities.

Split incentives that prevent property owner investments and prevent tenants from receiving energy efficiency benefits. TA will be tailored to the metering configurations and needs of each building. It can include assistance with green lease agreements and capital expense pass-through mechanisms as ways of balancing the split incentive. Utility tracking assistance may include guidance on obtaining utility bill data for tenant meters to inform decisions about in-unit upgrades. TA will also evaluate opportunities to use innovative on-bill financing mechanisms (e.g., BayREN PAYS® Financing Pilot) that may allow responsibility for repayment to be assigned to tenants.

The BayREN Multi-Family Subprogram will participate in any CPUC mid-cycle workshop to report on program progress in cooperation with all implementers of multi-family pilots during 2013 and 2014. The feedback and outcomes from the workshop will inform revisions to program design. Expected outcomes of the mid-cycle evaluation process are identified under the EM&V discussion in this Plan.

b) Subprogram Energy and Demand Objectives

BayREN02 Table 2: Projected Subprogram Net Energy and Demand Impacts, by Calendar Year[23]

	Program Years		
	2013	2014	Total
BayREN Comprehensive Multi-Family Program			

[23] Net energy savings calculations were based upon the weighted to date energy savings generated through the BayREN Multi-Family E-3 calculator.

GWh	0.35	1.02	1.37
Peak MW	0.28	0.83	1.11
Therms (millions)	0.04	0.11	0.15

c) Program Non-Energy Objectives

i. SMART non-energy objectives of the subprogram

- During the period 2013–2014, 50 contractors in the multi-family building trades will be trained. Metric Type 2b.
- During the period 2013–2014, 5,000 units will undergo energy efficiency upgrades through the BayREN Bundled Measures Program. Metric Type 2b.
- During the period 2013–2014, 225 projects, representing 9,000 units, will receive technical assistance through the BayREN subprogram.
- During the period 2013–2014, 300 property owners or managers will participate in outreach events or activities (each property owner may own multiple properties). Metric Type 2b.

ii. See above.

iii. Relevant baseline data

- With State Energy Program funding, approximately 70 auditors and 30 building operators were trained over three trainings.
- The State Energy Program tracked approximately 800 multi-family units in completed upgrade projects in the Bay Area.[24]
- With the Better Buildings Program funding, approximately 30 projects representing 2,000 units have received some form of technical assistance in Alameda County over 18 months.
- With ARRA funding, approximately 261 projects representing approximately 10,000 units have received some form of technical assistance in San Francisco over 22 months.
- The Alameda County program's outreach activities engaged 60 property owners, resulting in 50 project interest forms received during the same period.

These baseline estimates represent a program that was run in one or two counties, in the absence of substantial whole-building or bundled measure-style incentives.

iv. Quantitative Subprogram targets (PPMs)

[24] *Recommendations for Energy Upgrade California in the Bay Area*. ABAG, 2012.

BayREN02 Table 3: Quantitative Subprogram Targets (PPMs)

Target	2013	2014
Number of units incented	1,250	3,750
Number of multi-family contractors trained	25	25
Number of projects & units receiving technical assistance	75 projects 3,000 units	150 projects 6,000 units
Number of property owners reached by outreach activities	150	150

d) Cost-Effectiveness/Market Need

Cost-effectiveness for this subprogram was established using the E-3 Calculator, identifying expected projects and associated modeled savings (see below) by climate zone. The number and distribution of projects was estimated based upon program goals and expected uptake as well as U.S. Census data on the number of multi-family units within the region. Projects entered in the E-3 calculator included those in the Bundled Measures Incentive Program.

e) Measure Savings/ Work Papers

i. Indicate data source for savings estimates for program measures (DEER, custom measures, etc.)

For the multi-family energy savings calculations, typical upgrade packages and the associated costs were determined for each of the climate zones. Existing building scenarios were prepared to account for the presence of a gas furnace, heat pump, or electric resistance heater, with central and individual domestic hot water (DHW) systems modeled for each heating type. All conditions were represented within low-rise and high-rise multi-family buildings. Each package scenario was modeled in EnergyPro using a typical unit configuration, thus accounting for interactive effects of implementing multiple measures. The kWh savings, therms savings, and average kW avoided were then tabulated, and the distribution of projects across each BayREN target climate zone was determined using a weighted distribution based on U.S. Census data for county population.

ii. Indicate work paper status for subprogram measures

BayREN02 Table 4: Work Paper Status

#	Work Paper Number/Measure Name	Approved	Pending Approval	Submitted but Awaiting Review	Not Yet Submitted
1	Bundled Measure Incentive Program		X		

10. Program Implementation Details

a) Timelines

BayREN02 Table 5: Subprogram Milestones and Timeline

Milestone	Date
Project Initiation Meeting	1/31/2013
Technical Consultant RFPs Issued — software, training, TA & QA provider	2/1/2013
Technical consultants selected and contracted	3/31/2013
Technical assistance services set up	5/30/2013
Program collateral developed	5/30/2013
Software development completed	6/30/2013
Workforce training session 1 completed	6/30/2013
TA and bundled measure roll-out	7/1/2013
Targeted local and regional outreach for project recruitment	7/1/2013 – ongoing
Workforce training session 2 completed	3/31/2014
Installations completed	10/31/2014
Conclude pilot program	12/31/2014
Quarterly progress reports	3/31/2013 – 12/8/2014
Final program reporting	12/31/2014

b) Geographic Scope

BayREN02 Table 6: Geographic Regions Where the Subprogram Will Operate

Geographic Region	Multi-Family Subprogram	Geographic Region	Multi-Family Subprogram
CEC Climate Zone 1		CEC Climate Zone 9	
CEC Climate Zone 2	X	CEC Climate Zone 10	
CEC Climate Zone 3	X	CEC Climate Zone 11	
CEC Climate Zone 4	X	CEC Climate Zone 12	X
CEC Climate Zone 5		CEC Climate Zone 13	
CEC Climate Zone 6		CEC Climate Zone 14	
CEC Climate Zone 7		CEC Climate Zone 15	
CEC Climate Zone 8		CEC Climate Zone 16	

c) Program Administration

BayREN02 Table 7: Program Administration of Program Components

Program Name	Subprogram Component	Implemented by BayREN staff	Implemented by contractors to be selected by competitive bid process	Implemented by contractors NOT selected by competitive bid process	Implemented by local government or other entity (X = Yes)

Bundled Measures Incentive Program	Targeted Outreach				X
	Technical Assistance		Energy efficiency consultants		X[25]
	Bundled Measure Rebates				X
	Software development			X, TBD based on software specifications	
	Site visit conducted by Site Surveyors		X		X[26]
	Workforce Development, Outreach and Training		X		X

d) Subprogram Eligibility Requirements

i. Customers

BayREN02 Table 8: Customer Eligibility Requirements

Customer Eligibility Requirement
Five or more attached dwelling units
Property located in the 9-County Bay Area
Market rate, low-income, and affordable housing are all eligible

[25] Where existing staff are qualified.
[26] Where existing staff are qualified.

ii. Contractors/Participants

BayREN02 Table 9: Contractor/Participant Eligibility Requirements

Role	Eligibility Requirement
TA Provider	Qualifications equivalent to a professional firm delivering comprehensive multi-family building audits. Audit team must have the ability to provide comprehensive TA, including advice and referrals for non-energy efficiency DSM measures and non-energy measures. TA Provider will be selected by RFP process for regional implementation except in counties where existing multi-family program staff meets TA Provider qualifications.
Site Surveyor	HERS II Multi-Family Rater or equivalent qualified professionals with supplemental software training (i.e., completed California Multi-family Existing Building training with either GreenPoint Rated Existing Multi-family or BPI Multi-family Building Analyst certification).
Installation Contractors	Licensed in appropriate trade
QA Provider	Same as TA Provider (may be same entity or subcontracted to another entity with equivalent qualifications)

e) Program Partners:

i. Manufacturer/Retailer/Distributor partners

This subprogram will not include any upstream activities, and therefore will not include any manufacturer/retailer/distributor partners.

BayREN02 Table 10: Manufacturer/Retailer/Distributor Partners

Manufacturer/Retailer/Distributor Partner Information	BayREN02
Manufacturers enrolled in program	None
Manufacturers targeted for enrollment in program	None
Retailers enrolled in program	None
Retailers enrolled in program	None
Retailers targeted for enrollment in program	None
Distributors enrolled in program	None
Distributors targeted for enrollment in program	None

ii. Other key subprogram partners

Building Owners and Managers Association

California Apartment Association

City and County of San Francisco

City of Suisun City

County of Contra Costa

County of Marin

County of Napa

County of San Mateo

County of Santa Clara

County Tax Assessors Offices

HERS Providers (CHEERS, CalCERTS)

IOU program implementation organizations

Marin Clean Energy Authority

National Apartment Association

Other Industry associations

Pacific Gas& Electric

Public Agencies

Property owners

Service providers

Sonoma County Energy Independence Program

Sonoma County Regional Climate Protection Authority

StopWaste.Org (Alameda County Waste Management Authority)

Contractor Associations (EGIA, ACCA, etc.)

f) Measures and Incentive Levels

Bundled Measures Incentive

The BayREN proposes to pilot a bundled measure incentive that is aimed at filling the market gap between single-measure and whole building utility programs. The bundled measure approach is designed to capture projects that have smaller budgets and scope of work, and encourage installation of two or more measures that will result in a program average of 12% whole-building energy savings.

The bundled measure approach is appropriate for the medium-scope trigger events, ranging from:

- Replacement of one or more pieces of equipment — other measures may be added to increase total energy savings of project scope
- Unit turnover allowing access to several units — consider a bundle of in-unit measures in addition to some central systems/common area work
- Upgrade — depending on the extent of the upgrade and how many building components are affected, this could be a bundled measure or whole building approach

The bundled measures pilot provides a customized list of measures based on utility bill information, existing building characteristics, and a site survey. The TA provider will utilize program software to calculate projected savings. The estimated energy savings per

measure will vary by building type and take into account interactive effects. The pilot is designed to offer the following solutions:

- Incorporates actual utility usage data to inform measure recommendations
- Offers an alternative to costly energy audits for smaller project scopes and smaller buildings
- Provides property managers with basic energy savings information that may help them justify pursuing a more comprehensive audit later
- Reduces reliance on costly audits, which may depend upon energy models with questionable accuracy (they may not necessarily provide more savings assurance than a refined deemed savings calculation)
- Can motivate further or more extensive work, by layering complementary or additional measures onto a planned single measure
- Allows property owners to choose from a broad range of energy efficiency measures and utilize contractors that they trust
- Allows property owners to include emerging technologies in their upgrade scopes, and allows the program to obtain data to track their energy saving performance (see asterisked measures in Figure 1 below)

Measures eligible under the bundled measures incentive include measures that can be modeled in the CEC approved Energy Pro software and specifically the Energy Pro Lite module to be developed. The full list of such measures is extensive, and a short list of common measures is provided below for illustration purposes. The actual bundles of measures may include measures not listed but which can be input to the modeling software. With the scope of the project defined during technical assistance, the property owner will have the opportunity to choose from an extensive pool of modeled measures to meet minimum program participation thresholds whereby the bundle must contain at least two measures and show a minimum of 8% whole building energy savings performance above existing conditions with the hope that projects will actually achieve an average of 12% performance improvement based on modeled measures. While this is the approach for determining program compliance with the property owner, the individual measures in the bundle of measures approved for program participation will be matched with deemed savings estimates for the purposes of reporting program savings to CPUC, and for comparing this performance based program with Multifamily direct install and individual measure programs which report on a deemed savings basis. The eligible measures, thresholds for program compliance and assumptions in energy savings predictions and reporting will be refined based on program monitoring and feedback; and in order to remain complementary with other incentive programs offered in the market.

BayREN02 Figure 1: Bundled Measure Program Eligible Measures

Domestic Hot Water (Individual and Central)	
Natural gas storage DHW	Pipe insulation

Electric storage DHW	Circulation pump
DHW heaters/boilers	Heat pump DHW
Boiler controls	Tankless/instant DHW
Recirculation controls	Tank insulation
Condensing gas water heater*	Combined space and water heater*
Space Heating and Cooling (Individual and Central)	
Natural gas hydronic heat boiler/space heating hot water boilers/hydronic systems	Ducted evaporative cooling
Natural gas steam heat boiler/space heating low pressure steam boilers	Duct insulation/pipe insulation
Natural gas furnace	Duct sealing
Boilers for steam heating	Refrigerant charge verification
Cogeneration systems	System airflow verification
Package terminal heat pump	System fan wattage verification
Package terminal air conditioner	Variable speed motor
Room air conditioner	Programmable thermostat
Chillers	Cooling towers
VAV systems	HRV
System fan size/hp	Ventilation schedules

Bathroom fans	Tank insulation
Ductless air-conditioning for common areas	High performance rooftop unit*
Variable refrigerant flow for common areas	
Appliances	
Clothes washer (in-unit and common area)	Dishwasher (in-unit)
Refrigerator (in-unit)	Vending Machine Controller (cooled; common area)
Clothes Dryer	
Lighting (In-unit and Common Area; Interior and Exterior)	
CFL bulb (screw-in)	Cold cathode lamps
CFL fixture (hard-wired)	Ceiling fans
Screw-in CFL reflector bulb	LED exit signs
Linear fluorescent fixtures and bulbs	Timer
Occupancy sensor	Bi-Level lighting
LED night lights	Occupancy sensors
De-lamping	Photocells
LED interior lighting*	LED site lighting*
Advanced HID lighting for site lighting*	Advanced lighting controls
Task lighting	Daylighting
Building Envelope	
Attic/roof insulation	Cool roof
Wall insulation	Radiant barrier
Floor insulation	Windows

Air sealing	Overhangs
Weather-stripping	
Pools	
Filtration pump and motor	Pool booster pump

*Emerging technologies

Ineligible Measures
The following measures are explicitly identified as being ineligible to count toward the energy savings in the bundled measures incentive. However, the TA provider may recommend these measures and refer projects to other programs that provide incentives for these measures, namely the California Solar Initiative.

- Solar thermal for DHW, space heating, pool and heating
- Solar photovoltaic

BayREN02 Table 11: Summary Table of Measures, Incentive Levels, and Verification Rates

Measure Group (Bundled Measures — Average 12%)	**Market Actor Receiving Incentive or Rebate**	**BayREN**	
		Incentive Level	**Installation Sampling Rate**
Domestic Hot Water (Individual and Central)	Property owner	$750/Unit	100%
Space Heating and Cooling (Individual and Central)			
Appliances			
Lighting (In-unit and Common Area; Interior and Exterior)			
Building Envelope			
Pool Pumps			

g) Additional Services

Technical Assistance to Identify Approach and Potential Measures, Begin Utility Tracking, and Refer to Resources

The technical assistance offered through this subprogram is intended to serve a broad range of properties at different points in a multi-family building's life cycle. It will assist property owners by providing them with customized recommendations and facilitating their participation in rebate and financing programs. TA will be provided as a live phone-based service from a centralized location. In jurisdictions where in-person TA is available through other complementary programs, the BayREN TA provider may refer projects to the local in-person TA provider as appropriate.

Depending on the needs of each property and its owner/manager, TA can include property analysis and upgrade approach/measure recommendations, program and financing referral and guidance, and project management guidance.

Upgrade Approach and Measure Recommendation

Technical assistance begins with a consultation on the property owner's interests and property characteristics. The technical advisors will leverage newly developed IT tools and additional analytic methodologies to identify appropriate approach and upgrade measures for each building. They will then connect property owners to incentive and assistance programs relevant to their properties, including the IOU programs (through the single-point-of-contact), non-IOU energy (low-income resources, weatherization, etc.), and non-energy resource programs, like water utility incentives and green building programs. The project management component may include comparison of contractor bids and referral to certification programs that qualify energy auditors/raters.

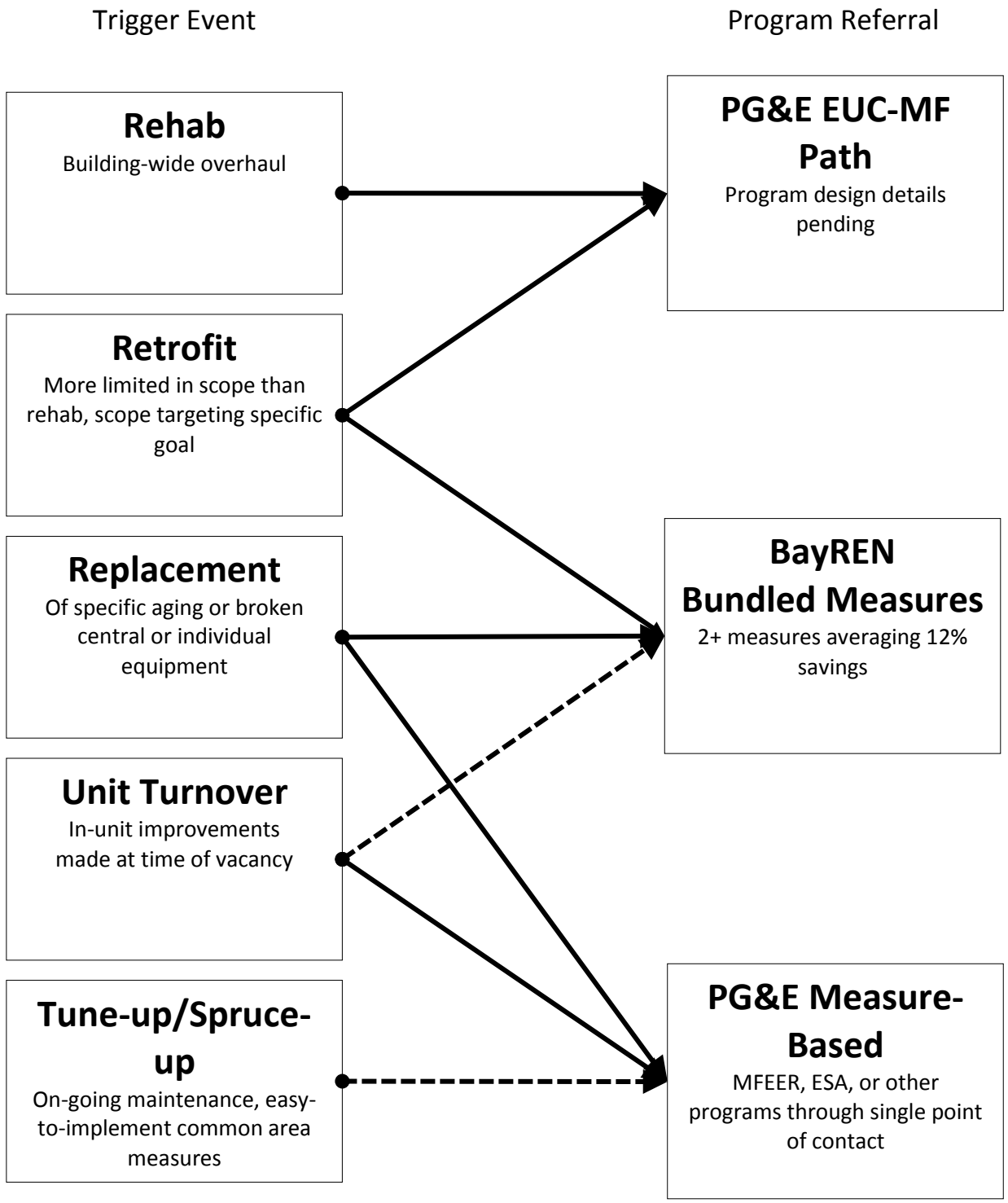
Program Referral

Technical advisors will refer projects to the appropriate utility programs, or single-point-of-contact where applicable. Figure 2 below shows the likely pathways for project referrals in the program, based on trigger events for making improvements.

Technical assistance providers will screen projects appropriate for whole-building upgrades, which will typically be those that have a significant upgrade or rehabilitation scope or work. For these projects, TA will support the project's participation in the PG&E Energy Upgrade California Multi-Family (EUC-MF) Path.

The opportunity to participate at the whole-building level is limited to a relatively small portion of the building stock. Without major planned work already budgeted, the capital requirements of a whole-building upgrade are a major barrier. Utility rebate amounts will generally not be sufficient to justify an owner pursuing major improvements. For property owners interested in pursuing a moderate scope of improvements, TA will offer assistance with the bundled measure approach.

BayREN02 Figure 2: Trigger Event Related Program Direction Through Technical Asssitance



For smaller scopes consisting of individual measures or very limited budgets, TA will refer projects to the PG&E single-point-of-contact for further assessment of eligibility for Multi-Family Energy Efficiency Rebates (MFEER), Energy Savings Assistance (ESA), and other PG&E programs. However, these programs do not include all measures that are of interest to building owners, and the incentive levels are based on individual measures, not the overall energy savings that can be achieved by pursuing multiple measures. The program will be tracking the participation of projects and expects that property owners will come back to do additional improvements throughout the life cycle of the building. Where appropriate, the technical advisor will refer projects to the utility single-measure rebate program (MFEER, ESA).

Program Referral for Low-Income Sector Services

The referral component will serve properties with low-income tenants with specific referral to the income-based programs. The advisor can provide guidance on the steps required to qualify the property based on tenant income documentation. See Table 15 for specific income-qualified programs that may be included in the referral service.

Program Referral to Water Efficiency Programs

The TA will include recommendations and program referral for water efficiency measures. In the multi-family sector, water heating represents a significant portion of total energy use. Water efficiency devices such as efficiency clothes washers, low-flow showerheads, and faucet aerators will save both water heating energy and water consumption. Reduced water consumption also represents additional upstream energy savings related to water treatment and distribution. The TA will approach water conservation comprehensively to include other measures, such as low-flow toilets. Program referral will direct property owners to the appropriate water utility programs for rebates or direct install opportunities.

Coordination with PG&E Local Government Partnership or CCA Energy Efficiency Programs

Jurisdictions in a few counties in the BayREN region also have access to multi-family services through PG&E Local Government Partnership (LGP) or CCA energy efficiency programs. The BayREN multi-family program will coordinate closely with the LGP implementers to ensure that the offerings to a property owner are complementary and not duplicative. BayREN's multi-family program focuses on leveraging ARRA-funded online tools with phone-based technical consultations, an alternative multi-family incentive program, and a Capital Advance financing pilot. The county-level multi-family programs may include in-person technical assistance, subsidies for audits, single-measure or performance-based rebates and additional marketing and outreach. These services are complementary of BayREN and can be leveraged for greater overall program participation.

Specifically, BayREN's Comprehensive Multi-family Subprogram delivery will be coordinated with:

- San Francisco Energy Watch (San Francisco)
- East Bay Energy Watch (Alameda County, Contra Costa County)
- Marin Energy Authority (Marin County, City of Richmond)

Financial Analysis and Referral to Financing Options

The financial analysis component will include comparison of financing options, and may incorporate a cash flow analysis and a long-term capital plan including all feasible energy efficiency measures. Projects undertaking work under either the bundled measures approach or the PG&E EUC-MF will be offered assistance with financing options. The TA provider will be familiar with the eligibility criteria, benefits, and limitations of several financial products. In particular, the TA provider will be able to provide guidance on the PG&E On-bill financing or multi-family financing products (when available); BayREN's Multi-Family Capital Advance Pilot (when approved) and PAYS® Pilot; and financing offered by other public or private sources including existing commercial PACE options..

Site Visit for Bundled Measure Projects

For projects applying for the bundled measure incentive, the TA provider will schedule a site visit by a qualified Site Surveyor. The site visit will consist of verifying the existing building conditions that were described to the TA provider, and confirming the appropriateness of the bundled measures identified for the project.

BayREN02 Table 12: Additional Services

Additional Services that the Subprogram Will Provide	To Which Market Actors	BayREN
Technical assistance	Property owner	Fully incented
Bundled measures – site visit	Property owner	Fully incented

h) Subprogram Specific Marketing and Outreach

The targeted outreach will build upon lessons learned through previous multi-family efforts, and focus on developing compelling messaging and strategic delivery through highly targeted channels. The outreach will leverage the existing Funding Finder and marketing collateral developed through SEP that studied energy upgrade messaging in the multi-family sector.

Developing Compelling Messaging and Collateral

Feedback from the multi-family sector indicates an interest in a centralized resource and a customized approach to upgrades. The messaging regarding the BayREN Comprehensive Multi-Family Subprogram will therefore emphasize:

- The presence of an incentive option to fit any multi-family property
- The technical assistance available to help decide on the best approach
- Testimonials and case studies from successfully complete upgrades

Collateral will be available in multiple media, including PDFs, web pages, some print, and text available for inclusion in industry newsletters.

