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 August 6, 2013

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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

The Decision authorized two pilot RENs, the Southern California REN and the San Francisco Bay Area REN ("BayREN")[1]. In addition to the goals articulated by the Commission in the Decision, 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.[2] These activities include:

- 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

[1] The BayREN is an unincorporated association of the following regional and public entities: Association of Bay Area Governments, City and County of San Francisco, Alameda County Waste Management Authority (StopWaste.org), County of Contra Costa, County of Marin, County of Napa, County of San Mateo, County of Santa Clara, City of Suisun City (on behalf of Solano County) and Sonoma County Regional Climate Protection Authority, or their successor agencies.

[2] 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.

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	$9,000,000	2,128,378	3,438	293,803

Upgrade				
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[3]	$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[4]	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 build upon the successful Advanced Path Program deployed by the BayREN counties during ARRA, and implement a modified Basic Path (Home Upgrade) 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 (Home Upgrade) 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 (Home Upgrade) 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

[3]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. .

[4] 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. 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.

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. Subprogram BayRENO1.

5. Subprogram Name: BayREN Single-Family Energy Upgrade Subprogram

6. Subprogram ID number: BayREN01

7. Type of Subprogram: Regional Energy Network

8. 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: _____)

9. 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

10. 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.

11. Projected Subprogram Total Resource Cost (TRC) and Program Administrator Cost (PAC)

TRC 0.56 PAC 1.29

12. Projected Subprogram Budget

BayREN01 Table 1: Projected Subprogram Budget, by Calendar Year

	Program Year		
BayREN 01 Single-Family	**2013**	**2014**	**Total**
Admin ($)[5]	$194,052	$291,078	$485,130
General Overhead ($)	$0	$0	$0
Incentives ($)[6]	$712,950	$3,435,750	$4,148,700

[5] Admin is defined as contract development, internal partner coordination, administration, reporting, and other non-program activities.

[6] Includes direct incentives only. Incentive program administration activities included in "Direct Install Non-Incentives."

Direct Install Non-Incentives ($)[7]	$638,025	$1,270,165	$1,908,190
Marketing & Outreach ($)[8]	$1,103,990	$1,103,990	$2,207,980
Education & Training[9]	$125,000	$125,000	$250,000
Total Budget	$2,774,017	$6,225,983	$9,000,000

13. 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 (Home Upgrade) 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 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 (Home Upgrade) upgrade approach[10] addresses customer confusion by providing a much simpler

[7] Defined as all incentive processing, program design, set up, and evaluation activities not included directly under "Marketing and Outreach" or "Education and Training."

[8] Includes all expenses and program labor associated with marketing and outreach activities.

[9] Includes all expenses and program labor associated with education and training activities.

[10] After the April 2, 2013 joint Advice Letter was filed, the RENs and the IOUs agreed on a new name for the Flex Package program. The new name is Home Upgrade. In an attempt to maintain consistency with the April joint filing, the program is still referred to as Flex Package with Home Upgrade appearing parenthetically.

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.[11]

  In addition, Flex Package (Home Upgrade) will provide an alternative upgrade package with predetermined 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

  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

[11] 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.

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 (Home Upgrade) is designed to be easily incorporated into existing contractor business models, while encouraging contractors to pursue additional energy efficiency measures. For example, Flex Package (Home Upgrade) 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 (Home Upgrade) 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(Home Upgrade) 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.[12]

- 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 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 (Home Upgrade) 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

[12] 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.

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 (Home Upgrade) 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[13]

	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

[13] Net energy savings calculations were based upon the weighted to date energy savings generated through the BayREN Single-Family E-3 calculator.

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 (Home Upgrade) 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.

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
Number of units incented through Flex Package (Home Upgrade)	360	2142
Percentage of Home Upgrade Advisor participants that complete a Flex Package(Home Upgrade) project	15	25
Number of Participating Contractors who have completed one or more Flex Package (Home Upgrade) projects[14]	30	70

[14] 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%

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 (Home Upgrade) 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 (Home Upgrade): 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 (Home Upgrade) 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 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 (Home Upgrade) 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 (Home Upgrade) 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

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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.

possible Flex Package (Home Upgrade) 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 (Home Upgrade) Energy Savings		X		

14. Program Implementation Details

a) Timelines[15]

BayREN offers the timeline found in Table 5 for the Single Family Subprogram.

[15] 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 (Home Upgrade) 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 (Home Upgrade)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 (Home Upgrade) Incentives	Incentive Category	$537,000	$3,213,000	$3,750,000
Flex (Home Upgrade) 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 (Home Upgrade) Program Design Created	5/1/2013
Audit Incentive Setup and Launch	5/1/2013
Flex Package (Home Upgrade) 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	$221,168	$442,332	$663,500[16]

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	1/31/2013
All Subcontractors Selected	2/27/2013
Home Upgrade Advisor Program Design Created	3/31/2013
Home Upgrade Advisor Program Launched	4/1/2013
Final Home Upgrade Advisor New Participants	9/30/2014

[16] Marketing costs for the HUA are included in the Single Family ME&O budget.

BayREN01 Figure 5: BayREN Program Participation Scenarios[17]

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.

[17] 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	

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

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 (Home Upgrade), 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 (Home Upgrade) 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
LicensingEUC-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 (Home Upgrade) 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 (Home Upgrade) 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[18] 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 (Home Upgrade) 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.

[18] 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 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 (Home Upgrade) 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 (Home Upgrade) Upgrade Incentive to single-family customers within the BayREN territory. The Flex Package (Home Upgrade) 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 (Home Upgrade) 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 (Home Upgrade) 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 (Home Upgrade) 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 (Home Upgrade) 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 (Home Upgrade) 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. 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 (Home Upgrade) 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 (Home Upgrade) 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: 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 points, and above	Follows Home Performance with ENERGY STAR Protocols[19] 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 (Home Upgrade) 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 (Home Upgrade) 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 (Home Upgrade) 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.

[19] "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

BayREN01 Figure 7: BayREN Flex Package (Home Upgrade) Measures and Points

Category	Upgrade Measure	Technical Specifications	REN Point Value
Base Measures (1 or more)	**Duct Sealing**	Seal to ≤10% for existing systems	**25**
	Duct Replacement	Seal to ≤6% for replacement ducts	**65**
	Whole Building Air Sealing	≥15% leakage reduction from vintage table defaults	**25**
	Whole Building Air Sealing	≥ 30% leakage reduction from vintage table defaults	**45**
	Attic Insulation & Air Sealing	Insulation ≥ R-30 (≥ R-38 in climate zones 1 & 11-16)	**55**
Base Measure Kickers	**2nd Base Measure**	Total of two base measures	**15**
	3rd Base Measure	Total of three base measures	**20**
Flex Measures	**Wall Insulation**	Insulate ≥R-13	**50**
	Floor Insulation	Insulate ≥R-19	**40**
	Duct Insulation	Insulate ≥R-8	**40**
	Furnace	≥92% AFUE	**60**
	Air Conditioner	≥14 SEER/12 EER	**65**
	Gas Storage Water Heater	EF ≥0.62	**20**
	Gas Storage Water Heater	EF ≥0.67	**35**
	Gas On-Demand Water Heater	EF ≥ 0.82	**90**
	Electric Storage Water Heater	EF ≥ 0.93	**40**

The Modified EUC Flex Path (Home Upgrade) 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.