Utilizing Existing Channels

Targeted outreach will leverage existing organizational structures and communication channels, specifically industry associations, local government departments, and service providers and property management associations.

- Multi-family industry organizations, including rental housing associations, property management associations, the California Apartment Association, apartment owner associations, the nonprofit Housing Association of Northern California, the East Bay Housing Organization, and individual homeowners associations and real estate investment trusts
- Public agencies and programs with a housing-related mission, including local government departments or agencies for housing and community/economic development. Materials will be provided for distribution to their lists
- Service providers, including property management companies, HVAC maintenance companies, mechanical engineers, general contractors, etc.

Leveraging Trigger Events

The trigger events identified earlier are often accompanied by an opportunity for interfacing with a property owner. Specifically, two points of interaction with government are:

- Affordable housing projects undertaking public finance through local or state entities

- Building department permits for one or more improvement measures that could lead to participation in a bundled measure upgrade

i) Subprogram Specific Training

In multi-family buildings, water heating systems account for a much higher portion of energy consumption compared to single-family buildings. Additionally, the central system trades have been underserved by single-family oriented contractor training opportunities. To ensure that a pool of knowledgeable central systems contractors is available to support the demand created by the incentive, training will be offered for these trades. Because of the sheer number of specialized subcontractors on any given comprehensive multi-family rehab project, it does not make sense to require a single contractor certification for all contractors and sub-trades. Rather, it will be more effective to target very specific professional training at the sub-trade that has the greatest potential for delivering efficiency improvements: contractors who work on central HVAC and water heating systems in multi-family buildings.

The program will offer targeted training to license boiler contractors (C-4 contractors), HVAC contractors (C-20 contractors), plumbers (C-36 contractors) and related building operators. The training will cover methods of redesigning existing systems to increase efficiency and conducting system tune-up inspections and repairs.

Specialized training will give these contractors the expertise needed to optimize the design, specifications and operations of these systems. This training will focus less on the verification methods and more on the efficiency gains to be made to conventional construction and operation practices. This training also includes combustion safety measures, and could incorporate retro-commissioning. The focus on water heating also provides an opportunity to include water efficiency training, which will promote energy savings on-site as well as in upstream water treatment and distribution energy.

j) Subprogram Software and/or Additional Tools

i. Subprogram Software

The subprogram will leverage existing energy analysis software to develop an energy savings assessment and tracking tool that will provide feedback data for refining the bundled measures list and projected savings. Through ARRA funding, a suite of multi-family tools was developed, including the EUC Multifamily Funding Finder and EUC Multifamily Portfolio Tracker. The Funding Finder makes general upgrade recommendations based on basic information on existing building characteristics, and connects users to applicable incentive programs. The Portfolio Tracker allows utility data tracking and upgrade project tracking. Under the BayREN Multi-family Subprogram, a module to existing CEC approved compliance software will be developed herein referred to as Energy Pro Lite.

The ARRA funded EUC IT tools and Energy Pro Lite tool used in combination will serve three main purposes:

- **Energy Modeling Lite:** Provide property owners with prioritized measures based on estimated energy savings that are informed by project-specific details
- **Project Tracking & Reporting:** Provide program administrators and the EM&V process with an organized database of participating projects and their upgrade profiles
- **Measure Feedback & Refinement:** Provide property owners and program administrators with feedback on actual savings per bundle of measures to refine savings estimates.

Energy Modeling Lite

The assessment and tracking tool will utilize some modeling calculations based on basic information about the existing building and proposed improvements. These assumptions and algorithms will align with industry accepted modeling tools. However, the data input requirements will be less extensive than full modeling software programs, and will not require a full on-site audit. This assessment tool is designed to reduce the barrier to upgrades caused by the cost and time investment required to complete a full audit and energy model run. The tool will be designed for data exchange compatibility with existing local government CRM systems.

As described in the Eligible measures section above, the BayREN proposes to build the energy modeling "lite" tool by modifying the Energy Pro software to essentially generate a deemed savings projection based upon very preliminary project inputs. This will enable program implementers and Technical Assistance providers to quickly establish a minimum savings projection for program participation, prior to requiring property owners to undertake a costly audit. It is not the intent to use the software program to calculate exact savings numbers or to base incentive amounts upon the predicted savings; it is rather to provide an efficient upfront analysis tool that will estimate a minimum assumed savings similar to how current IOU programs (e.g., ESAP & MFEER) utilize deemed savings.[27]

The software modifications needed to create the Energy Pro Lite module is expected to take six to eight weeks of development time. It will build upon work conducted with CEC staff and software developers to improve the software's applicability to multi-family buildings with State Energy Program funding. The BayREN will engage the key stakeholders including multifamily experts, software developers, CEC and CPUC in review and input during tool development via the MF HERCC HERS II tools task group and will ensure that savings assumptions conform to CPUC's requirements for energy savings analysis and reporting.

[27] This approach is essentially the same as the simplified Sim Calc Version of Energy Pro that PG&E funded for use in its Commercial New Construction programs. PG&E and SCE account representatives who do not have energy modeling training are using this version of Energy Pro Sim Calc with customers to generate preliminary savings estimates for Commercial New Construction program participation. That program works off of 40+ prototypes that are populated based upon occupancy, location, and square footage.

Project Tracking and Reporting

Project participation will be tracked in EUC Multifamily Portfolio Tracker. The data gathered in this system will allow for reporting on metrics achieved and detailed characteristics of the participating projects. The tool has the capability to track the following metrics:

- Name, contact, location of the property and property owners
- Building characteristics including size, units, system types and configurations
- Measures installed
- Projected energy savings (if measure list was developed through standard modeling software)
- Actual utility bills pre- and post- installation for common area and master meters, and any tenant meters, for which data authorization is obtained
- Actual savings over baseline

The data will be made available during regular reporting, and for evaluation in mid-cycle review. The BayREN will engage in on-going coordination with Energy Division to ensure appropriate data collection for EM&V needs.

Measure Feedback and Refinement

The tools will also provide a mechanism for feedback to refine measures. Combined with a sampling of extensive on-site verification and gathering of building metric data by the QA providers, this tracking mechanism will provide a robust dataset for analyzing and improving the understanding of multi-family upgrade measures. As needed, adjustments will be made based on the findings on the appropriate level of complexity of data input for the energy savings estimates of bundled measures.

ii. Audit Requirements

Pre-implementation audit required ___ Yes _X_ No

Post-implementation audit required ___ Yes _X_ No

iii. Audit Incentives

While the BayREN subprogram does not offer audit incentives, TA will refer property owners to other sources that may offer audit incentives. Investment grade audit costs can also be covered by multi-family financing.

BayREN02 Table 13: Post-implementation Audits

Levels at Which Program Related Audits Are Rebated or Funded	Who Receives the Rebate/Funding (Customer or Contractor)

None	N/A

k) Subprogram Quality Assurance Provisions

BayREN02 Table 14: Quality Assurance Provisions

QA Requirements	QA Sampling Rate (Indicate Pre/Post Sample)	QA Personnel Certification Requirements
Site visit — by program site surveyor	100% of bundled measure (pre)	HERS II MF Rater or equivalent qualified professionals with supplemental software training
QA on post-installation to verify installation and quality	100% of bundled measures (post)	See TA provider qualifications

For projects that apply for the Bundled Measure incentive, QA for pre- and post-installation will be conducted on-site and verify the (1) existence, (2) quantity/specifications, and (3) quality of installation. In addition to verifying and approving the completed work, this post-installation interface offers an opportunity to encourage property owners to continue with further upgrades. This will be particularly applicable in jurisdictions where the TA and QA are provided by the same entity, and a long-term upgrade plan was outlined as part of the TA.

Pre-Qualification, Assessment, and Verification Process

The project pre-qualification, assessment, and verification process involves a varying sequence of steps, depending on which programs are pursued. If, after a project receives BayREN Technical Assistance, it is directed to the PG&E EUC Multifamily Pathway, it would be required to follow PG&E's defined protocols for pre-qualification, assessment, and verification. The process outlined below applies to projects that receive BayREN TA, and subsequently pursues the BayREN Bundled Measures incentive.

The bundled measures incentive program does not rely on an extensive audit to generate measure recommendations and energy savings projections. The energy modeling "lite" software described in the software section will require data inputs that can be gathered by a property owner and not an on-site auditor.

- **Pre-qualification:** During the TA process, a project that decides to pursue the BayREN Bundled Measures incentive will receive a customized package of measures. The package defined by the TA provider is considered pre-qualified for the incentive, pending confirmation by the Site Surveyor.

- **Pre-installation Site Visit by Site Surveyor:** Once a bundle of measures is determined, a Site Surveyor will be dispatched to verify (1) the accuracy of the building characteristics that were used by the technical assistance providers to develop the recommended bundle, and (2) the feasibility and appropriateness of the recommended bundle.

- **Installation:** The property owner is responsible for carrying out installation of the defined bundle of measures. They are free to use any licensed contractor appropriate to the work. While property owners will be directed to a list of multi-family contractors who have received the central systems training offered under this program, they will not be limited to using only these as "participating contractors".

- **Post-installation QA Visit:** The post-installation quality assurance verifies (1) that the measures were installed, (2) the quantity and specifications of the installed measures, and (3) the quality of installation work. QA on projects with scopes that include measures to tighten building envelope or alter combustion appliances will include combustion safety testing following the CA MF HERCC combustion safety protocol addendum.

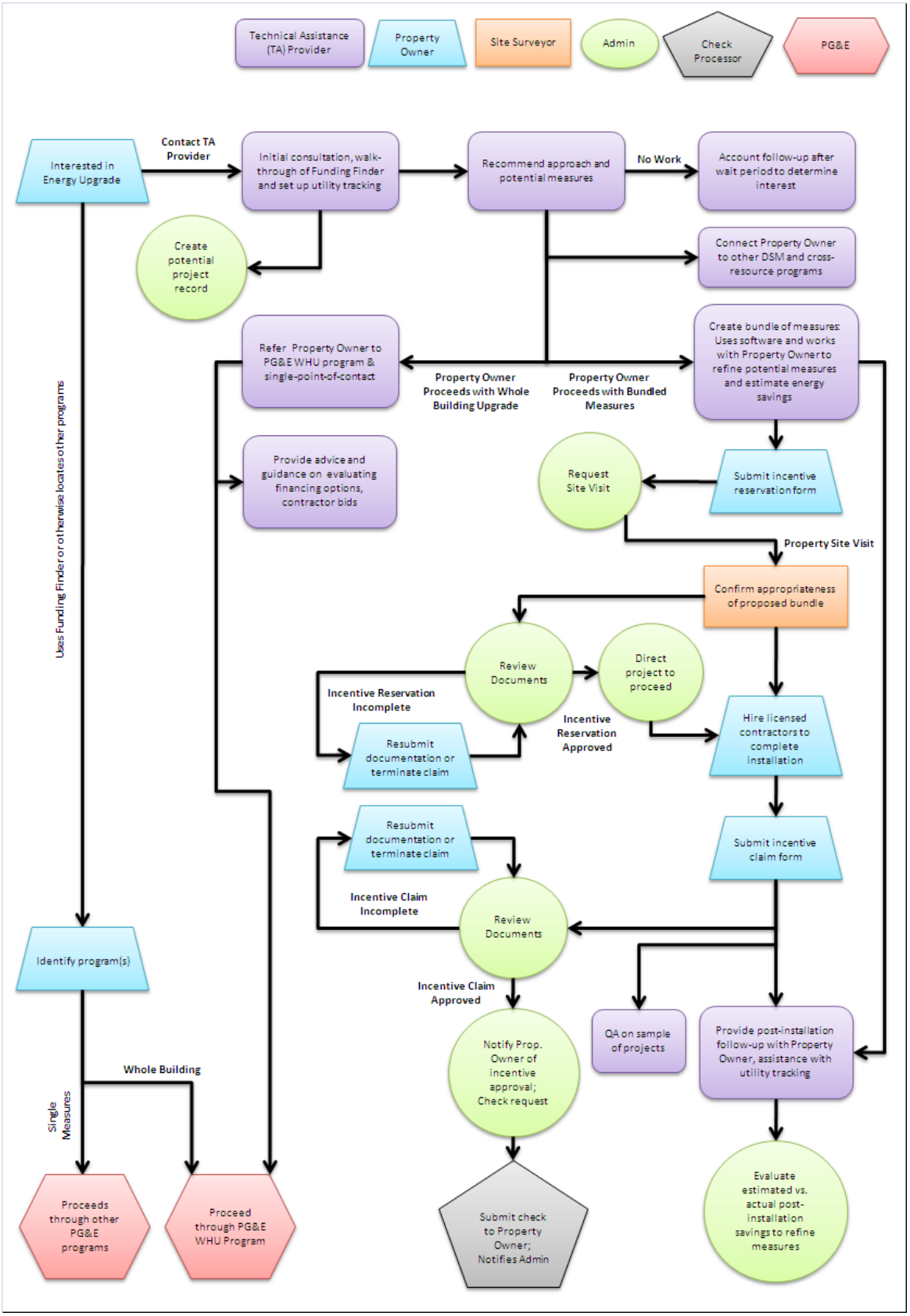
The same entities can provide technical assistance and conduct the pre- and/or post-installation on-site verification on the existing building condition and the installation work of the contractors who are selected by the property owner.

l) Subprogram Delivery Method and Measure Installation /Marketing or Training

No additional marketing or training will be provided for participants in the Bundled Measures program beyond that described above.

m) Subprogram Process Flow Chart

BayREN02 Figure 3: Subprogram Process Flow Chart



n) Cross-cutting Subprogram and Non-IOU Partner Coordination

BayREN02 Table 15: Cross-cutting Subprogram and Non-IOU Partner Coordination

Multi-Family Subprogram		
Other BayREN Subprograms	**Coordination Mechanism**	**Expected Frequency**
Codes & Standards	Coordination on compliance	Ongoing
Financing - Multi-Family Capital Advance Pilot (pending); PAYS® Financing Pilot	Project referral through TA	As appropriate, based on projects in TA
Other IOU/PUC Subprograms		
PG&E EUC-MF Path	Direct referral or referral through single point of contact	As appropriate, based on projects in TA; and quarterly or as needed
PG&E Single Point of Contact (including coordination with MFEER and ESAP)	Direct project referrals	As appropriate, based on projects in TA; and quarterly or as needed
PG&E Multi-Family Financing (TBD)	Project referral through TA	As appropriate, based on projects in TA
PG&E Local Government Partnership Programs	Project referrals, meetings, other regular communication	As appropriate, based on projects in TA; and quarterly or as needed
Coordination Partners Outside CPUC (non-REN and non-IOU)		
Government weatherization assistance programs	Direct referral for TA recipients	As appropriate, based on projects in TA
Municipal utility programs	Project referrals, meetings, other regular communication	As appropriate, based on projects in TA; and quarterly or as needed
Community Choice Aggregation (Marin Energy Authority) energy efficiency programs	Project referrals, meetings, other regular communication	As appropriate, based on projects in TA; and quarterly or as needed
Non-BayREN Financing Programs	Project referrals, meetings, other regular communication	Quarterly or as needed
Local Trade Associations	Meetings, other regular communication	Quarterly or as needed; as needed as part of outreach efforts
Green Building Labeling Organizations	Project referrals, meetings, other regular communication	As needed as part of outreach efforts

o) Logic Model

Logic Model provided in Attachment 1.

The logic informing the BayREN Comprehensive Multi-Family Subprogram design is aligned with recommendations from industry stakeholders and best practices from existing programs. During 2010–2011, the Home Energy Retrofit Coordinating Committee's Multi-family Subcommittee was convened to gather the insights and recommendations from industry experts and professionals.

This subprogram's design largely reflects the findings from that stakeholder process, which have been compiled in the report Improving California's Multi-family Buildings: Opportunities and Recommendations for Green Retrofit & Rehab programs: Findings from the Multi-family Subcommittee of the California Home Energy Retrofit Coordinating Committee dated April 11, 2011.

The subprogram logic draws from the experience of local governments in administering pilot programs and built multi-family upgrade infrastructure through Energy Upgrade California. During this time, local governments provided outreach, customized technical assistance, rater training, and software development. The local programs were summarized in the report *Recommendations for Energy Upgrade California in the Bay Area* dated April 13, 2011.

Additionally, stakeholder input has been gathered by the local governments of Berkeley, Oakland, and Emeryville through a grant to study the multi-family sector and its barriers, particularly split incentive. Their research included a survey of local government actions and policy options and compiled feedback from owners and tenants of multi-family properties. A report summarizing the policy options was published in October 2011 titled *Increasing Energy Efficiency in Existing Multi-family Buildings*.

The findings across these publications identify the components of this subprogram as key strategies to removing barriers to multi-family upgrades. As describe above, the desired outcome of the BayREN Comprehensive Multi-Family Subprogram is to address market barriers by:

- Providing customized technical assistance to overcome the diversity of building types and energy usage and billing configurations, and providing assistance with analyzing potential upgrade measures;
- Providing guidance through the complicated initial assessment of upgrade potential that could lead to a whole-building upgrade approach, and referring projects to existing utility programs;
- Providing a long-term energy upgrade and cash flow plan that fits with the building's capital improvement plan;
- Providing a viable alternative to the whole-building performance-based incentive that is less capital intensive yet customized;

- Training trades that represent a large opportunity for energy savings in multi-family buildings, and are underserved by single-family training initiatives
- Creating a mechanism for data feedback on the actual performance of implemented upgrade measures to refine the accuracy of energy savings estimates used in multi-family energy modeling and a better understanding of highest opportunity measures

11. Additional Subprogram Information

a) Advancing Strategic Plan Goals and Objectives

The Strategic Plan states that non-low-income multi-family units were not specifically addressed in the first Plan and recognizes that the market must be addressed in future iterations of the Plan (s2-p11). In the BayREN region, with high concentrations of urban areas, this market composes a significantly larger proportion of the residential sector than the statewide average.

BayREN02 Figure 4: Strategic Plan Alignment

BayREN Comprehensive Multi-Family Subprogram Alignment with CA Long-Term Energy Efficiency Strategic Plan		
Residential		
Strategy Number	**Strategy**	**BayREN Multi-Family Subprogram Strategy**
2-2	Promote effective decision making to create widespread demand for energy efficiency measures	The TA is designed to provide multi-family property owners with the expertise and analytical tools needed to make an informed decision
Low Income		
Strategy Number	**Strategy**	**BayREN Multi-Family Subprogram Strategy**
2-1	Increase collaboration and leveraging of other low-income programs and services	The TA will refer eligible and interested projects to IOU and other low-income specific programs
2-4	Identifying segmented concentrations of customers to improve delivery	The strategic development for targeted outreach will include a sector study of the Bay Area multi-family sector
Local Government		
Strategy Number	**Strategy**	**BayREN Multi-Family Subprogram Strategy**
4-4	Develop local projects that integrate energy efficiency, DSM, and water/wastewater end uses	Projects that integrate measures in all categories are an intended outcome of the comprehensive TA, which provides non-program-specific advice and connection to a wide of an array of energy efficiency, DSM, and non-energy resources and programs.
5-1	Create a menu of products, services, approved technologies and implementation channels to guide local governments that currently lack deep expertise in energy efficiency	The utility tracking and measure energy saving refinement process will result in a better understanding of multi-family measures
5-2	Develop model approaches to assist local governments participating in regional coordinated efforts for energy efficiency, DSM, renewables, green buildings, and zoning	The BayREN programs will model several approaches for local governments to coordinate regionally around energy efficiency, DSM, renewable, and green building

b) Integration

i. Integrated/coordinated Demand Side Management

The program's targeted outreach and technical assistance are designed specifically to promote customer education and awareness of existing DSM programs and to support participation in the most appropriate DSM options.

BayREN02 Table 16: Non-Energy Efficiency Subprogram Information

Comprehensive Multi-Family Subprogram		
Non-Energy Efficiency Subprogram	**Budget**	**Rationale and General Approach for Integrating Across Resource Types**
California Solar Initiative		Refer eligible and interested projects
Multi-Family Affordable Solar Housing (if made available)		Refer eligible and interested projects
Automated Benchmarking Service		Set up interested projects during utility analysis service of technical assistance

ii. Integration across resource types

BayREN02 Figure 5: Integration of Cross-Resource DSM programs

Non-Energy Efficiency Programs — across resource types	
Non-Energy Programs	**Rationale and General Approach for Integrating Across Resource Types**
Water utility rebates	Leverage water utility rebates for hot water energy measures; refer to water utilities for other eligible measures
Indoor air quality programs	Refer interested projects, assist with explanation of program and indoor air quality measures
Green labeling programs	Refer to green labeling programs (GreenPoint Rated, LEED-EBOM, LEED-NC), assist with preliminary checklists review
Third-party green product labeling programs	Inform interested participants about green product directories and third-party labels for identifying and looking for environmentally preferable attributes

c) Leveraging of Resources

The program will leverage infrastructure that was developed through ARRA funding, including:

- Outreach sources:

- — Market analysis methodology
- — Established local association relationships
- Technical assistance:
- — Design of effective technical assistance services
- — Funding Finder and Compass Portfolio Tracker software tools
- — Trained raters/auditors (TBD)

The subprogram will also leverage other sources of funding:

- ARRA Better Buildings Program funding in 2013
- Local public agency funding for property owner green certification stipends

d) Trials/ Pilots

The BayREN Comprehensive Multi-Family Subprogram will not offer any trials or pilots.

e) Knowledge Transfer

BayREN staff and members will regularly track challenges, lessons learned, and necessary adjustments for all technical, administrative, and marketing aspects of program implementation. These challenges will be transmitted to local government partners operating similar programs (e.g., County of Los Angeles) through regular meetings of local government forums (such as LGSEC, Local Government Commission, Urban Sustainability Directors Network, etc.), regional NGO and institutional partners (e.g., Joint Venture Silicon Valley, etc.), and through program updates provided to Commission and program partners.

12. Market Transformation Information:

a) Market Transformation Objectives

The market transformation objectives of the BayREN Comprehensive Multi-Family Subprogram are the following:

- Increase general knowledge and awareness amongst property owners and managers of energy efficiency practices and benefits, and encourage a long-term transition toward energy efficient property improvements
- Raise awareness of energy efficiency among relevant professional industries, including central system contractors, industry associations, and other multi-family service providers
- Streamline coordination of DSM programs across IOUs, local governments, and other organizations

b) Market Description

Market actors include:

- **General Contractors —** Oversee delivery of upgrades, other installation work; May perform direct installation or subcontract to specialty contractors; Not qualified or trained by BayREN Comprehensive Multi-Family Subprogram.
- **Specialty Contractors —** Have specialty license in central HVAC or DHW. Training will be available, but not required, to specialty contractors performing work under the BayREN Comprehensive Multi-Family Subprogram.
- **Green Building Professionals —** Building professionals, including general and specialty contractors, who are trained in delivering or assessing technical work that incorporates additional green building concerns beyond energy efficiency, such as outdoor water efficiency, indoor air quality, resource conservation, and low-impact development/site water management. Serve as private contractors or on behalf of green building rating and incentive programs.
- **Multi-family Property Owners** (or ownership entities and relevant asset managers).
- **Multi-family Property Managers** (or management companies)- Management responsibilities vary widely. In some cases, upgrades/investment decisions are assessed by the management entity that will make recommendations to the property owner. Proper ongoing operations are also important to realizing the potential energy savings from upgrades.
- **IOUs —** Administer energy efficiency incentive programs, including Energy Upgrade California, single-measure multi-family energy efficiency rebates, and low-income programs.
- **Local Governments —** Set greenhouse gas emissions, energy savings, and other sustainability goals and implement programs to meet those goals. Support IOU energy efficiency programs through professional and customer outreach, coordination amongst local actors, enforcement of code. Pilot energy efficiency programs.
- **Other Energy Efficiency Programs —** IOU third party and local government partnership programs that implement direct install, weatherization, and other incentive programs.
- **Non-Energy Efficiency and Conservation Programs —** Water utility, local government, green building, and other programs that promote and incent resource conservation, air quality, green products, and other non-energy efficiency efforts.

- **Product Manufacturers and Suppliers —** These actors affect behavior of their clients through the services they offer and products they provide.
- **Financing Sources —** Both public and private sources of development capital influence decisions made by those receiving their funds through prerequisites or preferential terms for energy efficiency or other green building features.

c) Market Characterization and Assessment

The market barriers associated with the multi-family energy upgrades are described above in the Subprogram Description and Theory. More in-depth discussion may be found in the previous reference report *Improving California's Multi-family Buildings: Opportunities and Recommendations for Green Retrofit & Rehab programs: Findings from the Multi-family Sub-Committee of the California Home Energy Retrofit Coordinating Committee* dated April 11, 2011.

Programs currently serving the multi-family market have been unable to overcome barriers to widespread adoption of whole-building upgrades. Property owners require significant hand-holding to pursue whole-building upgrades. While this level of assistance is effective at serving a few properties, additional infrastructure development is needed to transform the market. The BayREN Comprehensive Multi-Family Subprogram provides customized assistance at a regionalized, wider scale, while developing lasting infrastructure through contractor training, software enhancements to increase ease of use, and piloting an incentive approach that is designed in response to the needs expressed by the market.

d) Proposed Interventions

Proposed interventions have been described throughout this program description. Along with the Financing Subprogram (BayREN04), all proposed interventions are focused on reducing the technical, cost, and process barriers toward making Energy Upgrade California a successful program. A summary is provided in the table below.

BayREN02 Figure 4: Market Transformation Barriers and Interventions

Barrier	Proposed Intervention
Complexity of multi-family upgrades and programs	Customized technical assistance that generates a recommended approach, measure list (if bundled measures) and connection to *appropriate* programs and resources
Upgrade cost barriers	Bundled measure program option that eliminates up-front audit costs and provides an incentive designed for moderate and customized upgrade scopes, financing (BayREN04)
Central systems contractor energy efficient design and operations training gap	Targeted training for multi-family-specific trades: central HVAC and DHW

e) Program Logic Model: See Program Logic Model in Attachment 1

f) Market Transformation Indicators (MTIs) and Evaluation Plans

Resolution E-485 (December 2, 2010) Appendix B, lists adopted Market Transformation Indicators for the 2010–2012 Energy Efficiency Portfolio. To ensure consistency with adopted Market Transformation Indicators and Program Evaluation strategies, BayREN proposes the following Market Transformation Indicator (based upon the Adopted Whole House Retrofit MTIs, adapted for multi-family properties, and PG&E's 2013–2014 EUC-MF Subprogram PIP):

- Whole House MTI 2: The proportion of multi-family properties that elect to perform comprehensive energy upgrades. Metric Type 3.

Program evaluation will be coordinated with EM&V activities conducted on behalf of the Commission and PG&E. BayREN members will participate as possible in all data collection and interpretation activities, as directed by the Commission.

13. Additional information as required by Commission decision or ruling or as needed:

Subprogram EM&V Plans:

The BayREN, in close consultation with the CPUC Energy Division, will submit a detailed EM&V plan for program evaluation. The EM&V plan will include plans for continuously improving the program offering. The evaluation efforts will provide the process and strategies for advancing the program's management of key issues including those identified in the description of the Multi-family Subprogram's objectives and theory above, and restated below.

- **Targeted Outreach.** Properly targeted outreach will bring in more multifamily sector participants to Energy Upgrade programs.
- **Integrated Technical Assistance.** Integrated technical assistance can overcome the barrier of a complex financing and incentive landscape, and lead to more appropriate program participation.
- **Incentives.** Incentives for energy efficiency measures will increase program participation.
- **Energy Modeling "Lite".** A lightweight approach to energy modeling is appropriate and elimination of an up-front extensive audit will encourage and facilitate participation.
- **Financing.** The availability of a low-interest financing product offered in direct conjunction with incentives and other program services will encourage participation and depth of energy measures.

The BayREN Multi-Family Subprogram will participate in any CPUC mid-cycle workshop to report on program progress in cooperation with all implementers of multi-family pilots during 2013 and 2014. The feedback and outcomes from the workshop will inform revisions to program design.

The BayREN will be prepared to provide project-level and programmatic data during the mid-cycle review. Project metrics will be tracked using the EUC Multi-Family Compass Portfolio Tracker developed under ARRA and described in the Software section of this Plan. Additional EM&V data will be collected and provided in formats specified by the Energy Division.

IV. SUBPROGRAM BAYREN03

1. Subprogram Name: BayREN Codes and Standards Program

2. Subprogram ID number: BAYREN03

3. Type of Subprogram: Regional Energy Network

4. Market sector or segment that this subprogram is designed to serve:

Residential and non-residential; applies to all occupancies where local jurisdictions are responsible for enforcing Title 24 Part 6 CA Energy Standards and Title 20 Appliance Standards.

a) _X_ Residential

Including Low Income? _X_ Yes __ No

Including Moderate Income? _X_ Yes __ No

Including or specifically Multi-family buildings _X_ Yes __ No

Including or specifically Rental units? _X_ Yes __ No

b) _X_ Commercial (List applicable NAIC codes: _____)

- All NAIC codes for Commercial Buildings

c) _X_ Industrial (List applicable NAIC codes: _____)

- All NAIC codes for Industrial Buildings

d) _X_ Agricultural (List applicable NAIC codes: _____)

- All NAIC codes for Agricultural Buildings

5. Is this subprogram primarily a:

a) Non-resource program __ Yes _X_ No

b) Resource acquisition program _X_ Yes __ No

c) Market Transformation Program _X_ Yes __ No

6. Indicate the primary intervention strategies:

a) Upstream __X_ Yes __ No

b) Midstream _X__ Yes __ No

c) Downstream _X_ Yes ___ No

d) Direct Install ___ Yes _X_ No

e) Non Resource__ Yes __X_ No

7. Projected Subprogram Total Resource Cost (TRC) and Program Administrator Cost (PAC)

TRC 1.05 PAC 3.96

8. Projected Subprogram Budget

BayREN03 Table 1: Projected Subprogram Budget, by Calendar Year[28]

	Program Year		
BAYREN03 Codes and Standards	**2013**	**2014**	**Total**
Admin ($)	$167,450	$167,450	$334,900
General Overhead ($)			
Incentives ($)			
Direct Install Non-Incentives ($)	$1,018,929	$758,571	$1,777,500
Marketing & Outreach ($)	$145,800	$145,800	$291,600
Education & Training($)	$459,643	$485,357	$945,000
Total Budget	$1,791,821	$1,557,179	$3,349,000

9. Subprogram Description, Objectives and Theory

a) Subprogram Description and Theory

Energy codes and standards help California meet its ambitious goals for energy efficiency through strong and cost-effective energy efficiency regulations, and by supporting local reach codes that exceed statewide minimum requirements. Similarly, state and local climate, water, and green building goals are reliant on the enactment of sound regulations that push the market in the direction of supporting a more sustainable future. However, codes and standards only deliver the expected results if they are thoroughly understood by local authorities, developers, designers, and builders, and if they are properly and consistently enforced. In recent years, the IOUs have increasingly relied on codes and standards to achieve their energy savings goals; codes and standards contributed 19% of

[28] See BayREN01, Table 1- Projected Subprogram Budget, by Calendar Year for category definitions.

portfolio energy savings in 2010–12. Although these programs undergo measurement and verification to protect ratepayer investments, they have not provided information on which measures are working successfully in a given jurisdiction, or provided data that could support improvements.

BayREN proposes an integrated, measurement-driven management process for enhancing energy code compliance. We will establish code compliance baselines for jurisdictions in the 9-County Bay Area, utilize baseline data to inform and target training in order to institutionalize regular actionable feedback to local officials by tracking compliance over time, and to inform efforts to standardize reach codes in the region based on observed best practices. The effort is modeled after private sector tools such as Six Sigma and Total Quality Management, which establish performance benchmarks in order to inform and drive efforts for continuous improvement. The BayREN Codes and Standards group will leverage the expertise and direct alliances among its local governments in order to:

- Enhance the enforcement of energy, water, and green building codes
- Establish and institutionalize measurement of code compliance
- Share expertise and best practices on development of reach codes and work to align policies and enforcement across jurisdictions
- Prepare to implement future code updates

BayREN proposes to meet these milestones and goals by establishing and supporting compliance quality assurance programs at individual jurisdictions, developing and delivering local trainings that target data-driven priorities for enhancing enforcement, and developing forums for sharing best practices, resources, and tools. The theory underlying the BayREN Codes and Standards Subprogram is that the most effective way for the Commission to attain the expected goals in this area is to enable those with the greatest expertise and core competency to manage and implement the appropriate program activities. BayREN can play a primary or supportive role in the following areas:

Compliance and Enforcement (Lead)

Local governments, not utilities, are responsible for enforcing code compliance. Local government staff have the relationships and understanding of internal processes to engage with policymakers and enforcement personnel and to identify and overcome institutional barriers where external parties, including IOUs, cannot. The combination of financial resources via the BayREN and fresh strategies for leveraging the internal capacities of local agencies are essential to establishing performance measurement and supporting ongoing improvement in codes and standards enforcement. Key elements best accomplished within the local governments include needs assessment, peer-to-peer training, buy-in from departmental and elected leaders, and interaction with local builders and contractors.

BayREN's position is that solutions informed by field measurements will increase the quality of inspections through better technology, training, and new approaches to institutional problems in the inspection process. By delivering services through local

governments, BayREN will support building departments and inspectors with key training and technical and verification resources to enforce the code more effectively. This, in turn, will enhance the training of contractors and other essential stakeholders in the building industry.

Reach Codes (Lead)

A number of BayREN members have been developing and passing reach codes in their respective jurisdictions for years. They possess the knowledge not only of the rules governing code development, but also of the stakeholder process necessary to achieve the political support to have codes adopted. Among the activities listed in PG&E's C&S PIP for 2013–14 are: providing a "road map" of policy guidelines for adopting a reach code; providing a "reach code ordinance template"; facilitating public workshops and presentations to interested stakeholders; and working with market actors to conduct "outreach to local governments" regarding code assistance. It is BayREN's position that these and related activities would be more effectively conducted by the pool of experts within the local governments on a peer-to-peer basis. With resources to establish a BayREN support system that could serve all nine counties, the potential for adoption of new, more consistent codes would be greatly increased. This regional approach would serve the interests of contractors, industry stakeholders, and policymakers alike. The model could be extended to include adjoining counties and also be replicated in regions throughout the state.

Advocacy for Statewide Codes and Standards (Support)

In the development of codes and standards, there are many levels of interaction, and each party has strengths to contribute. While members of BayREN are active in some of the key agencies, organizations,[29] and decision making processes at the national and state level—our greatest expertise and influence is at the local level. Emphasizing core strengths of local governments, IOUs, state agencies, and other stakeholders will be the best strategy for advancing the adoption of effective regulations going forward. Therefore, we propose a model that leverages the strengths of local governments in advocacy work for stricter Codes and Standards that will help jurisdictions meet their own sustainability goals, which ultimately contribute to the State's goals. Contributions local governments would make include: documenting and sharing the results of reach code implementation from all BayREN jurisdictions where such codes are in place; presenting case studies of any emerging technology efforts being carried out in the region; participating in stakeholder meetings where new codes and standards opportunities are being assessed; and using local administrative incentives to pilot new reach codes and enforcement approaches.

Local jurisdictions have successfully used local administrative incentives to pilot new code approaches in the recent past. Prior to adopting reach codes, several Bay Area jurisdictions offered priority in permitting queues, increased floor area ratio, or other incentives in return for voluntary commitment to obtain green building certifications. Obtaining commitment that a project would, for example, earn GreenPoint Rated certification yielded

[29] See BayREN03 Table 15.

a specific code compliance margin (typically 15%), while commitment to LEED Gold yielded commissioning and associated documentation. Offering voluntary priority permitting for Net Zero Energy Building certification, or similar, would provide the jurisdiction experience with a fundamentally new approach to energy codes. A Net Zero Energy standard is met by verifying the building is designed and built (and ideally operated) to achieve a fixed energy use intensity (total kWh or kBtu per square foot per year consumed by the building), rather than incremental improvement relative to current code.

Market Barriers.

The following represent the chief barriers to effective code compliance and enforcement that BayREN will address:

- **Gaps in understanding extent of code compliance.** There is a knowledge/research gap in the industry. Energy code compliance rates are known to be low; however, an accurate baseline has not been established. Code compliance studies are cost prohibitive to individual local governments, requiring staff time for study shadowing as well as study design and execution. Concerns about repercussions if a lack of compliance is documented make baselining/assessment activities a low priority for code officials. Therefore, it is difficult to know how effective or efficient code enforcement is across jurisdictions, code sections (e.g., specific energy measures vs. plumbing vs. green codes), and enforcement agencies (zoning, planning, inspections).

- **Patchwork of standards and their interpretation.** Differences in energy code permit processing, builder sophistication and compliance, building code amendments, and application forms/processes across jurisdictions yield a patchwork of standards and—still more problematic—inconsistent interpretation. California green building codes are new, and enforcement officials are at the front end of a steep learning curve. Issues like commissioning, as well as new technologies like demand response automation, will require education and experience to master. Complex requirements with no local and timely data to inform action tend to encourage resistance and non-compliance, thereby compromising intended savings.

- **Priority given to life-safety issues.** Building code officials are the linchpin for ensuring compliance with Title 24 and Title 20 standards, but must deliver inspection and plan review services within the political limitations of cost-recovery fee structures. Given limited time and resources, their first priority is appropriately ensuring life-safety and fire standards are met.

- **Lack of effective training.** Training offerings for energy efficiency, water efficiency, and green building codes are scarce, not customized to the specific audiences (e.g., topics that would best aid local enforcement efforts), and are not offered at times and locations conducive to broad engagement by code enforcement agencies.

- **Lack of consistent sharing of best practices and policies.** Elected and executive level government officials have existing peer-to-peer networks for sharing best practices, but regional coordination of energy/water/green building policies and technological opportunities is infrequent. Peer-to-peer networks could benefit from increased attention on shared polices and implementation of best practices with regard to energy/green/water. While senior building officials have organizations such as CALBO, local staff have limited opportunities to learn from one another, and sharing opportunities are limited.

Actions that Address These Barriers:

The three categories listed below include activities that address a number of barriers simultaneously or at some point in a continuum. For example, baseline metrics and tracking will inform methods of improving compliance and will also support training efforts. Many of the gaps, on the other hand, will be addressed with targeted, data-driven training and/or policy support and advocacy activities. The BayREN activities outlined below will focus on permitted buildings. BayREN will investigate unpermitted buildings, however, some building departments consider this a sensitive area. Therefore BayREN will attempt to develop a workable methodology through consultation with each county building inspection department. If a workable methodology is developed, BayREN will then proceed with an investigation of the energy efficiency potential.

Compliance Baseline and Tracking

Quantitative metrics are essential to improving code enforcement. To efficiently use the extremely limited time and resources dedicated to enforcing energy-related codes, it is critical to raise the baseline level of compliance for common measures and to enhance inspector efficiency. We manage what we measure. Data-driven training and quality assurance programs are proven tools for enhancing productivity in many industries, but have yet to be applied to energy code enforcement. Local governments have direct knowledge of the institutional connections that are essential to achieving higher levels of compliance in code enforcement and overcoming the barriers and challenges to increased compliance. For the purposes of this work, BayREN defines compliance as completed construction projects conforming to energy codes. BayREN's Compliance and Tracking component will include:

- Compliance audits, including field testing, to establish baselines and improve energy code compliance in the 9-County Bay Area. The compliance baseline will be developed according to the following methodology:

- In each county, BayREN will conduct focus groups with building inspectors and contractors.
- BayREN will develop a survey for inspectors and another for contractors.
- The surveys will be administered in each county.
- Results of the focus groups and surveys will guide the development of the compliance baseline methodology.
- BayREN will review the current CEC and IOU compliance audit tool, and if needed, modify the audit in consultation with the CEC and IOUs.
- BayREN staff and consultants will receive training to perform on-site compliance audits.
- In each county, BayREN will select representative projects and perform construction site compliance audits.
- BayREN will analyze results and develop a tool to estimate energy savings potential.

- Regular compliance checks to institutionalize quality assurance as a fundamental practice in enforcement agency management. Provide code compliance assessments to staff as tools to study and improve contractor performance first and foremost, and not as a critique of the inspector's performance.

- Utilization of networks to access compliance officials to develop compliance metrics and establish compliance baseline conditions in order to prioritize future training and technical support, as well as better attribute energy savings to improved code enforcement.

- Establish a steering committee or network composed of local officials to engage local staff, drive buy-in, and ensure metrics are meaningful within the context of their duties.

- Focus on value-add propositions (such as on-site training, new managerial tools, and more efficient compliance checks) in return for access and establishment of reliable local baselines of compliance with energy/water/green building codes and policies.

- Use on-site verification as a mechanism to determine levels of compliance and knowledge. Use assessments to design trainings to improve the performance of both contractors and inspectors.

- As local governments, we are particularly attuned to the political landscape in which a measurement system must be designed. It is critical that the QA program be sensitive to agency political reality, recognize that agency resources are limited, and be designed to enhance compliance without penalizing jurisdictions that can most benefit from improved outcomes.

Education and Training

As local governments, we can provide trainings that will be well received by building and related departments and staff. We can also design trainings (informed by metrics) to increase enforcement and compliance with energy/water/green building codes and policies using a comprehensive approach. To optimize compliance, all market actors—designers, builders, inspectors, state and local regulators, and IOUs—must understand current performance levels and have effective feedback to motivate improvement. Some identified needs are:

- Begin to provide quality assurance for code enforcement by using sampling methods to audit compliance throughout the process—from application/plan check to site inspection and certificate of occupancy or final permit approval.
- Provide quarterly regional trainings that address basics of compliance and enforcement to a wide audience. Invite contractors and other outside stakeholders as appropriate. Include field-training exercises.
- Provide monthly local trainings to line and field staff on energy codes, technologies, and implementation of best practices. Focus trainings on measures and enforcement practices with the greatest potential for improvement and energy savings (such as HVAC, lighting, plumbing/hot water, and commissioning). Hold trainings in locations and at times that dovetail with staff training hours in order to minimize travel and increase participation.
- Provide monthly local specialized workshops targeting the responsibilities of specialist staff, such as plumbing and electrical inspectors, to verify energy and water efficiency.
- Include subcontracted third-party verification entities for training assistance where practical (building inspection consultants, green building raters, etc.).
- Deliver training addressing the water-energy nexus in partnership with water utilities (e.g., trainings on solar hot water, efficient plumbing fixtures and fittings, and irrigation systems commissioning).
- Train building permit staff in current energy efficiency and green building techniques, technologies, regulations, and incentive programs such as the PG&E EUC-SF and Flex Package, so they can be frontline representatives for property owners seeking to remodel, upgrade, or build new structures.
- Offer co-training/certification programs and industry update workshops to provide an opportunity for building code officials, planners, engineers, building trade professionals, and technology vendors to learn together and share knowledge.

- Provide co-training opportunities for building code officials, planners, engineers, building trade professionals, technology vendors, and contractors to encourage better understanding of the needs of the other parties, facilitate effective working relationships, and find opportunities to save time and expedite projects.
- Engage with the California Contractors State Licensing Board to notify contractors about the new quality assurance efforts, training opportunities, and enhanced enforcement campaign. Widespread understanding that energy codes will receive greater enforcement attention is the most powerful tool available to increase compliance.
- A regional body of elected officials and local government staff, sophisticated in energy efficiency and green building principles and measures, can be a highly-effective communications resource across the greater constituencies of the Bay Area. These actors have unique opportunities for sharing key ideas and benefits with the public, whether in public meetings, civic events, or during the regular course of business. This model also promotes better policymaking because implementation is considered during adoption.
- Establish regular opportunities to educate and train municipal staff at the local site. Provide workshops around the Bay Area, such that each jurisdiction can attend within a 20 minute commute or less.
- Provide ongoing educational programs for government elected officials on energy policies, regulations, and funding opportunities.
- As codes change, it is critical to ensure that enforcement staff are expert in the specifics of such changes. However, the pace of change in energy and green building codes is much more dramatic than in other building standards. Peer-to-peer training and forums for professional exchange among inspection staff will help leverage and reinforce existing training resources for contractors and design professionals. Since the most costly system is one that must be installed multiple times, enhancing the perception of inspector priority on energy codes will help motivate the industry to understand and comply with requirements.

Policy Support and Advocacy

The Bay Area is home to some of the most innovative energy policies in the country, and the BayREN will utilize its collective expertise to propagate regional efforts for better and more consistent code enforcement and standards development. Local governments can learn more from one another than is often possible from third-party consultants.

- Provide "train the trainer" meetings to regional leaders to enable them to deliver best practices and expert content at trainings and site visits provided to peer agencies
- Leverage, evolve, and promote existing policy resources and toolkits
- Support a public agency forum and convene quarterly forums for sharing best practices such as interagency coordination or adoption of building labeling and disclosure policies
- Engage CEC and CalBO in alignment of interpretation of state codes by local officials (e.g., installation of insulation triggers a permit and inspection in some communities, but not others)
- Coordinate and engage in the code development processes, such as Title 24 and Title 20 energy standards, CALGreen, and IgCC
- Share experience and lessons learned in development of reach codes with local government peers
- Advocate for statewide codes and standards by presenting results of regional reach codes

b) Subprogram Energy and Demand Objectives

BayREN03 Table 2: Projected Subprogram Net Energy and Demand Impacts, by Calendar Year

	Program Years		
	2013	**2014**	**Total**
Codes and Standards Program			
GWh	2.67	4.96	7.63
Peak MW	0.33	0.62	0.95
Therms (millions)	0.07	0.12	0.19

c) Program Non-Energy Objectives

i. SMART non-energy objectives of the program

Compliance Baseline & Tracking:

- During the period 2013–2014, all nine counties will establish a compliance baseline
- During the period 2013–2014, develop a regional plan for measurement-driven energy code compliance quality assurance

Code Enforcement Education & Training

- During the period 2013–2014, 71 workshops will be conducted throughout the nine Bay Area counties. Metric Type 2b.

- During the period 2013–2014, 7 professional forums will be conducted within the nine Bay Area counties. Metric Type 2b.
- Establish local government marketing and outreach coordinators in all 9 counties.

Reach Codes (Local Adoption and Implementation)

- During the period 2013–2014, all 9 counties will receive updated model policy tools for adopting reach codes.
- During the period 2013–2014, provide four "train the trainer" meetings to engage regional leaders to deliver best practices and expert content at trainings and site visits provided to peer agencies.

Policy Support and Advocacy (Statewide and Reach Codes)

- During the period 2013–2014 engage in stakeholder processes with the CEC, Building Standards Commission, Housing and Community Development, and other state agencies responsible for codes and standards development.

ii. See above.

iii. Relevant baseline data

Compliance Baseline & Tracking

Compliance baseline and savings potential from compliance enhancement are informed by PG&E 2013–2014 Codes and Standards Program Implementation Plan, with supporting details from the Commission's Energy Division Proposal for 2013–2014 Energy Efficiency Goals, and the potential study embedded therein.

Local compliance baselines do not exist but will be developed through this program.

Code enforcement education and training

Objectives for training were drawn from prior work in Alameda, San Francisco, and Sonoma Counties and scaled regionally.

Reach Codes, & Policy Support and Advocacy

In 2004, Bay Area local governments formed a Public Agency Council to coordinate the development of green building codes. This policy forum was hosted by Build It Green and met quarterly through 2010, and numerous local governments participated over the six years. In 2010–2011, the Bay Area Climate Collaborative—a public-private consortium including 16 major regional jurisdictions and 25 corporate and non-profit partners—assessed the status of local green building code adoption, and provided recommendations for consistent reach codes informed by local experience and the then-new California Green Building Standards.

iv. Quantitative program targets

BayREN03 Table 3: Quantitative Program Targets

Target	2013	2014
Compliance Baseline and Tracking (With improved metrics for compliance tracking)	9 counties	9 counties
Code Enforcement Education and Training	33 trainings/ 750 trainees	38 trainings/ 900 trainees
Policy Support and Advocacy	150 forum participants	200 forum participants

d) Cost-Effectiveness/Market Need:

There is substantial precedent recognizing the value of enforcement and verification as sources of energy savings. Codes and standards have been recognized in ratepayer funded portfolios, and—for example—contributed to 19% of projected IOU 2010–2012 portfolio energy (kWh) savings.[30] We propose that savings attributable to the BayREN Codes and Standards Subprogram be a function of the documented change in code compliance from baseline to the end of the program delivery period.

Cost-effectiveness calculations have been substantially informed by the methodology applied by IOU Codes and Standards enhancement programs.

The "Addendum to the 2011 Potential Study in Support of the [Commission Staff]'s Goals Proposal" suggested a statewide compliance rate for post-2005 Title 24 building standards of 83%, and a goal of achieving 100% compliance in 6 years, or two code cycles. The gross energy savings target for code compliance enhancement in PG&E's 2013–2014 Codes and Standards Implementation Plan (42 GWh) is significantly less than the savings required to be on track to meet the Commission's goals (125.9 GWh) within two code cycles.