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.

Attached hereto is Exhibit A is a detailed overview, both operational and budgetary, regarding the Home Upgrade Advisor.

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 (Home Upgrade) 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[20]

In 2011–2012, as part of the ARRA SEP efforts, BayREN members emerged as leaders in engaging real estate professionals. Alameda, San Francisco (and Los Angeles) counties have also been collaborating on a statewide Green Building Labeling pilot with Department of Energy Better Buildings Program grant funding. BayREN local governments are therefore uniquely positioned to lead future real estate partnerships,

[20] Due to the reduction of the original single-family subprogram budget by $9 million, the activities described in this subsection are currently unfunded. If additional funding becomes available either in this program cycle or in future cycles, BayREN members wish to implement the scope of work described below. The estimated subprogram cost is approximately $1.5 million.]

resulting in solidified industry support for energy efficiency and green upgrades. BayREN is uniquely qualified to lead this effort since:

- 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 have already developed and delivered trainings for 164 real estate professionals
- BayREN members facilitated a real estate committee to discuss issues related to green labeling, market valuation, and adding green labels to the Multiple Listing Service ("MLS")
- Fianlly, 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

The Role of Green Building Labels in Accelerating Home Upgrades

In California, improving the energy efficiency of existing residential buildings has become an urgent priority for state, regional and local governments. Making significant and lasting reductions in residential energy use will require sustained, multifaceted interventions to motivate the public to invest in energy efficiency and other green home improvements. The efforts are undertaken because as green labeled buildings prove their value in the marketplace, the labels will become a primary driver in the overall retrofit market.

15. The Value of Green Building Labels for Existing Homes

Green labeling of existing homes has emerged from the successful use of labeling systems such as LEED® for commercial buildings and ENERGY STAR® and GreenPoint Rated for new homes.

Green labels for existing homes, and in particular their value in the marketplace, can be deployed as a tool to complement and build on other market transformation strategies such as incentives and financing. Broader uptake of credible green labels for existing homes (e.g. GreenPoint Rated, HERS II, LEED for Homes, and the U.S. DOE's Home Energy Score) has the potential to:

- **Create market transparency** and enable the value of green building improvements to be recognized and acted on by home owners, home buyers, and the real estate and financial professionals who facilitate transactions
- **Serve as a driver for investment in residential building energy efficiency**, especially in mild climates like the Bay Area where energy upgrades can have a long payback period
- **Accelerate consumer awareness** about the value of energy/green improvements

16. Market Barriers

Without a widely accepted mechanism for green labeling of existing homes, it will remain difficult for:

- Home buyers to make rational choices that factor in a property's energy efficiency and other green attributes
- Home sellers to understand or take advantage of the potential sales price premiums if they invest in energy upgrades before sale
- Real estate professionals to communicate the value of energy efficiency improvements to home sellers and help home buyers identify more energy-efficient properties or finance upgrades post-sale
- Home inspectors and appraisers to identify and properly evaluate the value of green homes versus conventional homes

17. Next Steps for Market Transformation through Green Labeling

As part of their ARRA efforts, BayREN members undertook a variety of activities to use green labeling as a tool for accelerating energy upgrades of existing homes. As a result of those efforts, BayREN has identified the following market transformation strategies as most likely to support the single-family subprogram's objective of increasing home energy upgrades:

1. ENGAGE AND EDUCATE THE REAL ESTATE INDUSTRY

The time of home purchase/sale is a key leverage point for educating the public on the value of energy upgrades. Real estate professionals are in a unique position to persuade home sellers to upgrade their homes to sell more quickly and at a higher price, to help home buyers identify energy-efficient homes to purchase, and to procure financing for energy-efficiency upgrades after purchase.

However, most real estate professionals lack the knowledge or expertise to help clients take advantage of these opportunities. With State Energy Program funding, BayREN members trained 164 real estate professionals and provided them with tools to promote energy upgrades.

Next Steps:

1.a Continue training real estate agents, home inspectors and appraisers on the value and benefits of green building for their clients

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.

- 1.b Provide ongoing real estate forums to help early adopters advocate for change in their industry and connect with trained inspectors, HERS Raters, GreenPoint Raters, and green contractors
- BayREN members have learned that stand-alone training of real estate professionals is not sufficient to transform industry practices. An ongoing forum for real estate professionals to engage with peers is necessary in order for them to utilize their new skills and advocate for changes in the existing system. Real estate forums can lead to case studies, hosted open home events and valuation studies of green-labeled homes at time-of-sale.

2. IMPROVE INFORMATION TRANSPARENCY BY GREENING THE MLS

BayREN members San Francisco and StopWaste funded an academic study that shows that green labeled homes in California sell at a premium of 9 percent on average. Also, recent consumer surveys in Alameda County found that over three-quarters of respondents had heard of the term green building, and that 86% of those people stated that green improvements would somewhat or very much add to a home's resale value.

To build on this growing awareness of the added value of green homes, mechanisms are needed that provide for rational information exchange. For example, the San Francisco Assessor-Recorder's Office now allows for inclusion of green label information in the city's official land records.

Another approach that is likely to increase information transparency for the general public and real estate professionals such as appraisers is to include green label information in the widely used MLS real estate listing service. Efforts to green the MLS during the ARRA SEP period progressed slowly because of the fragmentary nature of the Bay Area's MLS Boards.

Next Steps:

- 2.a A major push is needed to educate and provide technical support to local MLS organizations
-

BayREN will target five MLS systems in the region and provide assistance in incorporating green fields into their listings. Support will be based on the *Greening the MLS in California Guide*, which was developed with SEP funding. Additional educational materials will be developed to support real estate professionals in using the green fields.

- 2.b Continue to promote the value of green labels and conduct additional market research

Real estate is an intensely local business, and Bay Area real estate professionals were skeptical that national or international research demonstrating the value of green labels had relevance in their local markets. As a result, StopWaste and SF Environment funded the first academically rigorous residential green valuation study in the US, which showed that there is additional value for buildings 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. In addition, there is need for other types of market research in the Bay Area to gauge current levels of consumer interest in green building and energy efficiency, and attempt to gather more information about the value premium associated with the upgrade of existing homes.

3. TEST INEXPENSIVE, ACCESSIBLE LABELING OPTIONS

Although market research shows that homeowners value green features and believe that they add value to homes at time of sale, the consumer demand for green labels will remain low until there is a sufficient supply. Green labels for existing homes were promoted to homeowners as part of Energy Upgrade California but were slow to gain acceptance in part because of the time and cost ($800-$2,000) involved in obtaining a green label. This

experience points to a need for a low-cost, accessible energy/green label that can be conducted in a single visit (at time of sale) or inexpensively added to the scope of an energy upgrade project, such as the DOE's Home Energy Score. In a Better Buildings Program pilot project, San Francisco and StopWaste are currently using Home Energy Score to score approximately 300 single-family homes that have participated in Energy Upgrade California.