We propose increasing ratepayer investment in codes and standards within the BayREN in order to make substantial progress toward the Commission's goal of 100% compliance. More fundamentally, we propose to engage local governments in an integrated, measurement-driven management process, which will be necessary to achieve the Commission's goal.

For further justification of market need, refer to Quantec (2007), (http://www.energycodes.gov/publications/research/documents/codes/ca_codes_standards_adopt_noncompliance.pdf), and to the decision establishing this proposal opportunity.

e) Measure Savings/ Work Papers

i. Indicate data source for savings estimates for program measures (DEER, custom measures, etc.).

[30] http://docs.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/166830-10.htm#P1907_425870

To determine the BayREN Codes & Standards Subprogram target energy savings, a top-down approach was utilized to derive these figures based on PG&E net projected savings for their 2013–2014 C&S Program as summarized in Table 6 of the PG&E "2013–2014 Energy Efficiency Portfolio Statewide Program Implementation Plan Codes and Standards." For this approach, we first determined the percentage of total PG&E customer population within the BayREN region, which provided weighted target savings for the BayREN region as compared to PG&E's complete service territory estimates. Once we established the customer percentage break-out for the BayREN region, we extracted the PG&E C&S target savings from Table 6, as mentioned above for PG&E's Compliance Improvement and Reach Codes subprograms, and applied the BayREN population factor to these energy savings goals.

Because the BayREN proposed C&S energy savings were determined as a specific percentage of the PG&E C&S efforts, the BayREN E3 calculator entries for codes and standards follow a similar approach as that used by PG&E.

For instance, all of the parameters describing the nature of the program were kept the same as for PG&E (e.g., the net-to-gross ratio, the load profile, etc.) with the following exceptions: 1) the overall net cost for the measure installation is proportionally the same as that proposed by PG&E, 2) the "number of units" were defined to properly distribute the anticipated energy savings between quarters, and 3) the per-unit savings were defined to produce the overall expected savings. As in the PG&E submission a "unit" of effort was not specified, because the program targets are defined in terms of combined savings per quarter.

ii. Indicate work paper status for program measures

BayREN03 Table 4: Work Paper Status

#	Work Paper Number/Measure Name	Approved	Pending Approval	Submitted but Awaiting Review
1	None Planned			

10. Program Implementation Details

a) Timelines

BayREN03 Table 5: Subprogram Milestones and Timeline

Milestone	Date
Project Initiation Meeting	Dec. 2012
RFPs for Regional/Local Training Providers	12/31/2012
RFPs for Specialty Training Providers	3/1/2013
Compliance Baseline Tracking Strategy Developed	3/31/2013
Marketing/Outreach Strategy Developed	3/31/2013
Policy Support and Advocacy Strategy Developed	3/31/2013
Compliance Baseline Tracking Launch	4/1/2013
Marking/Outreach Launch	4/1/2013
Public Agency Forum Launch	4/1/2013
Regional and Local Trainings Launched	4/1/2013
Specialty Trainings Launched	7/1/2013
Enhanced Tools and Metric for Compliance Developed	9/30/2013
Compliance Assessments Initiated	10/1/2013
Quarterly Progress Reports	3/31/2013 – 12/8/2014

b) Geographic Scope

BayREN03 Table 6: Geographic Regions Where the Program Will Operate

Geographic Region	Codes and Standards Program	Geographic Region	Codes and Standards Program
CEC Climate Zone 1		CEC Climate Zone 9	
CEC Climate Zone 2	X	CEC Climate Zone 10	
CEC Climate Zone 3	X	CEC Climate Zone 11	
CEC Climate Zone 4	X	CEC Climate Zone 12	X
CEC Climate Zone 5		CEC Climate Zone 13	
CEC Climate Zone 6		CEC Climate Zone 14	
CEC Climate Zone 7		CEC Climate Zone 15	
CEC Climate Zone 8		CEC Climate Zone 16	

c) Program Administration

BayREN03 Table 7: Program Administration of Program Components

Program Name	Program Component	Implemented by BayREN staff	Implemented by contractors to be selected by competitive bid process	Implemented by contractors NOT selected by competitive bid process	Implemented by local government or other entity (X = Yes)
Codes and Standards Program	Compliance baseline and tracking				X
	Develop tools and metrics for compliance		X		
	Conduct compliance assessments				X
	Quarterly regional trainings		X		
	Local trainings		X		X
	Specialty trainings		X		X
	Marketing/Outreach for training (1 lead per county)		X		X
	Develop a public agency forum	X	X		X
	Leverage, evolve, and promote existing policy resources and toolkits				X
	Engage in the codes and standards development processes	X	X		X
	Quarterly Reporting	X	X		X

d) Program Eligibility Requirements

i. Customers — Utility customers will not be a targeted population for this subprogram.

BayREN03 Table 8: Customer Eligibility Requirements

Customer Eligibility Requirement
N/A

ii. Contractors/Participants:

BayREN03 Table 9: Contractor/Participant Eligibility Requirements

Contractor Eligibility Requirement
Licensed Contractors performing building improvements targeted by codes and standards addressed by the program (B, C20, C10, etc.). Building and specialty (electrical, plumbing, etc.) inspectors and building department staff in Bay Area municipalities

e) Program Partners

i. Manufacturer/Retailer/Distributor partners

This subprogram will not include any upstream activities, and therefore will not include any manufacturer/retailer/distributor partners.

BayREN03 Table 10: Manufacturer/Retailer/Distributor Partners

Manufacturer/Retailer/Distributor Partner Information	BayREN03
Manufacturers enrolled in program	None
Manufacturers targeted for enrollment in program	None
Retailers enrolled in program	None
Retailers enrolled in program	None
Retailers targeted for enrollment in program	None
Distributors enrolled in program	None
Distributors targeted for enrollment in program	None

ii. Other key program partners

Effective enforcement requires the collaboration of local governmental agencies, IOUs, and public-private organizations. Our existing relationships with the following groups will be utilized to foster greater collaboration and enforcement of energy/water codes and standards.

CALBO and other regional building official networks

California State Contractor Licensing Board

Planning department professional networks

Water utilities and retailers

PG&E Codes and Standards group

California Energy Commission

Bay Area Climate Collaborative

Build It Green

US Green Building Council

ASHRAE, NFRC, CRRC, etc. national organizations

City and County of San Francisco

City of Suisun City

County of Contra Costa

County of Marin

County of Napa

County of San Mateo

County of Santa Clara

Marin Clean Energy Authority

Pacific Gas& Electric

Sonoma County Regional Climate Protection Authority

StopWaste.Org (Alameda County Waste Management Authority)

f) Measures and Incentive Levels

No incentives will be offered by this subprogram.

BayREN03 Table 11: Summary Table of Measures, Incentive Levels and Verification Rates

Measure Group	Market Actor Receiving Incentive or Rebate	BayREN	
		Incentive Level	Installation Sampling Rate
N/A			

g) Additional Services

BayREN03 Table 12: Additional Services

Additional Services that the Subprogram Will Provide	To Which Market Actors	BayREN
Compliance baseline and tracking	Building Officials/Departments	Fully Funded
Develop tools and metrics for compliance	Building Officials/Departments	Fully Funded
Conduct compliance assessments	Building Officials/Departments	Fully Funded
Develop a public agency forum	Building Officials/Departments; Contractors; Code Enforcement Training Organizations	Fully Funded
Leverage, evolve, and promote existing policy resources and toolkits	Building Officials/Departments; Contractors; Code Enforcement Training Organizations	Fully Funded
Engage in the codes and standards development processes	Building Officials/Departments; CALBO; CEC; CalGREEN; IgCC	Fully Funded

h) Subprogram Specific Marketing and Outreach

Program specific Marketing and Outreach will be directed at the local level in each of the nine Bay Area counties. These activities will primarily focus on conducting outreach to individual building departments within county municipalities to tailor training deployment to be aligned with local needs and to drive participation in the trainings.

BayREN03 Figure 1: Marketing Timeline

		2013				2014			
Obj.	**Description**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**
2	**Code Enforcement Education & Training — Informed by Metrics**								
2.1	Quarterly regional trainings		X	X	X	X	X	X	
2.2	Local trainings		X	X	X	X	X	X	X
2.3	Specialty trainings			X	X	X	X	X	X
2.4	Marketing/Outreach for training (1 lead per county)	X	X	X	X	X	X	X	X

i) Subprogram Specific Training

Benefits: Informed constituents. A regional body of elected officials and local government staff, sophisticated in energy efficiency and green building principles and measures, can be a highly-effective communications force across the greater constituencies of the Bay Area. These actors have a unique ability for sharing key ideas and benefits with the public, whether in public meetings, civic events, or during the regular course of business. This model also promotes better policymaking since implementation is considered during adoption.

- Establish regular opportunities to educate and train municipal staff at the local site. Provide workshops around the Bay Area, such that each jurisdiction can attend within a 20 minute commute or less.
- Provide ongoing educational programs for government elected officials on energy policies, regulations, and funding opportunities.
- Train building permit staff in current energy efficiency and green building techniques, technologies, regulations, and incentives programs such as Energy Upgrade California, so they can become frontline representatives for property owners seeking to remodel, upgrade, or build new structures.

Co-Training:

Benefits: Training/certification programs and industry update workshops provide an opportunity for building code officials, planners, engineers, building trade professionals, and technology vendors to learn together and share knowledge.

- Provide co-training opportunities for building code officials, planners, engineers, building trade professionals, technology vendors, and contractors to encourage better understanding of the needs of the other parties, facilitate effective working relationships, and find opportunities to save time and expedite projects.

BayREN03 Figure 2: Training Timeline

		2013				2014			
Obj.	**Description**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**
2	**Code Enforcement Education & Training — Informed by Metrics**								
2.1	Quarterly regional trainings		X	X	X	X	X	X	
2.2	Local trainings		X	X	X	X	X	X	X
2.3	Specialty trainings			X	X	X	X	X	X
2.4	Marketing/Outreach for training (1 lead per county)	X	X	X	X	X	X	X	X

j) Subprogram Software and/or Additional Tools

i. Software

Software and/or technology based solutions (paperless/tablet PC inspection forms, etc.) will be identified through the program's Compliance Assessment activities.

ii. Audits

Pre-implementation audit required ___ Yes _X_ No

Post-implementation audit required ___ Yes _X_ No

iii. As applicable, indicate levels at which such audits shall be rebated or funded, and to whom such rebates/funding will be provided (i.e. to customer or contractor).

No funding will be provided to incent audits in this subprogram.

BayREN03 Table 13: Post-implementation Audits

Levels at Which Program Related Audits Are Rebated or Funded	Who Receives the Rebate/Funding (Customer or Contractor)
None	N/A

k) Subprogram Quality Assurance Provisions

BayREN03 Table 14: Quality Assurance Provisions

Program Element	QA Requirements	QA Sampling Rate (Indicate Pre/Post Sample)	QA Personnel Certification Requirements
Codes and Standards	None	N/A	N/A

l) Subprogram Delivery Method and Measure Installation /Marketing or Training:

No additional marketing or training will be provided.

m) Subprogram Process Flow Chart

A process flow chart was not included for this subprogram as there is no direct program process flow for this subprogram.

n) Cross-cutting Subprogram and Non-IOU Partner Coordination

BayREN will coordinate closely with various partners in the development and roll out of the Codes and Standards Subprogram. Early coordination efforts have involved BayREN and the PG&E Codes and Standards Group. BayREN representatives held several conference calls and had one face-to-face meeting with PG&E C&S staff in the weeks

following the Draft Decision. PG&E agreed to share the results of a best practices study they had recently completed and also the tools and process improvements they intend to develop based on that study. BayREN could test the IOU tool as well as do comparison/modifications that could enhance tools and improve processes through demonstrations in BayREN counties. BayREN intends to coordinate closely with PG&E on scheduling the standard C&S trainings given by PG&E consultants so classes coincide with BayREN's more specialized and in-field trainings that apply theory to actual inspection sites and issues contractors face. The coordination process is yet to be determined but both parties have agreed to work together to avoid any duplication and to support each other's efforts. BayREN will be contacting PG&E in January 2013 to resume engagement and coordinate implementation plans.

BayREN 03 Table 15: Cross-cutting Subprogram and Non-IOU Partner Coordination

Codes and Standards Subprogram		
IOU Program Name	**Coordination Mechanism**	**Expected Frequency**
IOU energy efficiency rebates, direct install programs, demand response, local government partnerships, etc.	Regional coordination, rebate coordination,	Quarterly
PG&E Codes and Standards Group	Regional coordination of training materials and delivery, cross promotion	Quarterly
Coordination Partners Outside the Commission	**Coordination Mechanism**	**Expected Frequency**
California Energy Commission	Standards monitoring, training coordination, outreach	Quarterly
CALBO and other regional building official networks	Regional coordination, training assistance, marketing/outreach, peer-to-peer network	Quarterly
Planning department professional networks	Regional coordination, training assistance, marketing/outreach, peer-to-peer network	Quarterly
Water utilities and retailers	Regional coordination, rebate coordination	Quarterly
Build It Green	Standards monitoring, training coordination, outreach	Quarterly
Bay Area Climate Collaborative/Silicon Valley Leadership Group	Regional coordination, training assistance, marketing/outreach, peer-to-peer network	Quarterly
California Building Standards Commission/Housing and Community Development	CalGREEN development process; training engagement/partnerships	Quarterly
California State Contractor Licensing Board	Coordination, outreach	Quarterly
Bay Area Green Business Program	Regional coordination, integrated services	Quarterly
U.S. Green Building Council	Training, standards monitoring and development	Quarterly
Energy Star	Standards monitoring and development assistance	Quarterly
ASHRAE, NFRC, CRRC, other national organizations	Standards monitoring and development assistance	Quarterly

o) Logic Model

Logic Model provided in Attachment 1.

The logic informing the BayREN Codes and Standards Subprogram design is shaped by existing local government code enforcement activities and known challenges. BayREN proposes to meet its C&S milestones and goals by establishing and supporting compliance quality assurance programs at individual jurisdictions, developing and delivering local trainings that target data-driven priorities for enhancing enforcement, and developing forums for sharing best practices, resources, and tools. The theory underlying the BayREN Codes and Standards Subprogram is that the most effective way for the Commission to attain the expected goals in this area is to enable those with the greatest expertise and core competency to manage and implement the appropriate program activities.

11. Additional Subprogram Information

a) Advancing Strategic Plan Goals and Objectives

BayREN03 Figure 3: Strategic Plan Alignment

BayREN Codes and Standards Program Alignment with California Long-Term Energy Efficiency Strategic Plan		
Local Governments		
Strategy Number	Strategy	BayREN Program Strategy
1-1	Develop, adopt, and implement model building energy codes (and/or other green codes) more stringent than Title 24's requirements, on both a mandatory and voluntary basis; adopt one or two additional tiers of increasing stringency	Coordination on these topics will be part of Objective 3: Policy Support & Advocacy
1-2	Establish expedited permitting and entitlement approval processes, fee structures, and other incentives for green buildings and other above-code developments	Coordination on these topics will be part of Objective 3: Policy Support & Advocacy
1-3	Develop, adopt, and implement model point-of-sale and other point-of-transactions relying on building ratings to increase efficiency in existing buildings	Coordination on these topics will be part of Objective 3: Policy Support & Advocacy
1-5	Develop broad education program and peer-to-peer support to local governments to adopt and implement model "reach" codes and/or point-of-sale policies	Part of Objective 3: Policy Support & Advocacy
1-7	Develop energy efficiency related "carrots" and "sticks" using local zoning and development authority	Coordination on these topics will be part of Objective 3: Policy Support & Advocacy
2-1	Statewide assessment of local government code enforcement and recommendations for change	Regional assessment is part of Objective 1: Compliance Baseline & Tracking
2-2	Dramatically improve compliance with and enforcement of Title 24, including HVAC permitting and inspection requirements (including focus on peak load reductions in inland areas)	Objective 1: Compliance Baseline & Tracking; Objective 2: Code Enforcement Education & Training; sharing of best practices via Objective 3: Policy Support &

BayREN Codes and Standards Program Alignment with California Long-Term Energy Efficiency Strategic Plan		
		Advocacy
2-3	Local inspectors and contractors hired by local governments shall meet the requirements of the energy component of their professional licensing (as such energy components are adopted)	Objective 2: Code Enforcement Education & Training will inform these processes at the local level
4-3	Statewide liaison to assist local governments in energy efficiency, sustainability, and climate change programs	Objective 3: Policy Support & Advocacy
4-4	Develop local projects that integrate energy efficiency, DSM, and water/wastewater end uses	Objective 3: Policy Support & Advocacy
5-1	Create a menu of products, services, approved technologies, and implementation channels to guide local governments that currently lack deep expertise in energy efficiency	Objective 3: Policy Support & Advocacy
5-2	Develop model approaches to assist local governments participating in regional coordinated efforts for energy efficiency, DSM, renewables, green buildings, and zoning	Objective 3: Policy Support & Advocacy

b) Integration

i. Integrated/coordinated Demand Side Management

BayREN03 Table 16: Non-Energy Efficiency Subprogram Information

Codes and Standards		
Non-Energy Efficiency Subprogram	**Budget**	**Rationale and General Approach for Integrating Across Resource Types**
Water Utility Indoor Water Efficiency Incentive Programs	Vary	Coordination of training, standards monitoring and development
Local Government Outdoor Water Efficiency Programs (e.g., Lawn Conversion Rebates, Bay-Friendly Landscaping and Gardening)	Vary	Coordination of training, standards monitoring and development
Green Point Rated	Unavailable	Coordination of training, standards monitoring and development
U.S. Green Building Council	Unavailable	Coordination of training, standards monitoring and development

ii. Integration across resource types (included in Table 16 above)

c) Leveraging of Resources

Alameda County, San Francisco County, and Sonoma County have each made significant investments in codes and standards, which will be leveraged for this effort.

Alameda County (StopWaste.Org): Since 2001, StopWaste.Org has provided green building education, grants, and technical assistance to showcase leadership from the public sector. StopWaste.Org has assisted or given out grants and services totaling more than $3.5 million to civic and non-profits projects, provided training seminars and scholarships to hundreds of city/county staff, and helped establish green building ordinances (or "reach" codes) in every municipality in Alameda County. StopWaste.Org's green building program was recently recognized by the U.S. Green Building Council as the "Most Market Transforming" local government program in California, (see www.usgbc.org/california10). Features and accomplishments of StopWaste.Org include:

- Supplemental Verification Manual for CalGREEN Tiers that reduces ambiguity for inspectors and is compatible with 3rd party rating systems.
- Field-based building inspector training in verifying energy efficiency and green building measures.
- Mandatory policy toolkit for reach codes, including model findings for the California Building Standards Commission, a countywide cost-effectiveness study (now replicated by PG&E for its entire territory).
- Convened and sponsored regional policy networks and training sessions such as the Build It Green Public Agency Council and annual green building update seminars (2008-present).
- Funded development of verification checklists and rating systems to increase accountability: Build It Green's GreenPoint Rated, Bay-Friendly Coalition's rating system for landscapes, and the Small Commercial Checklist for Alameda County.
- Formed the Alameda County Water Supplier's Council to address water/energy planning, such as rebate coordination, codes and standards tracking, and training opportunities.
- Engaged in creating standardized tools and model policies for energy/green labeling and disclosure for commercial and residential buildings through an Innovator Pilot grant .

San Francisco: The City and County of San Francisco has been a national leader in adopting energy efficiency and green building policies. In 2011, the World Green Building Council awarded San Francisco its highest Leadership Award for "Excellence in City Policy for Green Building." In 2011 and 2010, San Francisco was recognized as the top office market in the United States in the Northwest Energy Efficiency Alliance/Cushman & Wakefield Green Building Opportunity Index, and was recognized by Siemens and the

Economist Business Intelligence Unit as the greenest major city in the United States and Canada Green City Index. San Francisco has received these honors in part because it:

- Developed and implemented San Francisco's Green Building Ordinance, which includes all California Green Building Standards Code requirements, and:
- Requires all buildings to beat Title 24 Energy Standards by at least 15%, to meet stricter requirements for storm water management, irrigation, and construction and demolition debris diversion.
- Requires all new residential buildings to meet GreenPoint Rated standards.
- Requires that all new large commercial buildings, as well as certain large tenant improvements, be designed and built to the LEED Gold standard.
- The Existing Commercial Buildings Energy Performance Ordinance requires non-residential buildings larger than 10,000 gross square feet to annually benchmark energy performance with Energy Star Portfolio manager, and to obtain an energy audit or retrocommissioning at least once every five years.
- Passed and implemented a Commercial Lighting Efficiency Ordinance that sets performance requirements for all 4' and 8' fluorescent fixtures, interior and exterior, including multi-family common areas.

Sonoma County: The *2010 Sonoma County Solar Implementation Plan* and the stakeholder process leading to its completion helped instigate a move to streamline green codes countywide. Currently all Sonoma County governments have adopted CalGREEN Tier 1. Local building officials used the Redwood Empire Association of Code Officials (REACO) as a platform to educate electeds, building staff, and most importantly designers, architects, builders, developers, and builders exchanges and other trade groups about the benefits of adopting the new CalGREEN codes. REACO has a green code committee that acts as an advisory body for local officials. They have a successful model for building local support. This is an example that BayREN could leverage for wider participation.

http://www4.eere.energy.gov/solar/sunshot/resource_center/sites/default/files/solar_implementation_plan_final-05-10-10.pdf

- REACO partners also developed "checklists" including a generic list and jurisdiction-specific lists that include sections for related code issues that must remain custom to each government, such as water-related codes
- REACO promoted CalGREEN adoption and enlisted 42 fire districts to adopt uniform fire codes as well; fire code overlaps energy upgrades in several areas including solar installations.

- Developed a standard solar permit that is used throughout the County.
- Local remodeling goal: Locally, some jurisdictions have set minimum code compliance at 500 square feet, which encompasses many remodeling projects and promotes upgrades in existing building stock

d) Trials/ Pilots

No trials or pilots will be operated as part of this program.

e) Knowledge Transfer

As one of its core activities, this program will utilize several strategies to disseminate best practices and lessons learned, including: Support a public agency forum, and convene seven (7) quarterly forums, for sharing best practices, such as interagency coordination or adoption of building labeling and disclosure policies

- Provide "train the trainer" engagement to engage regional leaders to deliver best practices and expert content at trainings and site visits provided to peer agencies.
- Leverage, evolve, and promote existing policy resources and toolkits
- Engage CALBO in alignment of interpretation of state codes by local officials. (Examples: Installation of insulation triggers a permit and inspection in some communities, but not others.)
- Coordinate and engage in the code development processes, such as Title 24 energy standards, CalGREEN, and IgCC.

12. Market Transformation Information

a) Market Transformation Objectives

The market transformation objectives of the BayREN Codes and Standards Program are the following:

- Increased general knowledge, understanding, and measurement of baselines of code compliance with existing energy/water/green building codes and policies.
- Improved metrics for compliance tracking, enhanced compliance understanding and enforcement, and increased documentation of code compliance quality assurance/verification in the nine BayREN counties and encompassed municipalities.
- Increased standardization of local reach codes across BayREN counties and incorporation of same reach codes into code development processes, such as Title 24 energy standards, CALGreen.

b) Market Description

Market actors include:

- **Local Governments —** Set greenhouse gas emissions, energy savings, and other sustainability goals and implement programs to meet those goals. Support IOU energy efficiency programs through professional and customer outreach, coordination amongst local actors, enforcement of code. Pilot energy efficiency programs.
- **Building and Specialty Inspectors/Code Officials —** Professionals employed in the establishment and enforcement of building codes, including life and fire safety, energy, and other codes and standards.
- **Local Policy Makers —** Local government staff, department heads, and elected officials charged with setting local codes and standards.
- **General Contractors —** Oversee delivery of residential remodels, other installation work. May perform direct installation or subcontract to specialty contractors. May be associated with whole house/building performance upgrades and Energy Upgrade California.
- **Specialty Contractors —** Have specialty license in HVAC, Insulation and deliver installation. May also perform whole house/building and general contracting duties. May or may not be associated with whole house/building performance upgrades and Energy Upgrade California.
- **Green Building Professionals —** Building professionals, including general and specialty contractors, who are trained in delivering or assessing technical work that incorporates additional green building concerns beyond energy efficiency, such as outdoor water efficiency, indoor air quality, resource conservation, and low-impact development/site water management. Serve as private contractors or on behalf of green building rating and incentive programs.
- **Energy Consultants/Raters —** Provide energy analysis and modeling services to owners and builders for code compliance. Includes HERS raters.
- **Professional boards and organizations** (CALBO, CSLB, etc.) **—** Centralize outreach channels to facilitate communication to targeted communities including building officials, contractors, and policy makers.
- **Code development agencies and organizations** (CEC, CALGreen, and IgCC) – Influence new code and standards development.