Next Steps:

- 3.a Conduct additional testing of low-cost labels in local markets, such as integrating Home Energy Score into Flex and Advanced path (Home Upgrade) projects and audit incentives

One way to increase the number of green labeled homes is to provide labels for energy upgrade projects that are receiving ratepayer incentives. For a small incremental cost, BayREN could integrate Home Energy Score into Flex or Advance Path (Home Upgrade) projects in the Bay Area. If a Home Energy Score is provided in conjunction with audit incentives, BayREN could also conduct follow up surveys with homeowners to determine whether the label created an additional motivation for them to pursue upgrades. Sales of these homes could also be tracked over time.

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

a) 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 (Home Upgrade) 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 (Home Upgrade) program will establish that Energy Upgrade California offers a program for everyone, regardless of socio-economic and other differences. Flex Package (Home Upgrade) 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 (Home Upgrade) 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	Range of outreach activities including	Connect directly with homeowners to

homeowner outreach	in-home workshops, community events, contractor/ homeowner events, real estate industry partnerships and outreach. Public relations efforts to secure earned media placement.	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

b) 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.[21] 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.

[21] *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.[22]

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
- Become sufficiently familiar with co-benefits to serve as compelling ambassadors for energy efficiency among consumers

c) Subprogram Software and/or Additional Tools

i. Software Tools Required

[22] 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.

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 (Home Upgrade) Program:[23]

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: 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)

[23] 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.

d) Subprogram Quality Assurance Provisions

BayREN01 Table13: Quality Assurance Provisions

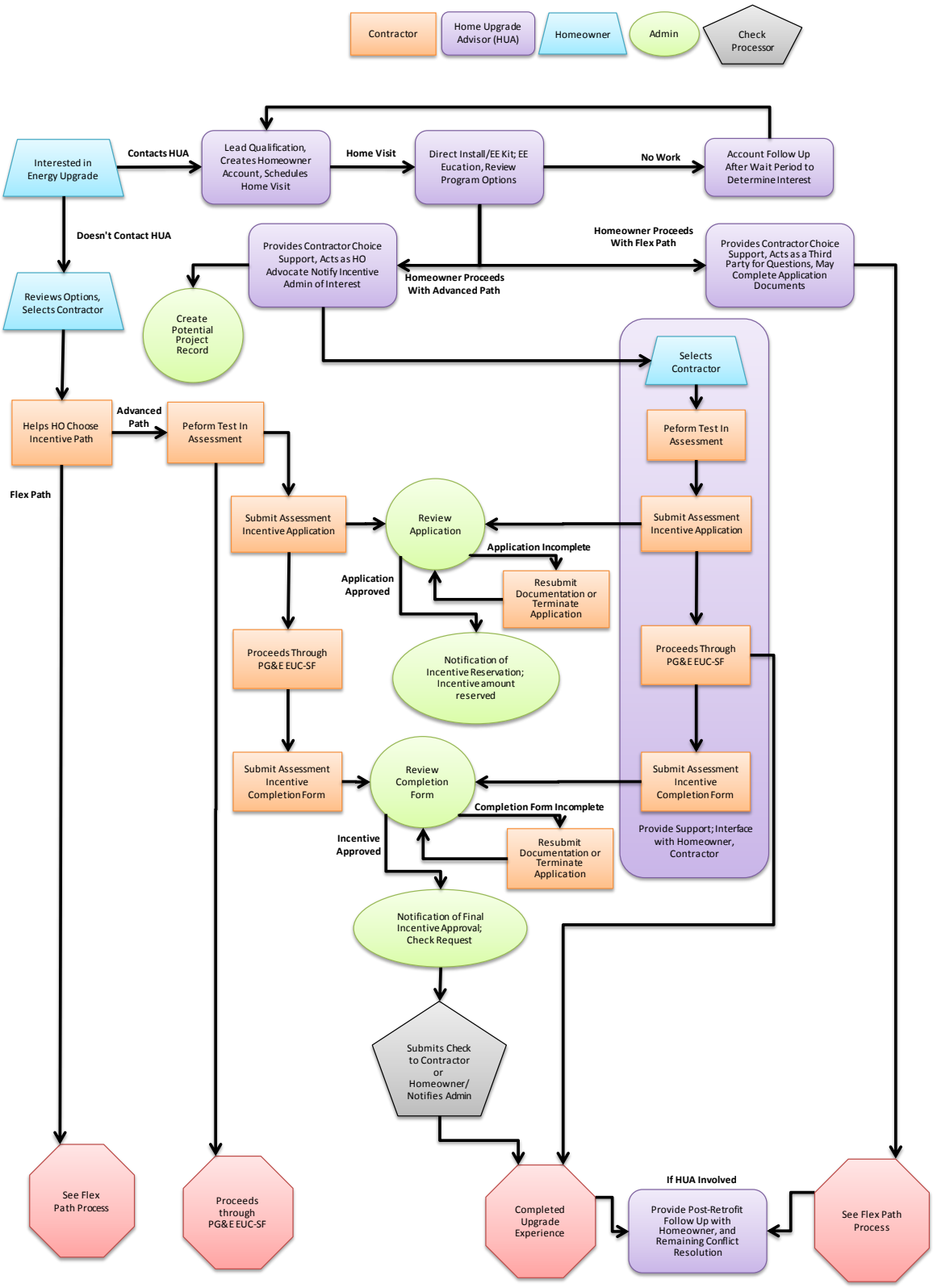
Program Element	QA Requirements	QA Sampling Rate (Indicate Pre/Post Sample)	QA Personnel Certification Requirements
Flex Package (Home Upgrade) **Incentive Program**	Property must meet eligibility requirements for measures installed	100% pre/post	BPI-BA
	Contractor holds valid license and meets eligibility 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

e) Subprogram Delivery Method and Measure Installation/Marketing or Training

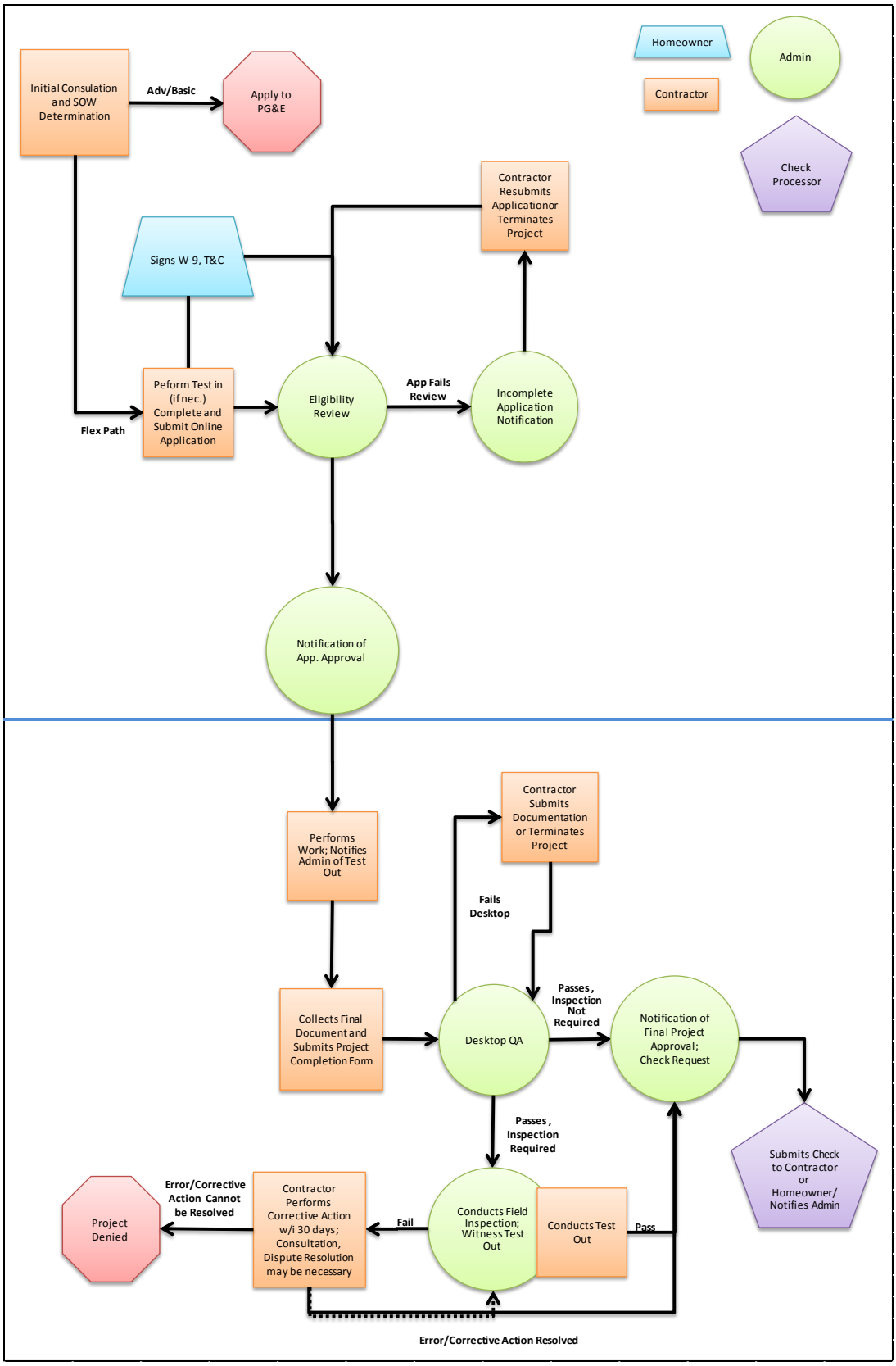
Home Upgrade Advisors will be qualified and trained to provide high-quality services and advice to homeowners by the implementing organization. Training and qualifications will be determined based upon final program design.

f) Subprogram Process Flow Chart

BayREN01 Figure10: PG&E EUC-SF Support Program Process Flow Chart



BayREN01 Figure 11: Flex Package (Home Upgrade) Incentive Program Process Flow Chart



g) Cross-Cutting Subprogram and Non-IOU Partner Coordination

BayREN01 Table14: 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 (Home Upgrade)/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

h) 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.

18. Additional Subprogram Information

a) Advancing Strategic Plan Goals and Objectives

BayREN01 Figure 12: 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 Table15: 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 (Home Upgrade) 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.[24] 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 (Home Upgrade) Incentive Program will take advantage of the lessons learned from these pilots. For this reason, it is expected that Flex Package (Home Upgrade) will not need a pilot phase. The Flex Package (Home Upgrade) 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.

19. 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.

[24] 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 u 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,[25] 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,

[25] 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.

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 13: Market Transformation Barriers and Interventions

Barrier	Proposed Intervention
Program design barriers—required audit, program complexity	Audit incentives, Flex Package (Home Upgrade) incentive, Home Upgrade Advisor
Program cost barriers	Audit incentives, Flex Package (Home Upgrade) 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.

20. Additional information as required by Commission decision or ruling or as needed: N/A

Subprogram BayRENO2

21. Subprogram Name: BayREN Comprehensive Multi-Family Subprogram

22. Subprogram ID number: BayREN02

23. Type of Subprogram: Regional Energy Network

24. 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: _____)

25. 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**

26. 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

27. Projected Subprogram Total Resource Cost (TRC) and Program Administrator Cost (PAC)

TRC 0.67 PAC 0.97

28. Projected Subprogram Budget

BayREN02 Table 1: Projected Subprogram Budget, by Calendar Year[26]

	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**

29. 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
- Customized technical assistance (see Additional Services section below)

[26] See BayREN01, Table 1- Projected Subprogram Budget, by Calendar Year for category definitions.

- 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[27]

	Program Years		
	2013	**2014**	**Total**
BayREN Comprehensive Multi-Family Program			
GWh	0.35	1.02	1.37
Peak MW	0.28	0.83	1.11
Therms (millions)	0.04	0.11	0.15

[27] Net energy savings calculations were based upon the weighted to date energy savings generated through the BayREN Multi-Family E-3 calculator.

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.[28]
- 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)

[28] *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		

30. 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[29]
	Bundled Measure Rebates				X
	Software development			X, TBD based on software specifications	
	Site visit conducted by Site Surveyors		X		X[30]
	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

[29] Where existing staff are qualified.
[30] 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.