- **IOUs —** Run energy efficiency incentive programs. Conduct contractor management, quality assurance, program administration for these programs.
- **Workforce Training Organizations —** Community colleges, professional training organizations, workforce investment boards, and nonprofit programs that provide job training and placement services for new professionals.
- **Non-Energy Efficiency and Conservation Programs —** Water utility, local government, green building, and other programs that promote and incent resource conservation, air quality, green products, and other non-energy efficiency efforts.
- **Other Relevant Professional Trades —** Includes all professional industries and associations that may affect property owner and building professional choices, including real estate professionals, product manufacturers and suppliers. These actors affect behavior of their clients through the services they offer and products they provide.

c) Market Characterization and Assessment

Many of the market barriers associated with energy efficient codes and standards are described above in the Subprogram Description and Theory. Recognizing these barriers, California has come to increasingly depend upon codes and standards to cost-effectively save energy and reduce greenhouse gas emissions. Nineteen percent of energy savings attributed to ratepayer funded programs are derived from codes and standards.[31] However, there is room for improvement. The best statewide energy code enforcement study in recent years revealed noncompliance rates ranging from 28% for residential hardwired lighting to 100% for non-residential duct sealing.[32] Updates to make the state energy requirements and local reach codes more stringent have received significant attention and support in recent years. Codes are fundamental to achieving California's Zero Net Energy and greenhouse gas emission reduction goals. However, laws and regulations alone do not save energy. The intended energy savings can only be realized if code requirements are effectively enforced. To optimize compliance, all market actors—designers, builders, inspectors, state and local regulators, and IOUs—must understand their current performance and have effective feedback to motivate improvement. On the other hand, the *status quo*—complex requirements with no local and timely data to inform action — discourages compliance and erodes potential savings from more effective codes.

[31] http://docs.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/166830-10.htm#P1907_425870

[32] Quantec (2007), http://www.energycodes.gov/publications/research/documents/codes/ca_codes_standards_adopt_noncompliance.pdf While the study provided a crucial snapshot of enforcement across the state, a single study that included only one Bay Area jurisdiction (Sonoma County) does not provide specific, actionable information or a record of performance over time. A better baseline is needed to truly gauge the compliance or noncompliance of energy and water provisions of the codes.

Building code officials, who are critical for ensuring compliance with Title 24 standards, must deliver inspection and plan review services within the political limitations of cost-recovery fee structures. Given limited time and resources, their first priority is to ensure that life-safety and fire standards are met. To efficiently use the extremely limited time and resources dedicated to enforcing energy-related codes, it is critical to raise the baseline level of compliance for common measures and to enhance inspector efficiency. Data-driven training and quality assurance programs, which are proven tools for enhancing productivity in many industries, have yet to be applied to energy code enforcement.

As codes change, it is also critical to ensure that enforcement staff is expert in the specifics of such changes. However, the pace of change in energy and green building codes is much more dramatic than in other building standards. Peer-to-peer training and forums for professional exchange among inspection staff will help leverage and reinforce existing training resources for contractors and design professionals.

d) Proposed Interventions

Proposed interventions have been described throughout this subprogram description. A summary is provided in the table below.

BayREN01 Figure 4: Market Transformation Barriers and Interventions

Barrier	Proposed Intervention
Existing gaps in understand of code compliance	Code compliance baseline and tracking
Existing patchwork of standards and their interpretation	Audit incentives, Flex Package incentive, financing (BayREN04)
Lack of effective training	Multiple and accessible trainings to increase code enforcement and compliance
Lack of consistent sharing of best practices and policies	Best practice forums for building officials and policy makers and “train the trainer” engagement
Lack of local jurisdiction engagement in code and standards adoption processes	Build upon existing policy resources and toolkits and align local official interpretation of state codes

e) Program Logic Model: See Program Logic Model in Attachment 1

f) Market Transformation Indicators (MTIs) and Evaluation Plans

Resolution E-485 (December 2, 2010) Appendix B, lists adopted Market Transformation Indicators for the 2010-2012 Energy Efficiency Portfolio, which were then amended by Energy Division in 2011 at the direction of the Commission. To ensure consistency with adopted Market Transformation Indicators and Program Evaluation strategies, BayREN proposes the following Market Transformation Indicators, based upon the proposed amended Codes and Standards MTIs proposed by Energy Division in 2011:

- Codes and Standards MTI 3: Compliance rates of remodels triggering T24 in existing (a) homes and (b) commercial buildings in California. Metric Type 3.

- Codes and Standards MTI 4: Compliance rates of T24 in (a) new homes (b) new commercial buildings in California. Metric Type 3.
- Codes and Standards MTI 5: Percent of building departments (jurisdictions) that adopt and use tools identified as industry best practices to improve permit application, tracking, and inspection processes and increase regional consistency. Metric Type 3.
- Codes and Standards MTI 6: Number of measures from Voluntary beyond code standards and rating systems (LEED, CHPS, 189) that are incorporated into mandatory T24 Standards in the Residential and Commercial Sectors. Metric Type 3.
- Codes and Standards MTI 8: Number and percent of eligible jurisdictions participating in the compliance enhancement program.

Program evaluation will be conducted in coordination with EM&V activities conducted on behalf of the Commission and PG&E. BayREN partners will participate as possible in all data collection and interpretation activities, as directed by the Commission.

13. Additional information as required by Commission decision or ruling or as needed: N/A

V. SUBPROGRAM BAYREN04

1. Subprogram Name: BayREN Energy Efficiency Financing Portfolio

2. Subprogram ID number: BayREN04

3. Type of Subprogram: Regional Energy Network

4. Market sector or segment that this subprogram is designed to serve:

a) _X_ Residential

Including Low Income? _X_ Yes __ No

Including Moderate Income? _X_ Yes __ No

Including or specifically Multi-family buildings _X_ Yes __ No

Including or specifically Rental units? _X_ Yes __ No

b) _X_ Commercial (List applicable NAIC codes):

- 531312 — Non-Residential Property Managers
- 236220 — Commercial/Institutional Building Construction (includes additions, alterations, and renovations)
- 522110 — Commercial Banking
- 531120 — Commercial Buildings Rental/Leasing

c) _X_ Industrial (List applicable NAIC codes:

- See above for Commercial; plus236210 — Industrial Building Construction

d) _X_ Agricultural (List applicable NAIC codes:

- Included in Commercial/Industrial

5. Is this subprogram primarily a:

a) Non-resource program ___ Yes _X_ No

b) Resource acquisition program _X_ Yes __ No

c) Market Transformation Program _X_ Yes __ No

6. Indicate the primary intervention strategies:

a) Upstream ___ Yes _X_ No

b) Midstream ___ Yes _X_ No

c) Downstream _X_ Yes ___ No

d) Direct Install _X_ Yes ___ No

e) Non Resource_X_ Yes ___ No

7. Projected Subprogram Total Resource Cost (TRC) and Program Administrator Cost (PAC)

TRC and PAC will not be calculated for this subprogram.

8. Projected Subprogram Budget

BayREN04 Table 1: Projected Subprogram Budget, by Calendar Year [33]

	Program Year		
Subprogram	**2013**	**2014**	**Total**
Admin ($)	$292,500	$202,500	$495,000
General overhead ($)	$0	$0	$0
Incentives ($)	$0	$0	$0
Direct Install Non-Incentives ($)	$2,415,600	$3,206,400	$5,622,000
Marketing and Outreach ($)[34]	$469,000	$336,000	$805,000
Education and Training ($)[35]	$0	$3,000	$3,000
Total Budget	**$3,177,100**	**$3,747,900**	**$6,925,000**

[33] See BayREN01, Table 1- Projected Subprogram Budget, by Calendar Year for category definitions. BayREN04 budget includes Single-Family Loan Loss Reserve and Multi-Family Capital Advance Program funds that are reserved until further authorization after the statewide financing consultant proposals are complete.

[34] A separate but targeted budget for the Finance Portfolio Subprogram has been included to provide ME&O specific to this program, e.g., cooperative advertising with lenders, specific lender-based collateral, and marketing directed at home financing and refinancing options.

[35] Education and Training under the Finance Portfolio Subprogram is specifically for the Pay-as-You-Save Pilot. Education and Training related to the Single Family LLR and Multifamily CAP (e.g., for contractors, appraisers, realtors, etc.) is provided for in the budgets of the Single-Family, and Multi-Family Subprograms.

9. Subprogram Description, Objectives and Theory

a) Subprogram — Financing Portfolio Elements

Pending CPUC authorization, the BayREN Energy Efficiency Financing Portfolio (the Financing Portfolio) will provide a variety of financing options to serve diverse consumer markets (residential and non-residential) across the 9-County region. Through a cross-leveraged, multi-option financing menu, and tiered systems that scale loan and credit enhancements to energy performance, the Financing Portfolio will address gaps that emerged as key impediments to broader uptake and deeper efficiencies during the ARRA SEP. In addition, the Financing Portfolio connects lenders, local governments, contractors, professional and trade organizations, and the utility in common messaging and marketing of the BayREN programs, featuring cash-positive and cash-neutral financing options, the value of benefits and co-benefits (including public health), and expanding the understanding and deployment of energy efficiency to the full "energy system," as well as addressing substantial energy consumption embedded in other building systems such as water.

Specifically, the BayREN Financing Portfolio will consist of:

- B1. Residential loan loss reserve program in Support of Energy Upgrade California Single-Family Home Projects (EUC SF-LLR)

$3,825,000 - reserved pending coordination with programs proposed by the statewide financing consultant and CPUC authorization. This financing option is structured to stimulate uptake in single-family home energy efficiency projects by way of a Loan Loss Reserve (LLR), partially tiered to increase the reserve ratio for deeper projects assessed for higher efficiency improvements. This model introduces a security/assurance mechanism to promote increased lender engagement and motivate competitive interest rates. The EUC SF-LLR will stimulate demand by leveraging a common regional design and application, enhanced by the capacity of local governments to augment the program with district, agency, foundational and/or federal grants, and additional inducements (such as matched water district incentives). Similar programs established by Los Angeles County and Santa Barbara County, and national programs in Wisconsin, Missouri, Washington, Maryland, and North Carolina, demonstrate the promise of loan loss reserves to suppress default risks and lower interest rates. The funds requested would support a region-wide Bay Area program, and facilitate private sector financing for approximately 1,345 energy upgrade loans worth approximately $16 million. Measures eligible for these loans would include those eligible for a BayREN Flex Package Incentive or a PG&E EUC-SF Incentive. Renewable technologies would not be eligible for these loans.

BayREN is confident that a robust LLR is a compelling tool to enroll lender participation, but agrees that all research indicates low default rates. As loans are enrolled, the approved debt-risk ratio will be encumbered and shifted to a parallel account (LLR-Encumbered). A LLR will expand the consumer base lenders are willing to consider for energy efficiency loans. At the same time, the fiduciary obligation owed by all to ratepayers requires us to temper broadening the potential consumer base too

far, with prudent lending criteria. Furthermore, since the LLR is set to a maximum risk ratio of 20 percent and amortized at five years (at the recommendation of CPUC Energy Division staff and the statewide financing consultants), the portion of the LLR encumbered to secure the risk-ratio of enrolled loans would have to remain intact until each loan term hits five years. Recognizing this complex balance, BayREN anticipates unspent, unencumbered LLR funding at the conclusion of the 2013-2014 EE Transition Period, and recommend quarterly reporting throughout 2013-2014; and a post-cycle financing workshop/process to review performance of the various credit enhancements and financing mechanisms, and to reassign or retain LLR based upon that analysis. It is important to note that no leverage dollars are anticipated for the LLR itself. BayREN projects an average of 20 percent energy efficiency improvement across Flex Package projects, and 30 percent energy efficiency improvement across PG&E EUC-SF Advanced projects.

- B2. Residential Multi-Family Capital Advance Program Pilot In Support of Energy Upgrade California Projects (EUC MF-CAP)

$2,000,000 - reserved pending coordination with the multi-family statewide financing pilot and CPUC authorization. The EUC MF-CAP Program will be available for eligible owners of multi-family properties with at least 5 units, who undertake upgrade projects with a scope defined by the bundled measure incentive program (see BayREN02) or the PG&E EUC-MF Path. The EUC MF-CAP Program will advance to participating lenders up to $5,000 per unit or 50% of the total loan principal, at 0%. This arrangement results in an effective interest rate of about half of the lender's interest rate, significantly reducing the cost of capital for the property owner. The underwriting criteria and loan terms are negotiated directly with the lender, which makes the program more attractive to financial institutions, and reduces the administrative burden for program implementation. The property owner is obligated to repay the total principal, and BayREN will receive a pro rata share of each payment. The repaid funds will be available to provide principal capital for additional projects. This model has been successfully implemented by the State of New York under the NYSERDA Multi-Family Home Performance Program, and demonstrates a model that is competitive and attractive to both lenders and multi-family building owners.

The EUC MF-CAP Program is projected to reach a minimum of 1,200 units. Program funds will be used for credit enhancement, further program development, and program administration. The Pilot is designed to work within a larger program offering with minimal additional administration.

Integrated program offering. The Pilot will be offered in direct conjunction with the broader BayREN multifamily program. The Pilot will leverage the outreach, technical assistance (TA) and incentives planned under Energy Upgrade California. Based on experience implementing programs, it is crucial that financing products are not treated as stand-alone tools, but rather as critical components of a comprehensive residential market transformation approach. Offering a simple lending product that can be quickly deployed in conjunction with the bundled measures incentives as one piece of an integrated approach. The addition of financing options will help "close the deal" with

some property owners who might receive incentives but lack up-front capital to fund the balance of upgrade costs. The BayREN anticipates that the on bill repayment (OBR) financing will also be available through the IOUs as an option to which its technical assistance providers can refer property owners during technical assistance phase.

The BayREN Multifamily program and the financing Pilot will be integrated through the following mechanisms:

- TA will include referral to the financing Pilot, among other financing sources
- Bundled measure incentive will define a list of measures that will also be eligible for financing
- TA will pull together bundled measure incentive and Pilot financing to present a scenario combining rebates and financing to fund the upgrades

Simple and quick. The Pilot requires minimal infrastructure development and administration. It utilizes lenders' existing infrastructure and practices. The underwriting criteria and loan terms are negotiated directly with the lender, which makes the program more attractive to financial institutions, and reduces the administrative burden for program implementation. Simple and quick is necessary to have a financing component available to coincide with the rest of the BayREN multifamily program offering. The capital advance or co-financing model was selected because it promises to provide a simple financing product with preferable terms to enable participants in 2013 – 2014 energy efficiency rebate programs to fund retrofits that are:

- Widely available to all ownership, affordability, and metering configuration types
- Fast to implement, requiring minimal infrastructure development and lender negotiations
- Simple to communicate to lenders and property owners

Serves the whole market sector. The Pilot will be available to all multifamily properties within the BayREN/ABAG region that meet participating lenders' underwriting criteria. The Pilot is not limited to a specific sub-sector; rather it is open to serve market rate and affordable housing, master and individually metered, etc. as well.

Serves individually metered, split incentive properties. Opening program eligibility to include individually metered properties allows properties with split incentive issues to choose to invest in their properties. Particularly in unrestricted market rate properties, owners may perceive the improvements as property enhancements that will garner indirect payback through increased rental value and are not motivated by the need to receive direct payback. While the Pilot does not propose a direct solution to overcome the split incentive barrier, it does serve properties with this barrier. The Pilot will yield findings on whether non-direct-payback value propositions exist in individually metered properties.

Repayment reduces actual program costs. The Pilot contains a repayment mechanism. Theoretically, up to 100% of the capital advance pool funds could be repaid by the end of the loan term. As the IOU financing consultants explained in their 11/30/12 response, the standard method of evaluating the leveraging of ratepayer funding is limited to consideration of up-front costs without a mechanism to account for the repayment of ratepayer funds. If considering the value of the repayments, the net present value of the cost of the capital pool could equal half of the upfront capital value of $1.5 million, thereby dramatically improving the cost effectiveness and leverage ratio of ratepayer funds.

The Pilot design is distinct from an interest rate buy-down or loan loss reserve (LLR) program because the funds are expected to be fully regained, less a small default rate. The funds that are regained through borrower repayment must be managed through on-going collection and accounting capacity. If the Pilot is successful the BayREN anticipates proposing on-going administration of the program in future funding cycles. If the Pilot is determined to end at the end of 2014, one solution would be for repayments to be collected into a fund managed by BayREN, PG&E, or other entity to supplement future Energy Efficiency program budgets.

Tests additional objectives. Deployment of a small pilot which requires minimal investment by leveraging the BayREN Multi-Family Subprogram is a cost-effective way to gather feedback from property owners regarding what would make financing attractive to them. This will prime the lending community for engaging in refined multi-family energy efficiency lending products in the future. This Pilot tests the viability of financing product features to inform future product development:

- Is a lower interest rate sufficient to incentivize credit-worthy property owners to take on debt to finance energy efficiency projects?
- Does the availability of low interest financing increase the volume or scopes of rebated energy efficiency projects?
- Gather performance data to provide evidence and confidence in the viability of financing energy efficiency projects.
- Engage lenders in energy efficiency projects and increase their exposure to, familiarity with, and understanding of energy efficiency projects.

Flexibility. The Pilot's design of offering a 50% capital advance at the 0% interest rate is flexible and could be modified in the future to incentivize certain desired outcomes. For example, the capital advance percentage could be tiered to encourage deeper energy savings, so that a 10% energy savings project is eligible for a 20% capital advance while a 20% energy savings project is eligible for a 40% capital advance, proportionally reducing the effective interest rate. For the immediate program launch, BayREN believes it is important to maintain program design simplicity, and will not pursue a tiered structure. These options will be retained for future consideration and demonstrate the financing mechanism's adaptability..

Eligible Measures. The scopes that will be approved for receiving the Pilot's capital advance funds will need to meet the following minimum criteria:

- Measures qualifying for PG&E EUC Multifamily or BayREN MF incentive rebate programs
- Undergone QA through one of the two programs

Market Size. The Bay Area contains approximately 700,000 dwelling units in multifamily buildings with 5 or more units. If the average upgrade is estimated to cost $3,000 per unit, the total market for upgrading all 5+ unit buildings is $2.1 billion. The current pilot targets loan aggregation of $3 million, which would serve approximately 0.14% of this market. The eligible market segment is limited to properties that can take on more debt, and meet lenders' underwriting criteria. The percentage of the total market that is represented by eligible projects is unknown at this time; this will be a finding of the Pilot.

- B3. Support for existing Commercial PACE Options throughout the BayREN Area (Commercial PACE Program)

$450,000. Commercial PACE programs are projected to drive energy efficiency upgrades in large-scale, commercial, industrial, and even agricultural buildings and facilities, and are presently being implemented in the Counties of San Francisco and Sonoma, as well as Los Angeles County. BayREN funds will be used to leverage Commercial PACE programs as part of CaliforniaFIRST efforts. This will include administrative and marketing and outreach support for these programs throughout the Bay Area. The Commercial PACE Program will maintain a current database on Commercial PACE options as part of BayREN's one-stop Energy Efficiency Programs website.

The Commercial PACE Program will assist CaliforniaFIRST to refine and streamline program administration, sustain project momentum, track results, and improve operational efficiency and scale through web-based processes. A web-based programmatic tool will consolidate, in one resource, coordinated databases that provide:

- A directory of capital providers and contractors (continuously updated)
- An automated project financing clearinghouse
- Web-based energy audit tracking
- Clearinghouse of financing options, including opportunities for cash-positive or cash-neutral project scaling
- Reference database for lenders that will cross- reference other REN program indicators and performance

As BayREN Commercial PACE activities will leverage CaliforniaFIRST financing, BayREN cannot offer a projected timeline for the disbursement of loan funds. BayREN will work with CaliforniaFIRST and other regional Commercial PACE programs (e.g. the Sonoma County Energy Independence Program) to establish reporting processes to capture energy savings from BayREN initiated projects. However at this time it is not

possible for BayREN to offer an estimate of expected energy savings per project. Furthermore, it is important to note that there is potential for lenders holding existing mortgages to offer direct loans in lieu of a PACE-repayment, resulting in energy efficiency retrofits and retrocommissioning that is initiated or simulated via a Commercial PACE program even if not consummated through PACE.

- B4. Pay-as-You-Save® Energy/Water Efficiency Pilot

Up to $650,000. The Pay-as-You-Save (PAYS®) Energy/Water Efficiency Pilot creates an innovative program at the water-energy nexus, targeted at measurable strategies that address the substantial energy usage embedded in residential water use. PAYS® is a market-based system in which customers, vendors, and capital providers, acting in their own interests, produce unprecedented resource efficiency investment that is also in society's interest. The Pilot will cover one to three jurisdictions, which will elect either to secure a third-party capital fund partner or to self-fund, to advance the costs of Basic and Basic-Plus packages of bundled measures to eligible, qualifying residential property owners (to serve homeowners and renters), with the option to expand to non-residential properties. This pilot will deploy a Certification Agent to verify eligibility based upon various factors, most importantly whether projected energy/water efficiency improvements will generate monthly bill savings in excess of the monthly project surcharge. Participants will repay project costs though a surcharge that covers the cost of measures, installation, and program administration. The surcharge is applied to water utility bills over a term of years assigned to the bundled package. Advanced measures (e.g., hot water-recirculation pumps and high-efficiency refrigerators) fall under the Pilot but are subject to a co-pay arrangement with property owners. The repayment obligation attaches to the property itself so that subsequent owners or tenants are responsible for outstanding balances, but also reap the water and energy efficiency benefits of the efficiency installations.

This subprogram is forecast to execute 2,000 projects. BayREN has set a goal of having 10% of those customers living in multifamily housing. This is in order to reach customers that for various reasons (including split incentives) are more difficult to reach. Furthermore, depending upon the implementing jurisdiction, the Pay-as-You-Save pilot could be tailored to serve non-residential properties as well. If program participation is lower than expected, BayREN will evaluate whether program design modifications are needed (e.g. modified measures offerings) or whether marketing and outreach efforts should be changed.

While Pay-as-You-Save funding will provide for program design and implementation costs, all capital used to finance program projects will be provided by a third party source to be recruited in the course of program design. This third party may be the implementing jurisdictions or private capital. The program interest rate will depend on the source of this third party capital; however it is anticipated that the interest rate will not exceed 7 percent. Because third party capital will finance any installed Pay-as-You-Save projects, BayREN funds are not impacted by participant defaults. Furthermore, there are no underwriting criteria for participants, as repayment is made through the

customer's surcharge, which is authorized under the implementing jurisdictions municipal code as highlighted in the following paragraph.

The Pay-as-You-Save pilot will be based upon the Better Buildings Program/Department of Energy funded Windsor Efficiency PAYS® pilot. Under the Windsor Efficiency PAYS® pilot, a surcharge is added to the participant's water account to repay the cost of the installed measures. The surcharge is for a basic utility service and the customer is liable for payment of the charges under this surcharge under the same conditions as the underlying Water Rate including, but not limited to, the Customer's service being subject to disconnection for non-payment in accordance with the rules of the Town of Windsor.[36] In the event of a default, after exhausting all reasonable and customary collection efforts the utility will recover any documented Windsor Efficiency PAYS®-related uncollectibles from the Windsor Efficiency PAYS® reserve fund. When this fund has been depleted, a $250,000 security fund from the Sonoma County Water Agency will be used to recover remaining uncollectibles. Should the Security Fund be exhausted, the utility will recover Windsor Efficiency PAYS®-related uncollectibles from all of its Customers or write it off on the water enterprise fund. At no point would bad debt be applied against water district bonds. While a final list of eligible measures will necessarily be determined in conjunction with the implementing jurisdictions, a draft list of residential measures is provided below in Figure 1 based upon the Windsor Efficiency PAYS® program. If existing baseline equipment is different from the newer single family homes in Windsor, additional measures will be added. Eligible measures fall into three categories:

- Basic measures: If eligible in a customer's home or business, must be installed if the participant wants to install any other program measures. Basic measures require no upfront customer co-payment and are permanent measures – they stay with the property when the customer relocates and any remaining surcharges are paid by the next occupant.
- Basic-Plus measures: are optional and also require no upfront co-payment.
- Advanced measures: are resource-saving measures that, based on current rates, are not sufficiently cost effective to qualify for surcharge repayment and therefore require an upfront out-of-pocket customer co-payment to enable the remainder of the measure cost to qualify for the surcharge. The Windsor pilot and existing programs based on the PAYS® system in Kansas and Kentucky have proved many customers will purchase such measures if given the opportunity.

Measures will save water, gas, electricity, or a combination of these resources. In order to qualify for repayment through the surcharge, the surcharge for residential customers must be no more than 75 percent of the estimated water and energy cost savings; for every $7.50 in PAYS® surcharges, customers receive at least $10.00 in utility bill

[36] The surcharge is subject to the terms and condition of the Windsor Water Rate and the Town of Windsor municipal code 12-3-615 — Combined Billing

savings. For commercial customers, the threshold can be raised to 80% of estimated total savings.

BayREN04 Figure 1: Pay-as-You-Save Draft Eligible Measures

Measure	Basic (required if eligible)	Basic Plus	Co-pay (upfront cost)
Showerheads	√		
Aerators	√		
Toilets	√		
Compact fluorescent lights (CFLs)		√	
Clothes Washers		√	
Standard Landscaping		√	
Enhanced Landscaping			√
On-Demand Hot Water Recirculation Pumps			√
Luxury Clothes Washers			√

Specific concerns and gaps addressed by the BayREN Financing Portfolio include:

- **Limited Access to Financing** – Due to loan and funding products, a majority of advanced package energy upgrades during the SEP Period were financed either personally or through pre-existing home equity lines of credit. The BayREN Financing Portfolio provides credit enhancement mechanisms that will act as independent and responsible assurances for banks and other lenders, mitigate risk, and promote expansion of new energy upgrade loan programs among banks, credit unions, and other lending institutions. Moreover, it will provide residential and non-residential property owners with compelling and competitive arrangements for financing energy efficiency.

- **High Interest Rates** – Studies reveal interest-rate ranges that have an inverse effect on consumer uptake of energy efficiency loan products and programs.[37] Energy efficiency LLR programs established in 2011 by the Counties of Santa Barbara and Los Angeles indicate that a LLR acts to mitigate lender risk and counter the existing market's credit barrier. By scaling LLR ratios to energy upgrade performance, the Financing Portfolio Program will drive the dual priorities of increasing demand and program uptake, and stimulating the market in higher efficiency projects. The Multi-Family Capital Advance Pilot is modeled after the Green Jobs Green New

[37] *Energy Efficiency Financing in California*. Rep. The California Public Utilities Commission, Energy Division and Harcourt Brown & Carey , July 2011; Grand Designs Great British Refurb Campaign Survey (2011); Philadelphia ENERGYWORKS Better Buildings Neighborhood Program; "Financing Residential Energy Efficiency: Assessing Opportunities and Coverage Gaps in the American Recovery and Reinvestment Act of 2009; "Report to the Oregon Utility Commission on Pilot Programs for the Energy Efficiency and Sustainable Technology Act of 2009", Energy Trust of Oregon Public Purpose Fund Administrator (October 1, 2010). During the SEP Program, Los Angeles County determined that without a Loan Loss Reserve, the interest rate for an unsecured loan increased by 170 points.

York multi-family low-interest loan program, and pilots an innovative mechanism to reduce the effective interest rate by 50%.

- **Burdensome Loan Processes** – The Financing Portfolio will streamline the loan application and enrollment processes, and offer customers and contractor's continuity, consistency, and support, thus enabling a wider, deeper reach for energy efficiency upgrades. In particular, banks and lenders prefer a streamlined, web-based loan application and enrollment process.

- **Lack of Regional Consistency, Continuity, and Economies of Scale Through Aggregation and Leveraging** – Promotion of a centrally financed and administered portfolio will drive broader and deeper penetration of energy efficiency upgrades, capture hard-to-reach consumer markets, and lower energy efficiency project and program costs. This will reinforce and broaden public awareness and understanding of Energy Upgrade California programs, where a complex pattern of customized programs across the State previously frustrated contractors and confused the public.

- **Split Incentive Barrier** (between building owners and tenants) – Commonly, owners are reluctant to pay for building improvements that appear to only benefit tenants. The BayREN Program will address this market barrier by quantifying benefits and co-benefits of whole building upgrades (including water systems), financing options and incentives, and demonstrating cash-neutral or cash-positive outcomes (upgrades that provide cost avoidance volume that surpasses monthly loan expenses). Commercial PACE offers a solution in multi-tenanted buildings since taxes and assessments qualify as a pass-through expense in many leases.

- **External Leverage-Deficit** – The ability of local governments to (1) provide unique government incentives such as fast-track review and permitting, and (2) compound leveraging of district, agency, foundational, and/or federal grant programs, allows for additional inducements to increase demand. Also, local governments will incorporate the BayREN programs into public messaging, marketing, and outreach with other programs, including air quality, climate action, and sustainability programs and projects.

Regarding the BayREN Financing Portfolio Subprogram, in the Decision governing the 2013–2014 cycle, the Commission did refer to Sempra Utilities the responsibility of securing consultant(s) to produce a white paper on financing options and programs that might be implemented on a statewide basis. The BayREN Financing Portfolio Subprogram is based upon existing financing pilots and projects running within the Bay Area region and in other California jurisdictions, as well as in local and state programs throughout the United States. Lessons learned and elements of success have been designed into the BayREN Subprogram, which may provide additional institutional

history to energy efficiency financing programs and serve as a financing laboratory for the Commission's future, more comprehensive plans for the State. BayREN looks to share these lessons learned with the statewide financing consultants.

b) Subprogram Energy and Demand Objectives

BayREN04 Table 2: Projected Subprogram Net Energy and Demand Impacts, by Calendar Year[38]

	Program Years		
	2013	**2014**	**Total**
Energy Efficiency Financing Portfolio			
GWh	0	0	0
Peak MW	0	0	0
Therms (millions)	0	0	0

c) Program Non-Energy Objectives

i. SMART non-energy objectives of the subprogram

- During the period 2013−2014, the BayREN Financing Subprogram will facilitate loans aggregating $16,000,000 in the PG&E EUC-SF and Flex Package Program. Metric Type 2b.
- During the period 2013−2014, the BayREN Financing Subprogram will facilitate loans aggregating $3,000,000 in the Comprehensive Multi-Family Subprogram. Metric Type 2b.
- The Program will serve the other BayREN Subprograms to increase conversion rates by no less than 15%, average energy efficiency improvement by no less than 5%; and number of projects by 20% (as compared to the 2011-2012).

ii. See above.

iii. Relevant baseline data

Compliance baselines are to be developed through this program.

[38] Given that the Single Family Loan Loss Reserve and Multifamily Capital Advance Program will be finalized in coordination with the statewide financing consultant, projected savings for the Financing Subprogram are not offered at this time. Furthermore, while energy savings have been estimated for these Financing Subprogram components, they may be duplicative of energy savings claimed in other programs. Energy savings estimates can be provided upon request of the Commission.

iv. Quantitative Subprogram Targets

BayREN01 Table 3: Quantitative Subprogram Targets

Target	2013	2014
Percentage of Flex Package Projects facilitated through the Financing Portfolio Subprogram	16%	22%
Percentage of PG&E EUC-SF projects facilitated through the Financing Portfolio Subprogram	25%	36%
Number of multi-family projects (and units) served by the Multi-Family-CAP Financing Pilot	10 projects (400 units)	30 projects (800 units)
Number of Projects forecast under the PAYS® Subprogram		2,000 projects

d) Cost Effectiveness/Market Need

Methods used in the Standard Practice Manual.

The framework for the BayREN Financing Portfolio Subprogram combines expanded lending options, risk management mechanisms, conventional incentives, and tiered performance-based incentives aligned to energy improvements to promote centrally-administered, high-yield, and cost-effective programs. Key elements of the Financing Portfolio have been recognized in a number of studies and white papers, as well as programs in other states. In addition, current financing gaps and the downward pressure these gaps impose upon energy efficiency program outputs has been clearly documented, in state, national, and international sources. Among sources for these assumptions, please note:

Scaling Energy Efficiency in the Heart of the Residential Market: Increasing Middle America's Access to Capital for Energy Improvements, Clean Energy Financing Policy Brief. Zimring, M., M.G. Borgeson, I. Hoffman, C. Goldman, E. Stuart, A. Todd and M. Billingsley (Lawrence Berkeley National Laboratories, April 4, 2012).

The Role of Local Governments and Community Organizations as Energy Efficiency Implementation Partners: Case Studies and a Review of Trends, American Council for an Energy Efficient Economy and the Energy Efficiency Strategy Project/ Massachusetts Institute of Technology (February 2012).

Energy Efficiency Financing in California. The California Public Utilities Commission, Energy Division and Harcourt Brown & Carey, July 2011.

Grand Designs Great British Refurb Campaign Survey (2011).

Philadelphia ENERGYWORKS Better Buildings Neighborhood Program.

Financing Residential Energy Efficiency: Assessing Opportunities and Coverage Gaps in the American Recovery and Reinvestment Act of 2009, National Housing Conference and the Center for Housing Policy (September 2009).

Report to the Oregon Utility Commission on Pilot Programs for the Energy Efficiency and Sustainable Technology Act of 2009, Energy Trust of Oregon Public Purpose Fund Administrator (October 1, 2010).

Expanding North Carolina Energy Efficiency and Renewable Lending Programs: Market Snapshot, Environmental Finance Center at University of North Carolina at Chapel Hill (September 2010).

"Recommendations for Energy Efficiency Finance Pilot Programs", Harcourt Brown & Carey, October 19, 2012.

e) Measure Savings/ Work Papers

i. Indicate data source for savings estimates for program measures (DEER, custom measures, etc.).

Given that the Single Family Loan Loss Reserve and Multifamily Capital Advance Program will be finalized in coordination with the statewide financing consultant, projected savings for the Financing Subprogram are not offered at this time..

ii. Indicate work paper status for program measures

BayREN04 Table 4: Work Paper Status

Work Paper Number/Measure Name	Approved	Pending Approval	Submitted but Awaiting Review	Not Yet Submitted
Workpapers not required				

10. Program Implementation Details

a) Timelines

While the launch of the Single Family LLR and the Multi-Family CAP programs is pending coordination with the statewide financing consultant and CPUC authorization of the specific funding for these programs, BayREN offers the timeline found in Table 5 for the Financing Subprogram.

BayREN 04 Table 5: Subprogram Milestones and Timeline (example)

Milestone	Date
Program(s) Initiation Meeting – Steering Committee	Dec. 2012
Single-Family LLR Administrator RFP issued	Pending
Multi-Family CAP Administrator RFP issued	Pending
Marketing RFP issued	1/31/2013
Necessary Jurisdictional Resolutions Adopted	Pending
Consultants and contractors for approved financing components selected and contracted	2/27/2013
Initial Banks/Lenders Enrolled in Program(s)	Pending
PAYS® Utility Enrollment/Program Design Development Launch	02/01/13
PAYS® Program Team Confirmed/Utility Approval(s)	12/01/13
PAYS® Pilot(s) Launch	01/01/14
Installations completed	11/15/2014
Conclude Pilot Program	12/31/2014
Quarterly Progress Reports	3/31/2013 – 12/8/2014

In addition, BayREN offers the following implementation details for the components of the Financing Subprogram. Please note that the timeline in Table 5 above identifies milestones related to the Single-Family LLR and Multi-Family CAP pending CPUC final approval of these programs and their associated budgets. Therefore any timelines presented below reflect potential BayREN activities pending this final CPUC approval.

Single-Family LLR Implementation Details

In addition to the milestones included within Table 5, in regards to the Single-Family LLR, BayREN members have conferred with banks, credit unions, and other lending institutions over the past two years regarding various credit enhancements loan enrollment mechanisms. All have indicated that a LLR stimulates the participation of lending institutions because:

- It lends insurance to a new loan product
- Allows lenders to broaden eligibility, typically in FICO scores
- Represents a commitment by the State to a program that requires a time and resource investment on their part to launch

Lenders have also emphasized that energy efficiency loans products must have streamlined document processes, quality control/assurances processes implemented in a timely and responsible manner by the program implementers, and a robust and compelling marketing campaign to raise awareness and stimulate consumer uptake. Based upon this substantive exchange with lenders, the BayREN has created a plan along the following timeline for activities prior to disbursement:

- January – April 2013: Complete a Master Request for Proposals procurement process to engage quality control/quality assurance and marketing teams working in concert with BayREN Members

- January – April 2013: Formalize lender partnerships for the EUC-Single Family Program (including modified Basic Path), and develop strategic plan for loan product marketing and launch
- January – April 2013: Establish Loan Loss Reserve Account and Loan-Loss Reserve Encumbered Account
- January – April 2013: Formalize documents and mutual processes to coordinate loan enrollment and approval with shift of amount(s) equal to the loan risk ratio from the Loan Loss Reserve Account into the Loan-Loss Reserve Encumbered Account
- January – April 2013: Formalize reporting templates and frequency with Energy Division and PG&E

And timeline for support activities as follows:

- March – July 2013: Completion of Green Labeling Pilot with SoCalREN; liaison with Department of Energy on its Home Energy Score program
- March – August 2013: Progressive development of financing-targeted marketing collateral; potential expansion of case study/white paper on Green Scoring and Labeling pilots, programs and trends; circulation of data on energy efficiency/indoor air quality improvement pilot; marketing green labeling study through real estate trade venues
- August 2013: Launch initial training with real estate professionals and convening of Green MLS groups and workshops

BayREN04 Figure 2: Single Family LLR Budget

PIP Budget Categories	Year		Total
	2013	2014	
Admin	$75,000	$55,000	$130,000
General Overhead	$0	$0	$0
Incentives	$0	$0	$0
Direct Install Non-Incentives	$1,540,000	$1,925,000	$3,465,000
Loan Loss Reserve Commitment	*$1,440,000*	*$1,800,000*	*$3,240,000*
Loan Servicer	*$100,000*	*$125,000*	*$225,000*
Marketing & Outreach	$104,000	$126,000	$230,000
Education & Training	$0	$0	$0
TOTAL BUDGET	**$1,719,000**	**$2,106,000**	**$3,825,000**

BayREN04 Figure 3: Single-Family LLR Projected Expenditures

	2013		2014		Total	
	Number of	LLR	Number of	LLR	Number of	LLR

	Loans	Commitment	Loans	Commitment	Loans	Commitment
Single-Family LLR	390	$1,120,000	955	$2,120,000	1,345	$3,240,000

Multi-Family CAP Implementation Details

The proposed Multi-Family Capital Advance Pilot budget is $2,000,000, $1,500,000 of which are funds directed to the capital pool that is excepted to aggregate $3,000,000 in total loans, leveraging an equal contribution from the private lending market. The Pilot was designed specifically to minimize administrative cost and upfront delays for infrastructure development. By leveraging existing financial institutions' lending practices, the Pilot minimizes the administrative burden to $500,000.

Target Units	1,200
Average Loan Value per Unit	$2,500
Average Pilot Capital Investment per Unit	$1,250
Total Target Loan Aggregation	$3,000,000

The BayREN will undertake activities prior to the launch of the Pilot, and ongoing during the funding cycle to support the Pilot. The expenditure of loan capital is expected to correspond to the expenditure rate of rebate funds from the PG&E EUC Multifamily and BayREN incentive programs. The following milestone dates also assume funding availability as of 1/31/2013 and are subject to alterations based on timelines of fund availability and implementation of either of the two rebate programs.

BayREN04 Figure 4: Multi-Family CAP Timeline

Milestone	**Date**
Project Initiation Meeting	3/1/2013
RFPs Issued – Loan Servicer and Financing Advisor	4/1/2013
Consultants selected and contracted	4/30/2013
Initial participating lender recruitment	4/1/2013 – 6/30/2013
Administrative documents and processes set up	6/30/2013
Program collateral developed	6/30/2013
Loan product roll-out *	7/1/2013
Installations completed *	10/31/2014
Conclude Pilot Program	12/31/2014
Quarterly Progress Reports	3/31/2013 – 12/8/2014

* Tasks which coincide with the BayREN Multifamily Subprogram

The timeline for project participation should track the launch and ramp-up schedules anticipated for the rebate programs. However, expenditure of the capital pool funds should occur at the beginning of an upgrade project, as contracted with the rebates which are expected to be expended at the end of each project. The timeline below assumes an average

project timeframe of 3 – 6 months. The Administration and outreach activities are expected to be heavily loaded at Pilot initiation. The Loan Servicer activity will also be heaviest during Pilot initiation and during loan origination.

BayREN04 Figure 5: Multi-Family CAP Placeholder Budget

PIP Budget Categories	2013				2014				Total
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Admin	$25,000	$30,000	$25,000	$20,000	$12,500	$12,500	$12,500	$12,500	$150,000
General Overhead							$0	$0	$0
Incentives							$0	$0	$0
Direct Install Non-Incentives	$0	$30,000	$240,000	$330,000	$325,000	$325,000	$325,000	$125,000	$1,700,000
Capital	$0	$0	$200,000	$300,000	$300,000	$300,000	$300,000	$100,000	$1,500,000
Loan Servicer	$0	$30,000	$40,000	$30,000	$25,000	$25,000	$25,000	$25,000	$200,00
Marketing & Outreach	$25,000	$40,000	$20,000	$15,000	$12,500	$12,500	$12,500	$12,500	$150,000
Education & Training	$0	$0	$0	$0	$0	$0	$0	$0	$0
TOTAL BUDGET	$50,000	$100,000	$285,000	$365,000	$350,000	$350,000	$350,000	$150,000	$2,000,000

The proposed tasks and expenses under each quarter are as follows:

Q1 – Q2 2013: $150,000 – Set-up of program infrastructure, processes, and paperwork; recruitment and orientation of lenders. Expenses include local government agency staff hours, legal fees, consultant for lender recruitment assistance, IT and data tracking platform license fee, and meeting expenses for lender recruitment, including local transportation, venues, food, and printing.

Q3 2013 – Q4 2014: $350,000 – Ongoing program administration, and loan origination and servicing activities by the loan servicer. Expenses include local government agency staff hours for project management and outreach to lenders; loan servicer contract which may include the following tasks:

- Oversee the loan origination practices of participating lenders
- Perform primary servicing (billing, payment processing, and delinquent account collections) in connection with participating lenders, for BayREN portion of capital
- Serve as back-up servicer for any loan originators approved by BayREN that service their own loans and oversee their collection and monitoring activities
- Collect information on servicing capabilities of loan originators to assist BayREN in determining if requesting loan originators will be authorized by BayREN to service their own loans

— Maintain a comprehensive reporting system to track the payment status of all loans and report to BayREN

Q3 2013 – Q4 2014: $1,500,000 – Capital pool disbursements.

Figure 6 details illustrate total program costs, and costs for an average participating project, and where the distribution of funding from ratepayer or private sources

BayREN04 Figure 6: Multi-Family CAP Program Details

Market & Demand Analysis		
Market Size (units)	700,000	
Pilot Market Penetration Rate	0.17%	
Total units served during Pilot Period	1,200	
Average Per-Unit Project Cost Net of Rebates	2,500	
Total Financing Needed (Capital)	**3,000,000**	
BayREN Proposed Financing Pilot Budget		
BayREN capital as % of Financing Need	50%	
Program Financing Costs	1,500,000	
Admin & Marketing Budget	500,000	
Total Financing Program Costs	**2,000,000**	
BayREN or IOU Program Budget (Rebates + TA)*		
Rebate/Incentive Costs (assumes $750/unit average)	900,000	
Technical Assistance (assumes $200/unit average)	240,000	
Program Administration (5% of program budget)	57,000	
Incentive Program Costs	**1,197,000**	
Total All Program Costs	**3,197,000**	
Project-related Costs (excludes admin)		**As % of Project Costs**
Rebates*	900,000	22%
Technical Assistance*	240,000	6%
BayREN capital	1,500,000	36%
Private capital	1,500,000	36%
Total Project Costs	**4,140,000**	**100%**
Total Project Costs from Ratepayer Programs	2,640,000	64%
Leverage Ratio		
Total Financing / All Program Costs ($3M / $3.197M)	0.94	
Total Financing / BayREN Capital ($3M / $1.5M)	2.00	

* Projects receiving the financing would be utilizing PG&E EUC or BayREN bundled measure rebates. The actual rebate amount per unit will vary depending on which program the project participates in, and at what level in the case of PG&E's EUC rebate. TA is assumed to be provided by BayREN. A portion of administrative costs associated with the rebate programs is included here as an assumption.

As shown above, the ratepayer contribution on a per-project basis is 64%. However, if the NPV of the repayments may be considered to offset the ratepayer costs, this contribution level would be reduced (see discussion on repayments in the program design section). The energy savings gained through the financing Pilot is not additional to the rebate programs, so should not be considered in isolation.

Commercial PACE Implementation Details

The Commercial PACE ME&O Budget has been approved at $300,000. Detail, including allocations, timelines and milestones, are estimated as follows:

- $95,000 (March-June 2013): BayREN geographic area commercial building inventory profiling (based on a number of indicators, including age, size, style and composition, systems, building shell (incl. windows), debt to equity ratio, ownership, upgrade history, and lenders holding existing mortgage(s)
- $35,000 (March 14, 2013): regional Commercial PACE Conference, timed simultaneously with the SoCalREN Conference with audiovisual link-up
- $58,000 (March – August 2013): ROI case studies/white paper covering key EE measures and strategies for commercial buildings
- $50,000 (May – August 2013): design of market-based marketing collateral (e.g,. for banks, building managers and operators, building owners' organizations)
- $62,000 (July 2013 – July 2014): distribution of market-based marketing collateral, paid advertising with Commercial PACE focus in trade and professional trade publications and media venues. Milestones include number of market sector media impressions, direct outreach to BOMA and building managers in each county of the BayREN region, and retrofits facilitated or influenced by Commercial PACE ME&O

Commercial PACE Administrative Budget has been approved at $150,000. Detail, including allocations, timelines and milestones, are estimated as follows:

- $65,000 (March – August 2013): Internal executive processes, certification and court validation for 5 counties in BayREN region not yet formally validated under CaliforniaFIRST.
- $75,000 (March 2013 – August 2014): stakeholder outreach, project facilitation, generation of funding leverage, and project enrollment activities among building inventory targeted in Bay-wide commercial building inventory profile indicated above in the ME&O budget and scheduling breakdown

- $10,000 (March 2013-December 2014): Tracking, recording and reporting of program performance, transformative factors and trends, and obstacles

BayREN04 Figure 7: Commercial PACE Budget

PIP Budget Categories	Year		Total
	2013	2014	
Admin	$85,000	$65,000	$150,000
General Overhead	$0	$0	$0
Incentives	$0	$0	$0
Direct Install Non-Incentives	$0	$0	$0
Marketing & Outreach	$190,000	$110,000	$300,000
Education & Training	$0	$0	$0
TOTAL BUDGET	**$275,000**	**$175,000**	**$450,000**

Pay-as-You-Save Implementation Details

BayREN implementation of the Pay-as-You-Save pilot assumes that the new programs draw heavily from lessons learned in implementing the existing program in Windsor.

At the request of CPUC Energy Division staff, the following project timeline and budget are offered to augment the rolled up Milestones and Timeline located in Table 5 and the Financing budget located in Table 1.