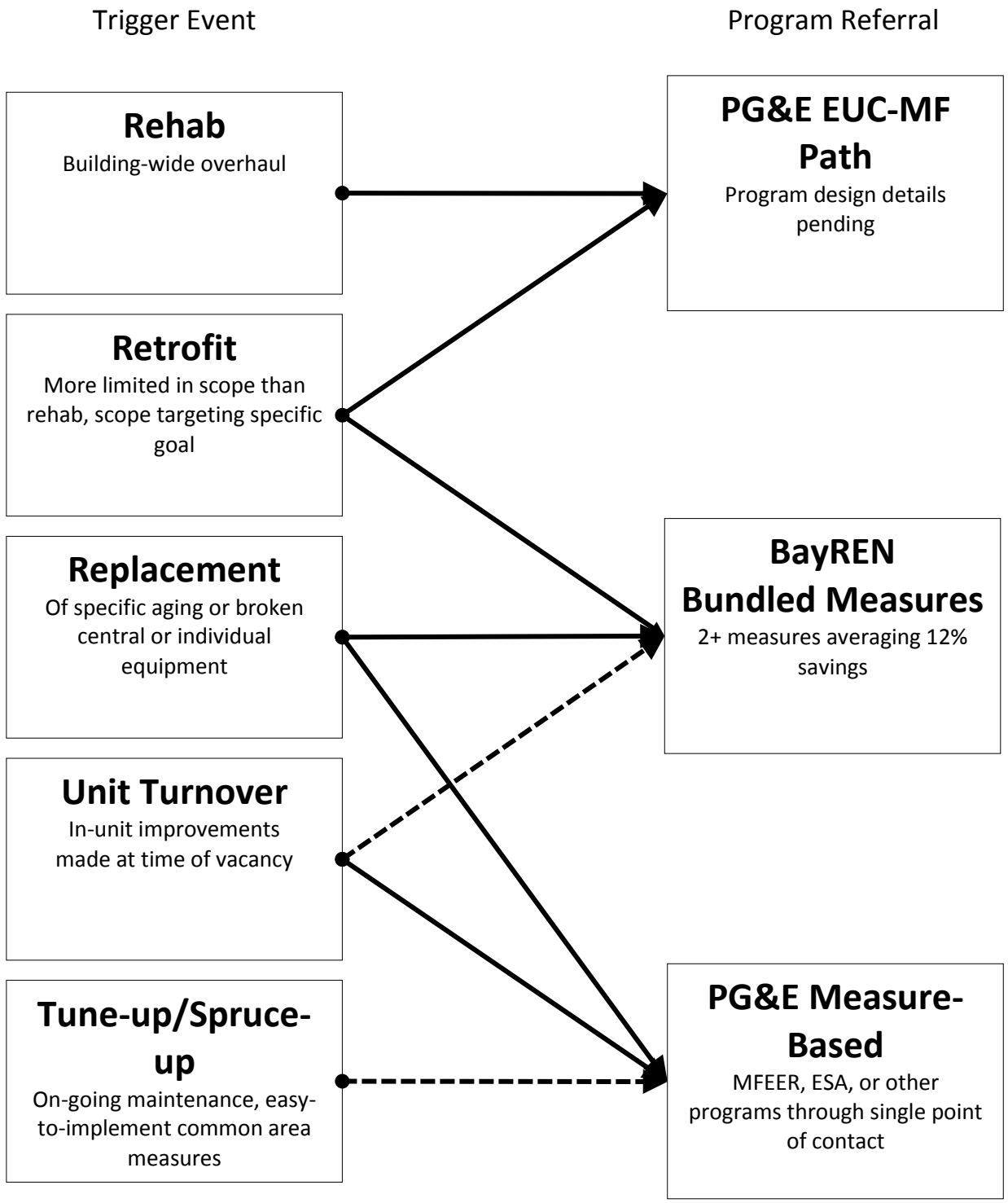
Program Referral

- Technical assistance providers will refer projects to the appropriate utility programs, or PG&E's single-point-of-contact where applicable. Figure 2 below shows the likely pathways by which projects will participate in appropriate program(s), based on trigger events for making improvements and the level of investment in partial or comprehensive upgrades. Projects can enter the MF EUC pipeline via multiple channels, primarily the PG&E Multifamily Single Point of Contact (SPOC) and BayREN Multifamily Technical Assistance Provider (MF TA). These two entities will coordinate on bi-directional Program Referral and Double-Dipping Prevention. Projects will be referred to the appropriate program(s) based on their eligibility and scope. PG&E and BayREN have developed and will maintain a consistent set of program elligibility criteria so that it is clear to property owners what their choices are for program participation when accessing utility rate payer incentives.

The Bay REN and PG&E Multifamily Program Teams have coordinated to develop the following language which describes to participants the basic relationship between the various programs:

- "A variety of Energy Upgrade California incentives are available for energy efficiency improvements in Multifamily Energy Upgrade California (MF EUC) projects.
    - MF EUC Whole Building Pilot Program (PG&E)
    - MF EUC Bundled Measure (BayREN)
- To serve the diverse multifamily housing sector, the spectrum of incentive programs includes the following primary programs that will continue to be offered by PG&E:
    - Multifamily Energy Efficiency Rebates
    - Middle Income Direct Install
    - Energy Savings Assistance
- In some locations, additional services are available through local programs:
    - MCE Marin Clean Energy Multifamily program
    - PG&E Local Government Partnership programs (e.g. SF Energy Watch)
- The primary and local rate-payer funded programs can be added to the incentive structure alongside the EUC offerings if a property owner meets the qualification criteria for each program independently, however the same measure or savings projection cannot receive multiple incentives within this funding cycle.
- Coordination between the Bay REN and PG&E Multifamily programs will continue to unfold throughout the duration of the pilot to ensure optimal customer experience. PG&E and BayREN will co-host Multifamily California Home Energy Retrofit Coordinating Committee meetings (MF HERCC) as appropriate in order to coordinate with relevant industry stakeholders. PG&E and BayREN will co-host outreach activities to entities such as local governments and property owners to outline the MF EUC program offerings.

BayREN02 Figure 2: Trigger Event Related Program Direction Through Technical Asssitance



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.

The BayREN and PG&E multifamily program teams have coordinated to ensure consistency in the offering of professional training and certification opportunities. The following MF EUC trainings will be subsidized and serve the needs of both MF EUC Whole Building and MF EUC Bundled Measure programs as defined in each program's respective professional qualifications requirements.

- Multifamily Green General Contractors, Central systems Heating, Ventilation and Air Conditioning (HVAC) & Domestic Hot Water (DHW)
- Multifamily Auditor/Rater training (Building Performance Institute (BPI) Multifamily Building Analyst and Green Point rated Certification)
- Multifamily Green Property Management (Green Business Program and BPI MF Building Operator Certification)

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.[31]

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.

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

[31] 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.

- 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.

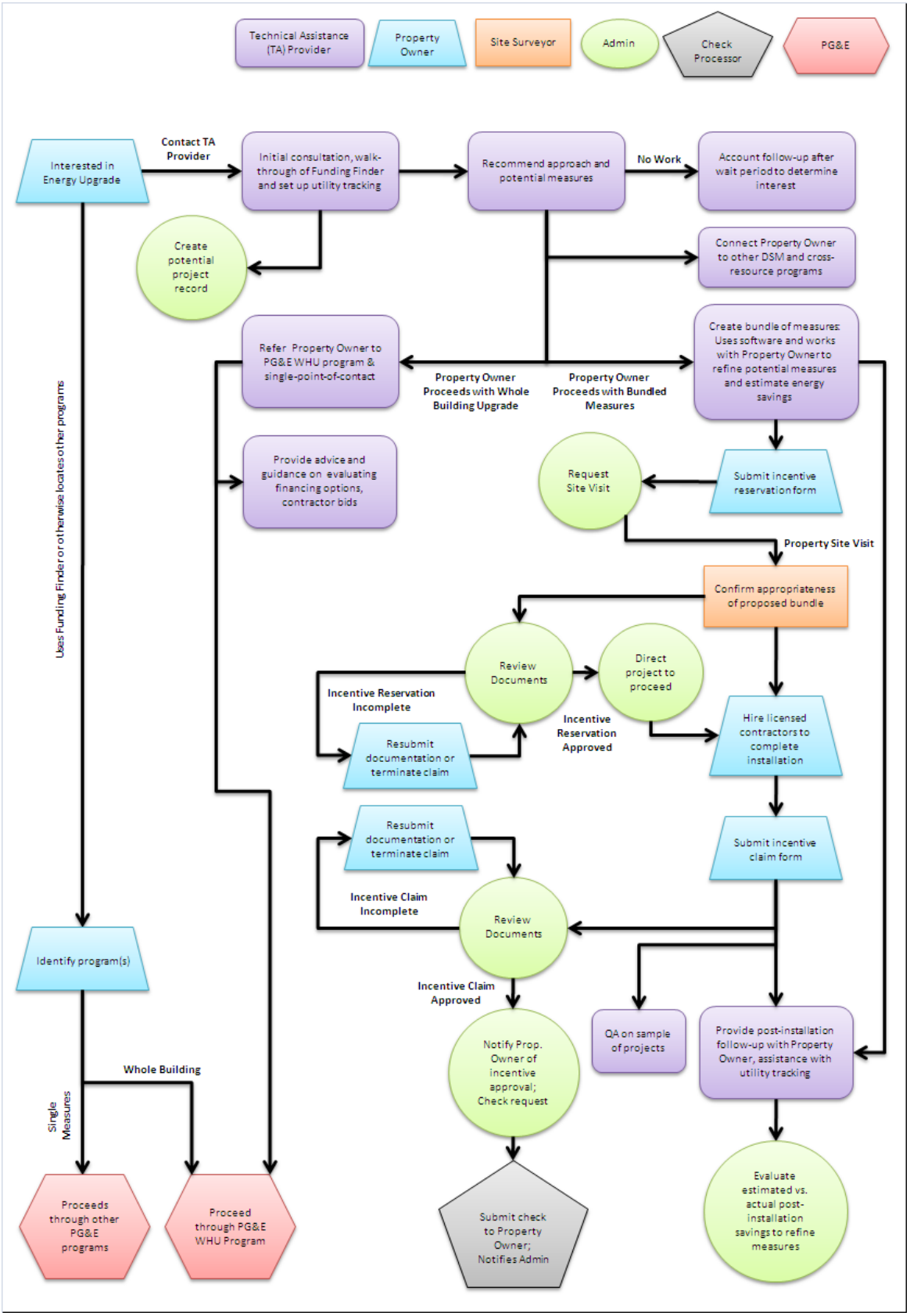
The same entities can provide technical assistance and conduct the pre- and/or post-installation on-site verification on the existing building condition and the installation work of the contractors who are selected by the property owner.

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

31. 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.

32. 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.

33. 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.

Subprogram BAYRENO3

34. Subprogram Name: BayREN Codes and Standards Program

35. Subprogram ID number: BAYREN03

36. Type of Subprogram: Regional Energy Network

37. 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) _ _ Industrial (List applicable NAIC codes: _____)

- All NAIC codes for Industrial Buildings

d) _ Agricultural (List applicable NAIC codes: _____)

- All NAIC codes for Agricultural Buildings

38. Is this subprogram primarily a:

a) Non-resource program _X_ Yes _ _ No

b) Resource acquisition program __ Yes _X_ No

c) Market Transformation Program _X_ Yes __ No

39. 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

40. Projected Subprogram Total Resource Cost (TRC) and Program Administrator Cost (PAC)

TRC and PAC will not be calculated for this subprogram.

41. Projected Subprogram Budget

BayREN03 Table 1: Projected Subprogram Budget, by Calendar Year[32]

	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

42. 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

[32] 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 utilizing and expanding the Best Practices Study and in consultation with PG&E and CPUC Energy Division. BayREN will coordinate with PG&E on this program and seek to leverage the power of local governments to forge into areas unique to public agencies such as enforcement. We will establish code compliance baselines, according to the methodology outlined below, 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.

As discussed in detail below, BayREN and PG&E have identified areas of collaboration. These activities are:

BayREN will coordinate with PG&E in Implementation of Best Practices

Coordinated Outreach and Incentive Programs

Implement New Code Enforcement Tools and Actions

Coordinated Training Efforts, and

Reach Codes.

BayREN can play a primary or supportive role in the following areas:

Compliance and Enforcement

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

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

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,[33] and decision making processes at the national and state level—our greatest expertise and influence is at the local level. Emphasizing core strengths of

[33] See BayREN03 Table 15.

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 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. BayREN's Compliance and Tracking component will record and track processes, such as use of best practices, and develop metrics, such as numbers of inspectors trained (and percentages by local government) on the new code. The development of the methodology for compliance baseline 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 work with the CPUC to develop a methodology for approval by the CPUC.
- In coordination with PG&E, assess effectiveness and implement PG&E compliance tools as well as develop and test new tools. 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 methodology to begin to quantify the value of improved compliance using methods and techniques compatible with the CPUC C&S evaluation protocols.

- 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. In cooperation with PG&E and respecting intellectual property, we can refer candidates to existing PG&E training. Additionally, we can build on existing training modules and coordinate training efforts to address gaps. We can provide in-depth trainings that address specific needs and utilize different formats, e.g. web, short one-hour sessions. 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 forums 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 workshops 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 (Home Upgrade), 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	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 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

Local compliance baselines do not exist but will be developed through this program. The data collected will be determined through the process outlined above.

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.[34]

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.

While BayREN is proposing that its 2013-14 Codes and Standards program be a Non-Resource Program, BayREN will produce a summary of findings or a white paper that would develop options on:

- o Development of potential activities for any future BayREN Codes and Standards program;
- o How savings from these activities would be measured; and,

o How savings for these future activities may be attributed.

BayREN will offer the findings or paper to the CPUC to inform EM&V activities conducted on behalf of the CPUC and PG&E.

[34] http://docs.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/166830-10.htm#P1907_425870

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.).

BayREN is proposing that its 2013-14 Codes and Standards Program be a Non-Resource Program. Accordingly, projected savings and E3 cost-effectiveness calculations are not included herewith.

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			

43. 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 has shared 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 has engaged PG&E to 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.

44. 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

During the 2010 to 2012 ARRA Period, Bay Area local governments made significant investments to increase staff knowledge and expertise in energy related building codes, and worked to educate local elected officials and department heads through public presentations within each jurisdiction. Beyond this, Alameda County, San Francisco County, and Sonoma County have each made significant investments in codes and standards, which will be leveraged for this effort. Additionally, PG&E has developed extensive and useful training materials which are being made available to the BayREN for use in this subprogram.

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 ICC.

45. 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 ICC) – 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.[35] 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.[36] 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.

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.

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[35] http://docs.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/166830-10.htm#P1907_425870

[36] 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.

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 (Home Upgrade) 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.

46. Additional information as required by Commission decision or ruling or as needed: N/A

Subprogram BayRENO4

47. Subprogram Name: BayREN Energy Efficiency Financing Portfolio

48. Subprogram ID number: BayREN04

49. Type of Subprogram: Regional Energy Network

50. 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

51. 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

52. 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

53. Projected Subprogram Total Resource Cost (TRC) and Program Administrator Cost (PAC)

TRC and PAC will not be calculated for this subprogram.

54. Projected Subprogram Budget

BayREN04 Table 1: Projected Subprogram Budget, by Calendar Year [37]

	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	$5,622,000
Marketing and Outreach ($)[38]	$469,000	$336,000	$805,000
Education and Training ($)[39]	$0	$3,000	$3,000
Total Budget	**$3,177,100**	**$3,747,900**	**$6,925,000**

[37] 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.

[38] 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.

[39] 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.

55. 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 (Home Upgrade) 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 (Home Upgrade) 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, providing program design and technical support to municipal water utilities selected by BayREN as Partner Utilities. Upon Partner Utility approval of Pilot design, Partner Utilities will implement and operate Pilots by using either third-party capital or self-financing 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. Utility customers that enroll as Pilot 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.