BayREN04 Figure 8: Pay-as-You-Save (PAYS®)Draft Detailed Timeline

Steps to launch program	Date	Responsible Party
PAYS® Utility enrollment/design development launch	2/1/2013	BayREN
Jurisdiction recruitment (RFP & concept paper)	*2/1/2013*	*BayREN*
Consultants and contractors for approved financing components selected and contracted	*2/27/2013*	*BayREN*
Implementing PAYS® Jurisdictions selected	5/1/2013	BayREN
Legal review of existing program contracts, forms, and worksheets	*5/15/2013*	*PAYS Jurisdictions*
Jurisdiction specific design begins	*5/15/2013*	*Consultants/Jurisdictions*
Initial banks/lenders enrolled in program	*pending*	*BayREN*
Draft program design submitted to CPUC and Utilities for comments/approval	*7/1/2013*	*BayREN*
Develop draft marketing plan	*7/15/2013*	*MEO Consultant*
Final program design	8/1/2013	Consultants
Release RFP for: certification agent, certified contractors, bulk program measures, and capital provider	*8/15/2013*	*BayREN*
Develop final marketing plan	*9/1/2013*	*MEO Consultant*
Program design approved	*9/1/2013*	*Jurisdictions*
Necessary Jurisdictional Resolutions Adopted	*pending*	*Jurisdictions*
Proposals from vendors due	*10/15/2013*	*Consultants*
Contracts/Program design ready for vendors	*11/1/2013*	*BayREN/Consultants/jurisdictions*
Contracts with vendors signed	12/1/2013	Jurisdictions/ Consultants

PAYS® Program Team Confirmed/Utility Approvals	*12/1/2013*	*Jurisdictions*
Program start	12/1/2013	All
Training of certification agent, utility staff, and certified contractors	*12/15/13*	*BayREN/Consultants*
Develop and distribute marketing collateral	*12/15/13*	*MEO Consultant*
Program launch	1/14/2014	Jurisdictions
Installations completed	*11/15/2014*	*Contractors*
Quality assurance	*ongoing*	*Consultant*
Quarterly reporting	*ongoing*	*BayREN*

BayREN04 Figure 9: Pay-as-You-Save Detailed Budget

PIP Budget Categories	Year		Total
	2013	2014	
Admin	$32,500	$32,500	$65,000
General Management	*$16,125*	*$16,125*	*$32,500*
Data Management & Reporting	*$16,125*	*$16,125*	*$32,500*
General Overhead	$0	$0	$0
Incentives	$0	$0	$0
Direct Install Non-Incentives	$275,600	$181,400	$457,000
*Program Implementation**	*$50,600*	*$32,500*	*$83,100*
Contractor Recruitment	*$20,000*	*$4,500*	*$24,500*
Design and Scope Development	*$130,000*	*$92,000*	*$222,000*
Utility/Jurisdiction Specific Rate and Measure Analysis	*$60,000*	*$30,000*	*$90,000*
Information Technology	*$15,000*	*$5,000*	*$20,000*
*Quality Assurance**	*$0*	*$17,400*	*$17,400*
Loan Servicer	*$0*	*$0*	*$0*
Marketing & Outreach	$75,000	$50,000	$125,000
Marketing Plan	*$25,000*		*$25,000*
*Outreach Implementation and Support**	*$50,000*	*$50,000*	*$100,000*
Education & Training	$0	$3,000	$3,000
TOTAL BUDGET	**$383,100**	**$266,900**	**$650,000**

*Budgeted funds solely provide for planning and set up costs. Once the program is implemented, the majority of upfront funding for program implementation (oversight, data management, measure installations, quality control) will come from program capital secured by the implementing water utility. This is repaid over time from pilot program participants and successor occupants of these premises.

Financing Allowable Expenses

In addition to standard budget categories and program activities (e.g. program tracking and reporting within Administrative tasks), the following categories are proposed as allowable expenses for the Financing Subprogram. For the Single-Family LLR and the Multi-Family CAP components, BayREN will also leverage the Single-Family and Multi-Family subprograms' marketing budgets to incorporate specific messaging and outreach activities as related to the appropriate financing support component.

BayREN04 Figure 10: Allowable Expense Categories

Identified Sub-Category	Existing PIP Budget Category	Specific Financing Component/Program, if applicable
Market Analysis, including surveys, case studies, and building stock inventory profiling	Marketing	Commercial PACE
Registration/Validation under CaliforniaFIRST	Administration	Commercial PACE
Coordination of Quality Assurance activities	Direct Install	Pay-as-You-Save
Legal Counsel/Review of Contracts and Lending Terms/Conditions	Direct Install	Pay-as-You-Save

b) Geographic Scope

BayREN04 Table 6: Geographic Regions Where the Program Will Operate

Geographic Region	PG&E EUC Support Program	Geographic Region	PG&E EUC Support Program
CEC Climate Zone 1		CEC Climate Zone 9	
CEC Climate Zone 2	X	CEC Climate Zone 10	
CEC Climate Zone 3	X	CEC Climate Zone 11	
CEC Climate Zone 4	X	CEC Climate Zone 12	X
CEC Climate Zone 5		CEC Climate Zone 13	
CEC Climate Zone 6		CEC Climate Zone 14	
CEC Climate Zone 7		CEC Climate Zone 15	
CEC Climate Zone 8		CEC Climate Zone 16	

c) Program Administration

BayREN04 Table 7: Program Administration of Program Components

Program Name	Program Component	Implemented by BayREN staff	Implemented by contractors to be selected by competitive bid process	Implemented by contractors NOT selected by competitive bid process	Implemented by local government or other entity (X = Yes)
Financing Portfolio Program	Program Administration	Supervisory Administration	Primary Program Administrators		X
	Program Quality Control/Quality Assurance		Primary Program Administrators	X	X
	Project Tracking & EMV		Primary Program Administrators		X
	Consumer Eligibility		Primary Program Administrators		X
	Financial Portfolio Tracking		Primary Program Administrators		X
	Intra-Program Leveraging and Tracking		Primary Program Administrators		X
	Financial Portfolio Marketing		Primary Marketing Program Development & Administration		X
	Financial Portfolio Outreach – Target Markets		X		X
	PAYS® Program Administration		X	X	X
	Program Reporting	X	Consulting Program Administrator		X

d) Program Eligibility Requirements

i. Customers

BayREN04 Table 8: Customer Eligibility Requirements (Joint Utility Table)

Subprogram	Eligibility Requirements
PG&E EUC-SF LLR	Single-Family Detached Home
	Located in 9-County BayREN Region
	Meets Responsible Lending Criteria
	Energy Efficiency Improvement Threshold
Multi-Family-Capital Advance Program Pilot	Multi-Family Building of at least 5 Units
	Located in 9-County BayREN Region
	Meets Eligibility Criteria
Single-Family Flex Package LLR	Located in 9-County BayREN Region
	Meets Responsible Lending Criteria
	Energy Efficiency Improvement Thresholds (scaled)
PAYS® Pilot	Located in 9-County BayREN Region
	Meets PAYS® Eligibility Criteria
	Property owner or tenant/renter

ii. Contractors/Participants

BayREN04 Table 9: Contractor/Participant Eligibility Requirements

Contractor Eligibility Requirement
Single Family LLR: Must be a PG&E EUC or BayREN Flex Package Participating Contractor, including meeting all license and certification requirements Multi-Family CAP: Bid Proposals PAYS® Pilot: Certified Contractors pre-qualified pursuant to skills and services, including measures installation, codes, insurance, and bonding

Lender Eligibility Requirement
Multi-Family CAP: Any bank or community development financial institutions (CDFIs) may participate as a lender upon signing the participation agreement that will be developed with participation criteria as part of the initial Pilot set-up. No lenders have been identified as participating lenders at this time.

e) Program Partners

i. Manufacturer/Retailer/Distributor Partners

BayREN04 Table 10: Manufacturer/Retailer/Distributor Partners

Manufacturer/Retailer/Distributor Partner Information	BayREN03
Manufacturers enrolled in program	None
Manufacturers targeted for enrollment in program	None
Retailers enrolled in program	None
Retailers enrolled in program	None
Retailers targeted for enrollment in program	None
Distributors enrolled in program	None
Distributors targeted for enrollment in program	None

ii. Other key program partners – general Financing Subprogram

City and County of San Francisco

City of Suisun City

Community-based Organizations

County of Contra Costa

County of Marin

County of Napa

County of San Mateo

County of Santa Clara

Homeowner Associations

HVAC contractors

Joint Venture Silicon Valley

Lawrence Berkeley National Laboratories

Lenders (including without limitation banks, credit unions, PACE Equity and Wheel Funds) [39]

Local Water Districts

Local Workforce Investment Boards

Marin Clean Energy Authority

Pacific Gas& Electric

Professional Building Operation and Management Companies and Organizations

Professions and trades, e.g., real estate brokers, mortgage officers, appraisers, government building and permitting departments

Professional Building Trade Associations

Real Estate Professional/Associations

Retail/Manufacturer outlets

Sonoma County Energy Independence Program

Sonoma County Regional Climate Protection Authority

Specialized trades contractors

StopWaste.Org (Alameda County Waste Management Authority)

iii. Other key program partners – Multifamily CAP

The Pilot will be integrated into the other BayREN Multifamily program offering, and will benefit from the partnerships that will be leveraged as part of the overall program. Additionally, partners in the lending community will be sought as an initial step in establishing the Pilot. The following types of lenders and organizations will be approached for partnership.

- CDFIs and Loan Funds
- Credit Unions
- Community banks
- National banks
- Fannie Mae

[39] The following list does not currently include specific lenders, as BayREN negotiations with lenders are pending contingent upon final ruling on the BayREN Single-Family LLR and Multi-Family CAP.

— Renewable Funding

iv. Other key program partners – Pay-as-You-Save Pilot

Program Partner	Role	In Windsor PAYS
ABAG	Program Management and Administration	RCPA
BayREN Members	Program Management and Implementation; Counties with jurisdictions participating in the Pilot will work to integrate PAYS within broader BayREN/EUC programs in their jurisdiction.	RCPA
Local Government Water Utilities (TBD)	Program Management and Implementation	Town of Windsor Water Utility
Certified Contractors (TBD)	Customer outreach, installation	Bottom Line Utility Solutions
Certified Manufacturers/Distributors (TBD)	Provide qualified resource efficiency goods and appliances	Standards of Excellence, Niagara Conservation, and Chilipepper
Certification Agent (TBD)	Customer recruitment, Verification of measure eligibility and quality assurance	Sonoma County Energy Independence Program (SCEIP)
Consultants (TBD)	Program Design & Set-Up, Program Administration, ME&O, quality assurance	BKi and The Energy Efficiency Institute, Inc.
Capital Provider (TBD)	Provide capital for jurisdictions unable to self-fund	Town of Windsor

f) Measures and Incentive Levels

No incentives will be offered under this subprogram.

g) Additional Services

Additional services described here will be extended to all single-family subprograms (BayREN01), as well as multi-family and commercial buildings (BayREN02).

BayREN04 Table 12: Summary Table of Measures, Incentive Levels and Verification

Additional Services that the Subprogram Will Provide		**To Which Market Actors**	**BayREN**	
Recipient Subprogram	***Additional Services***	***Recipient Market Actors***	***Expected Charges***	***Incentives***
PG&E EUC-SF	Financial toolkit LLR option	Homeowners	Service fees	Up to 20% LLR ratio for projects estimated to attain more than 35% energy performance improvement, with a repayment term of at least 10 years
Multi-family	Financial toolkit CAP option	Property Owners	Service fees	Capital advance of 50% of loan principal at 0% interest rate
Flex Package	Cross-leveraging with LLR option	Homeowners, Property Owners	Service fees	From 15% to 20% LLR ratio depending upon energy efficiency improvement and loan repayment terms.
PAYS® Pilot	Certification Agent	Property Owners and Eligible Tenants Within Pilot IOUs' Service Areas	Measure Costs and Service Fees	Full set of rebates measures pending utility measures selection[40]

[40] PAYS® participants pay for full cost of measures, installation, and program administration through a water utility surcharge that constitutes 75% of the estimated energy/water savings. Existing rebate programs for landscaping (such as turf removal) may be applied to drought resistant landscaping option, if the participating water utility wants to include drought resistance landscaping and existing rebates funds are already available through the participating water utility.

h) Subprogram Specific Marketing and Outreach

The Financing Portfolio Subprogram has been designed to overcome market barriers erected by a lack of credit and financing options. The Subprogram will be aggressively promoted through marketing, outreach, and education (ME&O) for customers, stakeholders, and partners in the single-family, multi-family, and commercial sectors. Under the Financing Portfolio Subprogram, ME&O will target existing and potential lender clients and customers (conventional, credit union, and foundational) to raise community awareness and define the BayREN Program as a strategically placed driver to increase customer demand, facilitate streamlined (electronic) processes for loan application and enrollment, and provide multiple options (which may cross-cut and leverage each other).

In addition to direct energy efficiency, energy cost, and financing options benefits, the Financing Portfolio Subprogram ME&O will promote:

- Increased inclusiveness under a diversity of Bay Area program options
- Social and environmental co-benefits (e.g., stabilize energy infrastructure, improved indoor air quality and healthier living spaces)
- Economic co-benefits (decreased costs, higher building performance, governmental incentives relating to plan review, permitting and inspection, and new valuations on energy efficiency such as Green MLS ratings)
- Accessible and regionally consistent Financing Portfolio options and contractor/supplier incentives
- Energy efficiency achieved through improvements under the water-energy nexus
- Streamlined loan application and enrollment processes

Under the Multi-Family Capital Advance and Commercial PACE options, ME&O will also target building owners, operators, and managers. Commonly, owners are reluctant to pay for building improvements that appear to only benefit tenants. The BayREN ME&O will address this market barrier with a campaign that demonstrates the benefits and co-benefits of whole building upgrades that achieve energy and water efficiency. The campaign will highlight financing options and incentives, as well as cash-neutral or cash-positive outcomes (upgrades that provide cost avoidance volume that surpasses monthly loan expenses).

i) Subprogram Specific Training

The Financing Portfolio Subprogram will engage skilled consultants, contractors, and implementers, and will not require independent training.

j) Subprogram Software and/or Additional Tools

i. No software or tools will be required.

ii. Indicate if pre and/or post implementation audits will be required for the subprogram. __ Yes _X__ No

Pre-implementation audit required ___ Yes _X__ No

Post-implementation audit required __ Yes _X_ No

BayREN04 Table 13: Post-implementation Audits

Levels at Which Program Related Audits Are Rebated or Funded	Who Receives the Rebate/Funding (Customer or Contractor)
Not applicable	

k) Subprogram Quality Assurance Provisions

BayREN04 Table 14: Quality Assurance Provisions

Program Element	QA Requirements	QA Sampling Rate (Indicate Pre/Post Sample)	QA Personnel Certification Requirements
Financing Portfolio	Property must meet eligibility requirements	100% pre-sampling	None
	Property Owners Must Meet Responsible Lending Criteria	100% pre-sampling	None
	Contractor holds valid license and meets eligibility requirements (Energy Upgrade Participating Contractor or participant in other qualified program)	100% pre/post sampling (initial and routine verification)	None
	PAYS®	100% pre/post sampling	Certification Agent
	Project meets requirements of program	100% pre/post	BPI-BA
	Field Verification of Measures Installed	100% post-sample	BPI-BA
	Field Verification of Combustion Safety Test for Air Sealing (relevant projects)	100%	BPI-BA

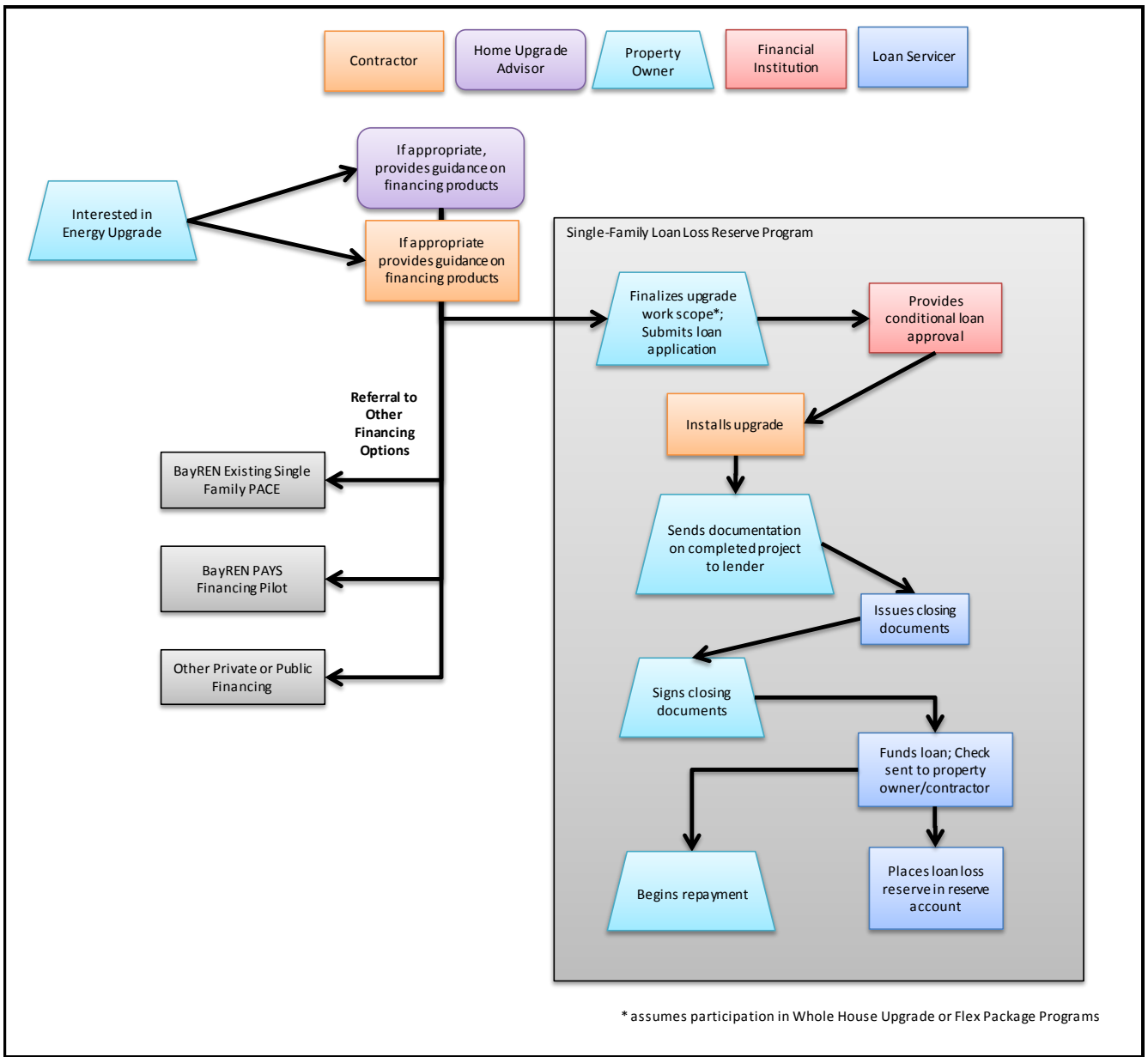
l) Subprogram Delivery Method and Measure Installation /Marketing or Training

No additional marketing or training will be provided; excepting training text manual for the PAYS® Subprogram.

m) Subprogram Process Flow Chart

For the Multi-Family Capital Advance Pilot, Figures 12 and 13 below describe the participation process and party roles.

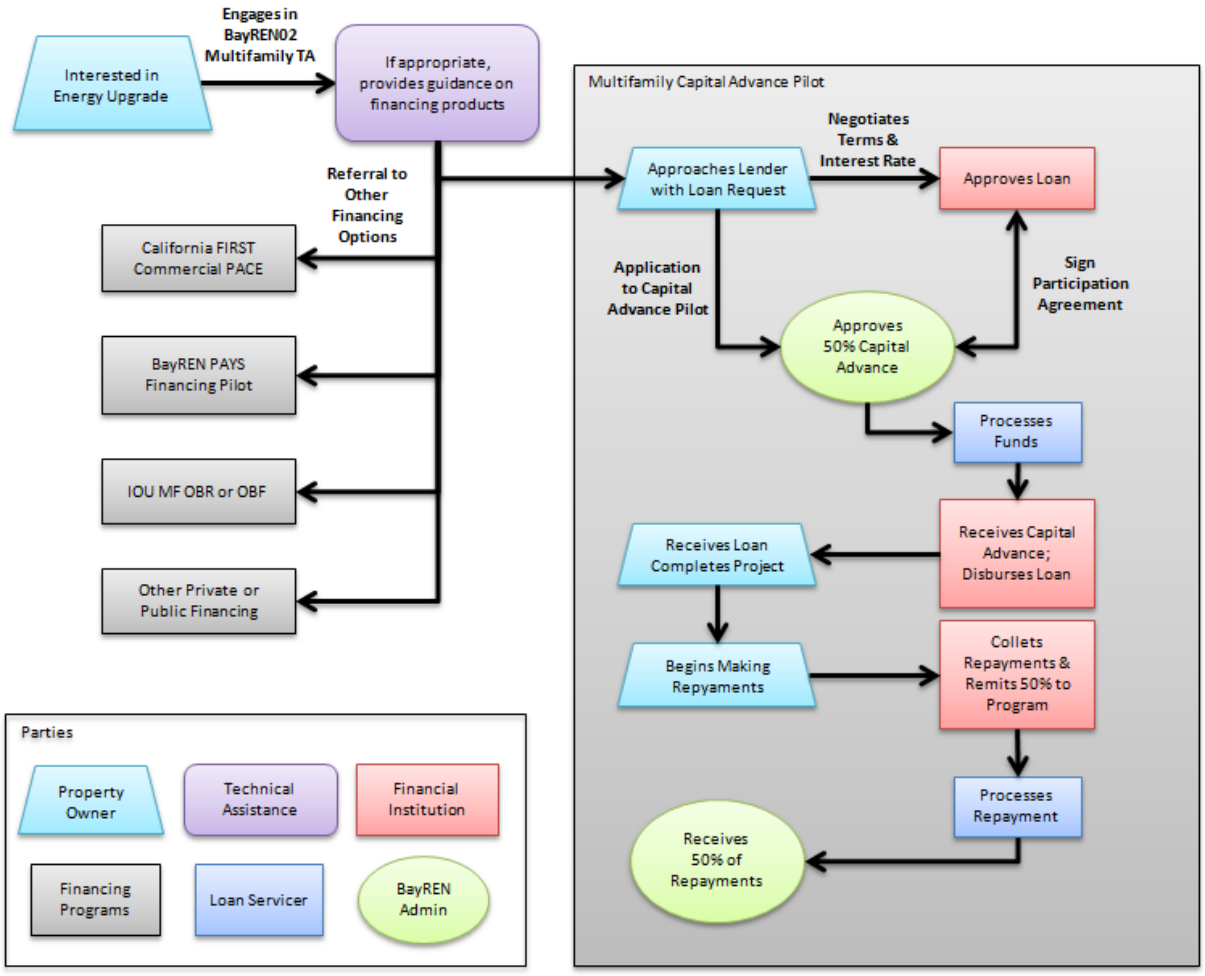
BayREN04 Figure 11: Financing Portfolio Single-Family Loan Loss Reserve Program Process Flow Chart



BayREN04 Figure 12: Financing Multi-Family Capital Advance Pilot Parties and Roles

Party	Roles
BayREN	Program administration and reporting Approval of 50% capital advance Issues participation agreement to be signed by lender
BayREN MF TA Provider	Measure identification assistance and referral to incentive programs If BayREN bundled measure: Project scope definition and payback quantification If PG&E EUC: Direct project to complete audit and define scope through PG&E process
Property Owner/ Borrower	Loan application to lender Loan repayments
Financial Institution	Lender qualification Loan approval Primary loan servicing Signs participation agreement with BayREN
Loan Servicer	Financial institution qualification Oversight over loan origination and payment processing practices Capital disbursement to lender; repayment collection from lender

BayREN04 Figure 13: Financing Portfolio Multi-Family Capital Advance Pilot Process Flow Chart



n) Cross-cutting Subprogram and Non-IOU Partner Coordination

BayREN04 Table 15: Cross-cutting Subprogram and Non-IOU Partner Coordination

Financing Portfolio Subprogram		
Other REN Subprograms	**Coordination Mechanism**	**Expected Frequency**
Single-Family	Project Referrals	All potential projects, either through Energy Advisor, the Local Government, or Contractors
Multi-Family	Project Referrals	All potential projects, either through Energy Advisor, the Local Government, or Contractors
Codes and Standards	Local Governments Marketing of Internal Incentives (e.g., fast-track permitting)	All applicable projects
IOU Program Name	**Coordination Mechanism**	**Expected Frequency**
Statewide Financing Consultants	Meetings, communications	Regular as needed to coordinate statewide and REN financing components
PG&E EUC, energy efficiency rebates, direct install programs, demand response, local government partnerships, etc.	Meetings, communication, participating contractor and QA updates, regional coordination, rebate coordination	Monthly
Coordination Partners Outside CPUC	**Coordination Mechanism**	**Expected Frequency**
Banks, Credit Unions and Lending Institutions	Meetings, regional coordination, cross-marketing, outreach and communications, communications	Monthly
Bay Area Green Business Programs	Regional coordination, cross-marketing, stakeholder forums and communications	Quarterly
CAEATFA Loan Loss Reserve Program partners	Meetings, communication, participating contractor and QA updates, regional coordination,	Quarterly
CALBO	Regional coordination, training collateral, marketing/outreach	Quarterly
California Community Services and Development Dept.	Regional coordination with Weatherization Assistance Programs	Quarterly
Climate Institutions (Bay Area Climate Collaborative, Joint Venture Silicon Valley, Silicon Valley Leadership Group, Sustainable Silicon Valley)	Regional coordination, cross-marketing, stakeholder forums and communications	Quarterly
Workforce organizations and institutions (e.g., NARI, Working Partnerships USA), and PG&E	Regional coordination; cross-marketing; workforce training and collateral	

EUC Participating Contractors		
Water Utilities and Districts	Regional rebate coordination, cross-marketing, and mapping coordination	Bi-Monthly

o) Logic Model

Logic Model provided in Attachment 1.