BayREN Pay-as-You-Save funding will provide for program design and implementation costs as outlined in the following three phases:

- Phase 1: Recruit Partner Utilities to Implement Pilot

- Host BayREN PAYS® Introductory Meeting sent to provide overview of pilot opportunity to BayREN Steering Committee and regional water utilities.
- Conduct in-person Follow-Up meetings with interested utility representatives.
- Select BayREN PAYS® Partner Utilities based upon the following criteria, to be articulated in a "Letter of Intent" to be submitted by interested utilities to BayREN: commitment to implement a successful pilot, utility rates and billing structures, utility proposed measures, and utility capacity for program administration.

- Phase 2: For Partner Utilities, create a program concept and a program design for how the pilot would look in their districts.
  - Establish target customer types and building sector(s) by working with utility staff to evaluate building stock, current measure saturation, and other factors to identify the best opportunities for the PAYS model.
  - Conduct utility specific rate and measure analysis. 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 savings. For commercial customers, the threshold can be raised to 80% of estimated total savings.
  - Determine a final list of eligible measures in conjunction with the Partner Utilities. While a final list of eligible measures will necessarily tailored to 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.

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			√

Define specific program implementer/contractor roles and responsibilities. These roles and responsibilities will depend upon the needs of the Partner Utilities and each utility's final list of eligible measures.

- Phase 3a: Support pilot implementation for Partner Utilities.
  - Based upon the program design approved by the Partner Utility, develop all pilot tools including contracts, measure eligibility tests, and program tracking tools.
  - Work with Partner Utility to facilitate updating of billing systems, program implementer/contractor RFP and/or other recruitment process, and analysis of financing options.
  - Develop initial marketing collateral and messaging, and support Partner Utility in promoting pilot through existing and other aligned marketing channels including Utility websites, partner programs, etc.

  Customers of utilities implementing a PAYS® pilot would be enrolled upon completion of Phase 3a.

- Phase 3b: Provide Technical Assistance to Partner Utilities in the course of Pilot operation.
  - Update program design and measure thresholds as appropriate in response to initial Pilot field results.
  - Assist Partner Utility in coordinating program implementer/contractor activities in accordance with the program design.
  - Assist Partner Utility in adjusting and maintaining Pilot reporting and data protocols as necessary to accurately track program participation and results.

All capital used to finance program projects will be provided by a third party source to be recruited in the course of Phase Three of program design. This third party may be the implementing jurisdictions or a private capital provider. 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.[40] 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.

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.[41] Energy efficiency LLR programs established in 2011 by the

[40] 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

[41] *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

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 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.

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.

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[42]

	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 (Home Upgrade) 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

[42] 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.

Compliance baselines are to be developed through this program.

iv. Quantitative Subprogram Targets

BayREN01 Table 3: Quantitative Subprogram Targets

Target	2013	2014
Percentage of Flex Package (Home Upgrade) 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.).

The Single Family Loan Loss Reserve and Multifamily Capital Advance Program are currently subject of the Financing Proceeding, A1207001. Until a decision is issued in that proceeding, funding for these programs is unknown. Accordingly, E3 calculations for these two financing programs are not included herewith. E3 calculations will be developed once the funding is approved and the program design is finalized.

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				

56. 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	02/20/14
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 Loans	LLR Commitment	Number of Loans	LLR Commitment	Number of Loans	LLR 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
BayREN PAYS® Pilot consultants and contractors for approved financing components selected and contracted	*2/1/2013*	*BayREN*
Implementing PAYS® Jurisdictions selected	5/20/2013	BayREN
Legal review of existing program contracts, forms, and worksheets	*6/1/2013*	*PAYS Jurisdictions*
Jurisdiction specific design begins	*6/1/2013*	*Consultants/Jurisdictions*
Initial banks/lenders enrolled in program	*pending*	*BayREN*
Draft program design submitted to CPUC and Utilities for comments/approval	*8/1/2013*	*BayREN*
Develop draft marketing plan	*8/15/2013*	*MEO Consultant*
Final program design	9/1/2013	Consultants
Develop final marketing plan	*9/1/2013*	*MEO Consultant*
Program design approved	*9/15/2013*	*Jurisdictions*
Necessary Jurisdictional Resolutions Adopted	*pending*	*Jurisdictions*
Release RFP for: certification agent, certified contractors, bulk program measures, and capital provider	*10/1/2013*	*BayREN*
Proposals from vendors due	*11/1/2013*	*Consultants*
Contracts/Program design ready for vendors	*11/15/2013*	*BayREN/Consultants/jurisdictions*
Contracts with vendors signed	12/15/2013	Jurisdictions/ Consultants
PAYS® Program Team Confirmed/Utility Approvals	*1/1/2014*	*Jurisdictions*
Program start	1/15/2014	All
Training of certification agent, utility staff, and certified contractors	*1/15/14*	*BayREN/Consultants*
Develop and distribute marketing collateral	*12/15/13*	*MEO Consultant*
Program launch	2/20/2014	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 (Home Upgrade) 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 (Home Upgrade) 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)[43]

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

[43] 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**	**Bayl**
Recipient Subprogram	***Additional Services***	***Recipient Market Actors***	***Expe***

PG&E EUC-SF	Financial toolkit LLR option	Homeowners	
Multi-family	Financial toolkit CAP option	Property Owners	
FLEX (Home Upgrade)PACKAGE	Cross-leveraging with LLR option	Homeowners, Property Owners	
PAYS® Pilot	Certification Agent	Property Owners and Eligible Tenants Within Pilot IOUs' Service Areas	

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.

[44] 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.