11. Additional Subprogram Information

The BayREN Financial Portfolio Subprogram advances the following goals, strategies, and objectives of the California Long Term Energy Efficiency Strategic Plan:

a) Advancing Strategic Plan Goals and Objectives

BayREN04 Figure 14: Strategic Plan Alignment

Bay-REN Financing Portfolio Subprogram Alignment With the California Long-Term Energy Efficiency Strategic Plan		
Residential and Low Income		
Strategy Number	**Strategy**	**BayREN Financing Portfolio Subprogram Strategy**
1-4	Develop innovative financing programs for the construction of energy efficient homes	The Financing Portfolio provides a variety of financing options that provide risk assurances to lenders and competitive choices to consumers and building owners.
1-5	Encourage local, regional and statewide leadership groups to support pilots and foster communication among pioneering homeowners and builders	The Financing Portfolio Subprogram's marketing, outreach, and education campaign will expand beyond homeowners associations to lending institutions, builders, building operation and management associations, and other relevant trade and professional groups.
2-1	Deploy full-scale Whole-Home Programs	The Financing Portfolio will drive and facilitate greater demand and uptake in whole-home energy efficiency projects.
2-4	Develop financial products and programs such as on-bill financing to encourage demand for energy efficiency building products, home systems, and appliances.	The Financing Portfolio designs, monitors, implements, and seeks to continuously expand and improve financial products and programs for whole-home energy efficiency.
Commercial Sector		
Strategy Number	Strategy	BayREN Financing Portfolio Subprogram Strategy
2-6	Develop effective financial tools for energy efficiency improvements to existing buildings	The Financing Portfolio promotes and cross-leverages financing instruments for broad market reach.

BayREN04 Figure 14 continued

Local Governments		
Strategy Number	**Strategy**	**BayREN Financing Portfolio Subprogram Strategy**
1-2	Establish expedited permitting and entitlement approval processes, fee structures, and other incentives for green buildings and other above-code developments	This 9-County program allows for systemic implementation throughout the Bay Area of government-driven incentives such as fast-track permitting, reduced fees, etc.
1-3	Develop, adopt and implement model point-of-sale and other point-of transactions relaying on building ratings to increase efficiency in existing buildings	The Financing Portfolio ME&O campaign will feature a full compendium of co-benefits—both social, environmental and economic—including home and building valuation increases through energy efficiency (and water) upgrades, impacts of enhanced home or building performance, and cost-neutral and/or cost-positive options.
4-1	Local governments lead their communities with innovative programs for energy efficiency, sustainability, and climate change	The BayREN jurisdictions led highly-successful upgrade, marketing, and workforce programs during the SEP 2010–2012 cycle. Building upon those successes, the BayREN will expand its work in innovative programs, diverse financing options, and integration of expanding energy efficiency programs and messages (including public health benefits) with its local and regional climate, greenhouse gas, sustainability and adaptation programs, and grant-funded projects (e.g., Strategic Growth Council-funded projects).
4-4	Develop local projects that integrate energy efficiency, DSM, and water/wastewater end uses.	The BayREN program will serve this Strategic Plan through multiple subprograms, including single-family and multi-family, and the PAYS® pilot.
5-1	Create a menu of products, services, approved technologies and implementation channels to guide local governments that currently lack deep expertise in energy efficiency	The 9-County Steering Committee model for BayREN was effectively implemented during 2011-2012 to provide equitable and uniform access by and responsiveness to all cities within the governing area. This model will be expanded during the 2013–4 Energy Efficiency Program Cycle. This approach provides parity of programs, technology, and information regardless of municipal internal resources, and avoids balkanization of energy efficiency among jurisdictions.

b) Integration

i. Integrated/coordinated Demand Side Management

The Financing Portfolio Subprogram represents:

1. An expansion of funding options launched during the initial SEP period
2. Increased cross-leveraging of upgrade programs with compatible financing options
3. Innovative yet cost-effective response to existing market barriers and the unique demands of distinct consumer groups
4. Variable options to promote greater incorporation of reductions in energy use embedded in water consumption and distribution

The Financing Portfolio extends the coordination between the nine Counties of the BayREN Region to achieve programmatic continuity and consistency and increase market scope and saturation for deep energy upgrades. These efforts will be expanded in the 2013–2014 period, as BayREN will continue to identify high-yield, cost-conscious means of driving regional consumer demand by deploying competitive financing options, effective sector marketing, and enhancing contractor-lender relationships. The Financing Portfolio will restate the benefits of other energy efficiency and green building programs to consumers, including benefits such as indoor and outdoor water efficiency, green product rebates, improved building performance, and increased property values. BayREN will cross-market with other programs such as California FIRST and CAEATFA's Loan Loss Reserve Program and will optimize program performance through added government incentives such as fast-track review and permitting.

BayREN04 Table 16: Non-Energy Efficiency Subprogram Information (TBD)

Financing Portfolio		
Non-Energy Efficiency Subprogram	**Budget**	**Rationale and General Approach for Integrating Across Resource Types**
Water Utility Indoor Water Efficiency Incentive Programs	Vary	Cross promotion, integration into Energy Advisor services
Local Government Outdoor Water Efficiency Programs (e.g., Lawn Conversion Rebates, Bay-Friendly Landscaping and Gardening)	Vary	Cross promotion, integration into Energy Advisor services
Local and Regional Government Green Business Programs	Vary	Cross promotion; sector profiling for energy and water use
EPA WaterSense	Unavailable	Promotion of brand, installation of products (e.g., aerators) by Energy Advisor
Green Point Rated Existing Home	Unavailable	Cross promotion of label, incentives offered through BBP pilots

ii. Integration across resource types

See above for a description of intended program and cross-marketing partners and efforts, which bring together actors in the lending, local government, contractor, utility, water agency, professional realty and other trades, and commercial and residential sectors.

c) Leveraging of Resources:

The Financing Portfolio program leverages the following programs:

- CPUC/CEC Energy Upgrade California Brand
- Sonoma County Energy Independence Program
- San Francisco County's PACE Program
- Energy Upgrade California Statewide Marketing Program (California Center for Sustainability Energy)
- Weatherization Programs
- California Solar Initiative
- Technology Credit Union's Green Home Loan Program

- Matador Credit Union's Loan Loss Reserve Program
- City of Windsor Efficiency PAYS® Program
- PG&E Whole House Incentive Program-Basic Contractor Credentials Quality Assurance Support, Marketing Channels
- PG&E Local Government Partnerships and Energy Watches-Co-Marketing Channels
- Other local government energy and sustainability efforts and campaigns
- Other local government programs within relevant agencies and bureaus, such as building, permitting, and inspection departments
- Water Districts and Agency Programs
- Regional and local BBP Programs
- Additional grant and alternative funds leveraging by BayREN jurisdictions

Specific to the Pay-as-You-Save Pilot, the following table outlines anticipated leveraged funding amounts.

BayREN04 Figure 15: Pay-as-You-Save leveraged funding

Funding Sources	Purpose	Anticipated Amount
Third party capital	Initial capital provided by third party or implementing utility for purchase of efficiency measures and appliances, and other program costs. Repaid by participating customer surcharges.	$4,000,000
Customer co-payment	Some enhanced landscaping and advanced measures which pass the total resource cost test or offer non-quantifiable benefits to participants but do offer significant immediate savings require an up-front out-of-pocket payment to enable the rest of the measure to qualify for the cost-effectiveness threshold applied to the surcharge. This allows the customer flexibility in measure selection (in recognition of non-energy benefits associated with some measures and some customers' commitment to climate change and understanding of life cycle economics).	TBD; depends on measures installed
Better Buildings Program PAYS Grant	The Windsor Efficiency PAYS® pilot currently running in Sonoma County was funded by a Department of Energy BBP grant. The BayREN PAYS® will borrow aspects of this program design and capitalize on lessons learned	$655,000
Existing water and energy utility rebates	Depending on the participating water utilities selected, any existing rebate programs may be reallocated to save funds no longer needed to motivate customer installations and used to target desired measures which are not sufficiently cost effective to qualify for the tariff. Additionally, all PAYS® participants must be eligible for the same rebates available to	TBD; depends upon eligible measures and installation totals

	other gas, electric and water customers for the pilot to succeed.	
Total Leveraged Funding		**>$4,655,000**

d) Trials/ Pilots

The MF-CAP and PAYS® Pilots described above will be implemented 2013–14.

e) Knowledge Transfer

BayREN staff and members will regularly assess program outcomes, benchmarks, and milestones, and will track challenges, lessons learned, and necessary adjustments for all technical, administrative, and marketing aspects of program implementation. These data sets will be organized and transmitted to local government partners operating similar programs (e.g., County of Los Angeles). Knowledge transfer will occur through: regular meetings of local government forums (such as the Governor's Office of Planning and Research, the LGSEC, Local Government Commission, Urban Sustainability Directors Network, etc.); meetings with regional NGO and institutional partners (e.g., Joint Venture Silicon Valley, Los Angeles Regional Collaborative for Climate Action and Sustainability, the Bay Region Joint Policy Council, the Bay Area Climate Collaborative); and through program updates provided to the Commission and program partners.

12. Market Transformation Information:

a) Market Transformation Objectives

The market transformation objectives of the BayREN Financing Subprogram are the following:

- Decrease the number of households unable to participate in whole-house program due to lack of available financing
- Deliver integrated demand-side energy management options that include efficiency, demand response, energy management, and self-generation measures through coordinated marketing and regulatory integration
- Increase general knowledge and awareness amongst property owners and managers of energy efficiency practices and benefits, and encourage a long-term transition toward energy efficient property improvements
- Increase awareness of energy efficiency among relevant professional industries, including central system contractors, industry associations, and other multi-family service providers
- Create streamlined coordination of DSM programs across IOUs, local governments, and other organizations

b) Market Description

Market actors include:

- **Banks, Lenders, Credit Unions (Lending Institutions)** – To work with the BayREN Program Administrators to offer, market, and cross-leverage the financing choices, incentives, and customer-group tailored funding options for installation of single- and multi-family residential and commercial energy and "energy system" (e.g., water) efficiencies.
- **Other Energy Efficiency and Renewable Programs** – Such as CFI, BBP, and Weatherization Programs, as leveraging partners in energy and energy system upgrades.
- **Water Agency/District Programs** – To maximize energy efficiency outcomes through partnering with water agency programs and promoting improvements in the efficiency of energy embedded in water distribution, collection, and processing.
- **Building Performance Auditors –** Partner with the BayREN Program to increase residential and commercial building owner awareness of energy efficiency's return-on-investment, cash-positive and cash-neutral energy efficiency improvements, and benefits of whole-building improvements.
- **Building Performance Contractors** – Deliver information to residential and commercial customers on financing options and incentives.
- **General Contractors —** Oversee delivery of residential upgrades and other installation work. May perform direct installation or subcontract to specialty contractors. Assist in data gathering of customer and upgrade information.
- **Green Building Professionals —** Building professionals, including general and specialty contractors, who are trained to deliver or assess technical work that incorporates additional green building concerns beyond energy efficiency, such as outdoor water efficiency, indoor air quality, resource conservation, and low-impact development/site water management. Serve as private contractors or on behalf of green building rating and incentive programs.
- **Single-Family Residential Property Owners**
- **IOUs —** Run energy efficiency incentive programs, especially EUC. Conduct contractor management, quality assurance, program administration for EUC.
- **Local Governments —** Set greenhouse gas emissions, energy savings, and other sustainability goals and implement programs to meet those goals. Support IOU energy efficiency programs through professional and customer outreach, coordination amongst local actors, enforcement of code. Pilot energy efficiency programs.
- **Other Energy Efficiency Programs —** IOU third party and local government partnership programs that implement direct install, weatherization, and other incentive programs.
- **Non-Energy Efficiency and Conservation Programs —** Water utility, local government, green building, Green Business, and other programs that

promote and incent resource conservation, air quality, green products, and other non-energy efficiency efforts.

- **Other Relevant Professional Trades —** This includes all professional industries and associations that may affect property owner and building professional choices, including real estate professionals, product manufacturers, and suppliers. These actors affect behavior of their clients through the services they offer and products they provide.
- **Organizations, Foundations, and Institutions —** This includes CBOs, as well as organizations implementing community, climate action, sustainability, adaptation, and economic development missions.

c) Market Characterization and Assessment

In order to develop a Program Implementation Plan that addresses key market barriers, the BayREN members have referred to a number of sources that have characterized and assessed challenges to the State's principal energy efficiency long-term transformative goal. These resources include *Recommendations for Energy Upgrade California in the Bay Area Final Report* April 2012 (ABAG Report), the White Paper on Financing from the Home Performance Resource Center, March 2010 (HPRC Financing White Paper), and Recommendations filed by the California Center for Sustainable Energy with the Commission on February 22, 2012, following the February 2012 Energy Upgrade California Financing Workshop (CCSE Financing Comments). These considerations have informed the BayREN's approach to developing a responsive Program Implementation Plan:

ABAG Report. The ABAG Report identified limited upgrade options, limited financing options, and lack streamlined, reliable processes as key impediments to greater uptake in the PG&E EUC. Based on these findings, it made the following recommendations:

- **Launch regional financing strategies that make Energy Efficiency Affordable and Accessible.** Offer financing mechanisms, including both Property Assessed Clean Energy (PACE) and alternative financing, to address the high upfront cost of energy upgrades. More specifically, the ABAG Report recommends a regional program of affordable financing to fund building upgrade projects such as credit enhancement tools (e.g., loan loss reserve), interest rate buy-down programs, and PACE programs. Contractor financing/growth capital to purchase equipment and manage cash flow problems caused by IOU rebate processing times was also recommended.
- **Pilot "a la carte" menu-based incentive program.** Local governments are in the best position to launch a pilot program using an "a la carte" menu approach of energy-savings-based point-weighted measures such as Flex Path in Los Angeles County. Local governments can be more flexible than PG&E and can streamline and implement efficiencies by quickly launching a simpler program design, which reduces overall administrative burden and job processing time. A menu-based incentive program can replace the existing IOU Basic Package, allowing the IOUs to focus their efforts on a performance-based program that offers higher levels of incentives.
- **Increase incentive offerings and conduct research on effectiveness.** Offer regional audit rebates and evaluate their effectiveness. Offer rebates for audits or project

"kicker" to encourage participation in the IOUs PG&E EUC and evaluate how effective the rebates are in leading to completed upgrades. By administering audit rebates (for test-in and test-out), local governments have access to real-time feedback on project participation, which enables fine-tuning of consumer marketing strategies and contractor support. Until broader data sharing obstacles with the IOUs are resolved, the only way for local governments to conduct meaningful program EM&V is by using the project data obtained by administering a rebate.

- **Provide "third party" property owner and contractor support.** Provide neutral "third party" assistance and advice to property owners as they enter and navigate the energy upgrade process and apply for associated rebates. Provide the same type of assistance and advice to contractors applying for local government rebates. This role could be served by local governments or non-profit organizations.
- **Streamlined Processes** for participants, contractors, lenders, and administrators in order to reduce transaction costs and build a quality green workforce. Reduce duplicative paperwork and data entry for incentive and other program processing.
- **Address Split-Incentive Issues** with multiple approaches including Green Labeling, return-on-investment analyses, and quantification of benefits and co-benefits.
- **Utilize local government incentives to complement the utility program design and incentive.** Local government incentives can best promote existing utility programs and/or improve the value proposition of upgrades incentivized by utility programs by requiring no additional property owner and contractor burden.

HPRC Financing White Paper: The HPRC Financing White Paper also focused its recommendations on the variety of financing options (including low-interest mechanisms), clarity and simplicity of processes, strategic layering of options with incentives, and greater support to performance-based, deep upgrades over upgrades motivated by products or services. The BayREN Financing Portfolio has addressed each of these market barriers with a diverse, accessible, layered and performance-based menu of funding choices.

CCSE Financing Comments: CCSE's comments below represent its responses and recommendations to direct questions posed in the *Administrative Law Judge's Ruling Regarding Energy Efficiency Financing (R. 09-11-014),* including the three-day workshop held at the Commission on February 8-10, 2012, regarding energy efficiency financing. Queries raised in the Ruling deal directly with financing market barriers, audits, and options. CCSE's responses have also influenced the concept and design of the BayREN Financing Portfolio, which has been similarly structured as curative measures to the challenges reflected in the ALJ's interrogatories:

B3. ***Should IOUs be able to propose to be loan originators? Why or why not? For what types of customers?*** "IOUs should not be allowed to originate loans, as this is a task that falls well outside of the core skill set of IOUs and could create any number of limitations on participation in the program."

B10. ***Should there be some advantageous underwriting or interest subsidy for projects that involve "deeper" levels or more "comprehensive" efficiency improvements?***

"The Commission should definitely provide some form of funding assistance to encourage deeper retrofits, as this is crucial to developing the whole building performance market, which is needed to meet California's energy and climate goals. As evidenced by the input given by various financial institutions at the workshops, interest rates for projects with long payback periods will not even be in the single digits without major credit enhancements. Therefore, any EE financing mechanism implemented by the Commission should make credit enhancements available for these deeper retrofit projects such that interest rates are closer to 7%, or lower, to attract participation."

B19-22. ***Questions regarding use of ratepayer dollars for credit enhancement purposes***

"Ratepayer support for credit enhancements of various flavors (loan-loss reserve, underwriting, interest rate buy-downs, etc.) are a vital component of any EE loan mechanism, as currently available EE mortgages and other EE loan products are not offering the necessary terms to spur widespread participation in deeper energy retrofit projects. In order to reach significant participation levels, credit enhancements will be needed to support projects undertaken by customers with lower credit scores (650 and below) in order to secure reasonable terms for these projects. A number of workshop participants recommended specific tiered credit enhancement levels based on a customer's FICO score, and these could serve as a model for ratepayer supported credit enhancement program."

C4. ***What entity or entities should be sought to administer a loan loss reserve form of subsidy or an interest rate write-down subsidy? (e.g., a state agency, nonprofit, governmental, utility, or private financial entity? Or a specific entity such as CAEATFA?)***

"Administration of any ratepayer funded loan loss reserve, interest rate buy-down, or other financing subsidy *should be overseen at a local/regional level by local government and nonprofit entities (emphasis added)*. The Ruling identifies a number of tasks such as contractor training, marketing and outreach, quality assurance, and others that are not core competencies of IOUs and which must be done at the local level in order to respond and adapt to conditions on the ground. Local governments and mission-driven organizations are already doing this through ARRA-funded programs including Energy Upgrade California, PACE, and loan-loss reserve programs. There are existing examples of this third-party approach in coordination with local governments already underway. . . .Through partnerships with state and federal agencies, local governments, financial institutions, community based organizations, workforce developers, residents and utilities, this regional approach has developed a strong foundation and remains the ideal vehicle for further program administration and integration.

"This model is successful and should be further supported as this industry continues to develop and the need for greater program and resource integration becomes necessary. As evidenced in CCSE's approach to the Building Performance industry, continued coordination and integration of local, statewide and federally based programming will

ultimately result in a more efficient and less overlapping set of resources available to our communities. This includes not only the coordination of technical standards broadly, but specifically the additional involvement of existing services such as PACE and local loan-loss reserve programs."

C5. ***What roles, if any, should utilities play in informing customers about financing available and/ or actively promoting specific or all financing mechanisms?***

"Experience with EUC efforts across the state have shown that the IOUs cannot be expected to market programs that are not directly related to their own core programs. Certainly utility inclusion of information and messaging on financing would be welcome, but it should not be the core channel. Marketing and outreach related to EE financing should be handled by local governments and mission-driven organizations."

C19. ***How should private or local government entities be encouraged to offer loans not otherwise available (e.g., to reach target markets)?***

"As previously stated in these and other comments within this proceeding, there are many local and regional energy financing efforts underway throughout California. These programs are being driven by local governments and non-profit organizations that are closely connected to the communities they serve. . . . The Commission should recognize these efforts and funnel ratepayer money to support local PACE programs, loan-loss reserves, and other EE financing mechanisms currently being set up by local governments. . . . EE financing is still needed and the Commission should take advantage of the local and regional infrastructure that has been established to help spur further participation in these programs and maximize the energy savings resulting from such programs. Such funding could be used for credit enhancement at the local level and for standardization of programs across regions in order to ensure consistency and lessen confusion for participants throughout the state. Through credit enhancements and marketing and outreach funds, local governments and non-profits could reach out to appropriate target markets with a variety of financial options to achieve greater penetration of whole building retrofits."

d) Proposed Interventions

Proposed interventions have been described throughout this program description, and are focused on securing the success of Energy Upgrade California by expanding financing options to address market barriers specific to multiple consumer groups, establishing cost-effective performance-based incentives, and reducing technical, cost, and process barriers. A summary is provided in the table below.

BayREN04 Figure 12: Market Transformation Barriers and Interventions

Barrier	Proposed Intervention
Program design barriers-Required audit, program complexity, lack of program options	Audits incentives for completed PG&E EUC-SF Advanced Projects, Flex Package incentive, Energy Advisor
Lack of Lender Uptake in Energy Efficiency Programs	LLR and DSR accounts that attract lender participation and promote deployment of credit enhancements
Program Cost Barriers	Audits incentives for completed PG&E EUC-SF Advanced Projects, Flex Package incentive, financing (BayREN04) options and credit enhancements
Ledger Sheet Barriers to Commercial Projects	Promotion of Commercial PACE options allow commercial building owners to carry improvements as annual operational costs rather than debt
Limited customer awareness of benefits, co-benefits and return-on-investment	Broad and targeted marketing campaign, contractor sales training; and audit incentives
Lack of professional/industry awareness	Professional outreach as part of marketing campaign
Contractors limited by financing options	See above under Program Cost Barriers; Home Upgrade Advisor to support contractor sales

e) Program Logic Model: See Program Logic Model in Attachment 1

f) Market Transformation Indicators (MTIs) and Evaluation Plans

Resolution E-485 (December 2, 2010) Appendix B, lists adopted Market Transformation Indicators for the 2010–2012 Energy Efficiency Portfolio, which were then amended by Energy Division in 2011 at the direction of the Commission. To ensure consistency with adopted Market Transformation Indicators and Program Evaluation strategies, BayREN proposes the following Market Transformation Indicators, based upon the proposed amended Whole House Upgrade and IDSM MTIs proposed by Energy Division in 2011:

- Commercial/Industrial/Agricultural Combined (CEI) MTI 1: Number and percent of Calculated Incentive participants who go on to implement a long-term energy plan under the Continuous Energy Improvement program. Metric Type 3.
- Commercial/Industrial/Agricultural Combined (NRA) MTI 4: Percent of NRA participants that implement recommended measures without receiving an IOU incentive. Metric Type 3.
- Whole-House MTI 2: Proportion (%) of households that elect not to perform comprehensive energy upgrades due to various barriers such a slack of available financing, lack of qualified contractors, undesirable payback period, lack of urgency, "hassle" of upgrade, or uncertainty that the upgrades will provide appreciable benefit. Metric Type 3.
- Whole House MTI 3: The number of IOU customer households that undergo a deep upgrade (Advanced and/or IDSM) audit through IOU programs. Metric Type 3.
- IDSM MTI 2b: Percent of customers in each customer class who have received an integrated audit and percent of these customers (by audit type) who have implemented one or more of the audit recommendations (indicate how many incentivized vs. non-incentivized). Metric Type 3.
- IDSM MTI 3: Percent of customers in each customer classes who are aware of integrated programs or incentive opportunities. Metric Type 3.
- IDSM MTI 5: Water conservation and waste reduction strategies are incorporated into integrated program offerings. Metric Type 3.
- Program evaluation will be conducted in coordination with EM&V activities conducted on behalf of the Commission and PG&E. BayREN members will participate as possible in all data collection and interpretation activities, as directed by the Commission. At this time, BayREN proposes the following metrics for evaluating its success in meeting the above objectives:
    - Volume of deal flow generated through the program

- Difference in lender interest rate for program participants versus non-participants of similar lending qualifications
- Number of lenders participating or accepting the capital advance product, and qualitative feedback on experience and potential outcomes of participation on future processes
- Number of property owners participating
- Increase in project scope for participating property owners
- Data gathered through market testing of product

These metrics will be tracked for EM&V purposes, and will be integrated with the BayREN Multi-family program processes. The BayREN will engage in on-going coordination with the Energy Division to ensure appropriate data collection for EM&V needs.

13. Additional information as required by Commission decision or ruling or as needed: N/A