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

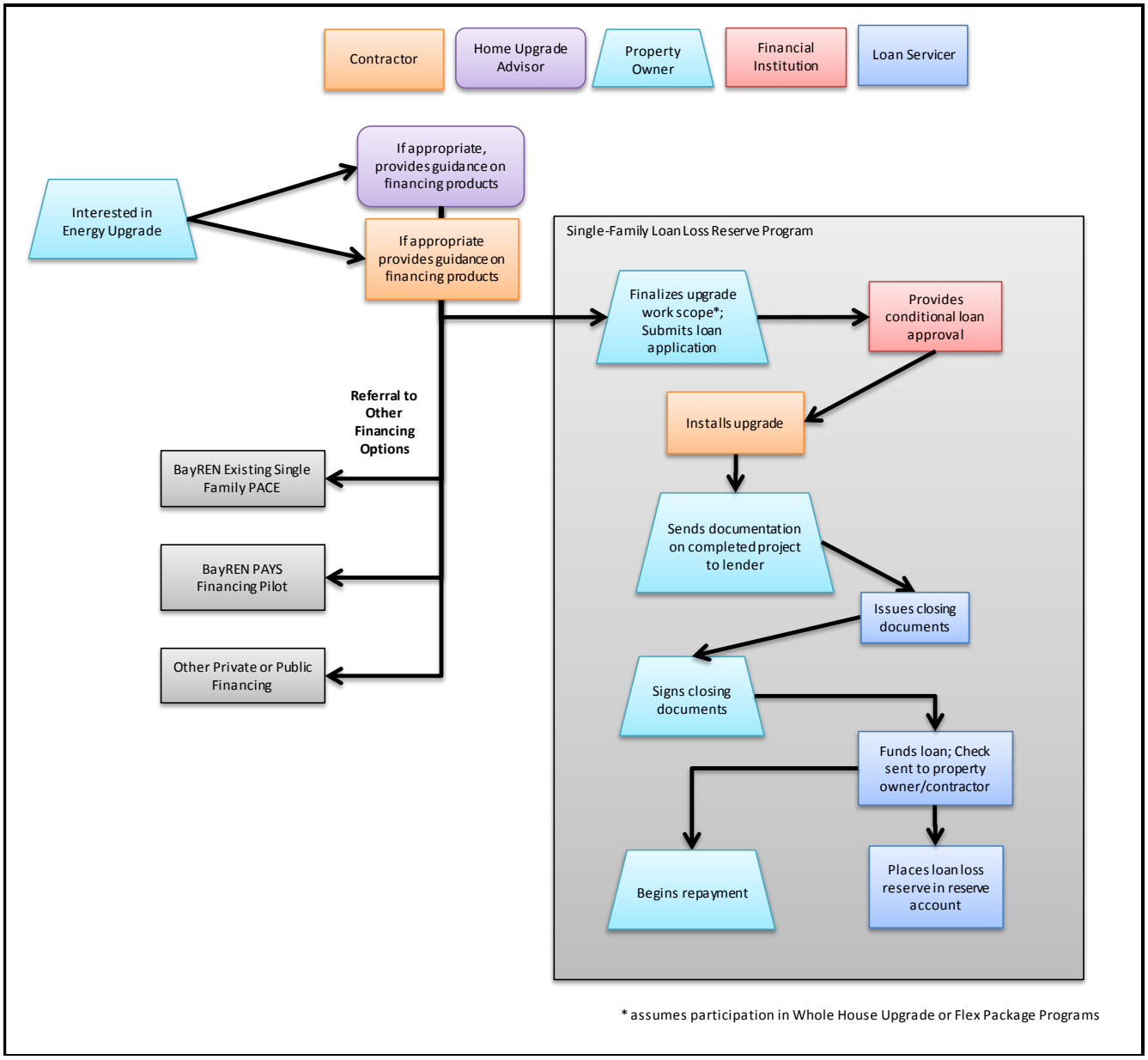
l) Subprogram Delivery Method and Measure Installation /Marketing or Training

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.

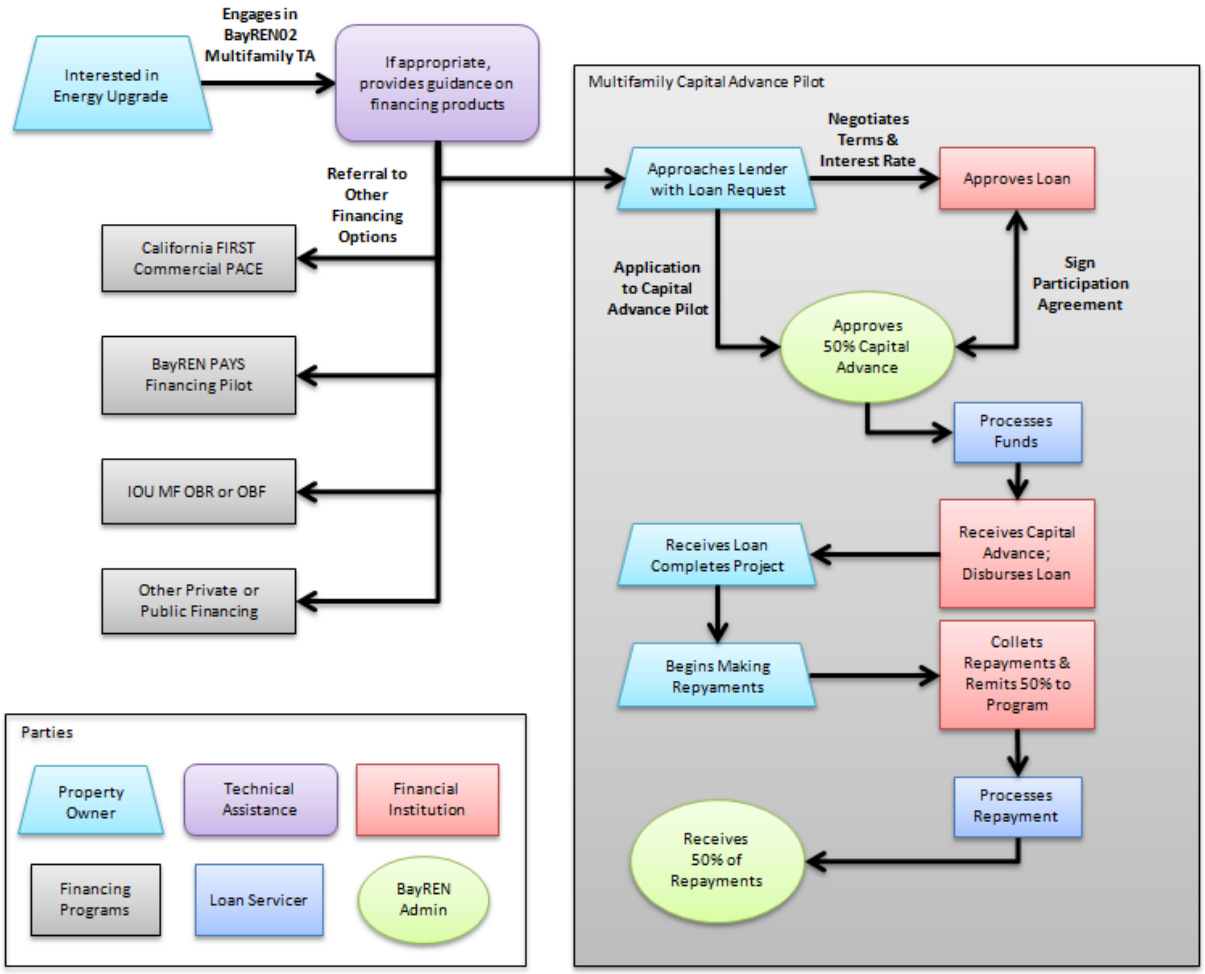
BayREN04 Figure 11: Financing Portfolio Single-Family Loan Loss Reserve Program Process Flow Chart



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.

57. 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 other gas, electric and water customers for the pilot to succeed.	TBD; depends upon eligible measures and installation totals
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.

58. 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 (Home Upgrade) 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 (Home Upgrade) 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.

59. Additional information as required by Commission decision or ruling or as needed: N/A

In its protest to the BayREN's January 14, 2013 Compliance Filing, PG&E commented that the BayREN provided two sets of rollup E3 calculators, one of which appears to contain the calculations for EUC. However, in both cases the budget does not tie to the approved budget of $26,567,750 but instead shows $23,975,750. In addition, the sum of the sub-program E3 calculators (e.g. energy savings, cost effectiveness, levelized costs) does not match the E3s that summarize the portfolio results. However, per guidance from CPUC staff, the BayREN E3 calculators utilize budgets which account for amortization of the Single Family Loan Loss Reserve allocation over the life of the loan. As a result, the budget for the BayREN Financing subprogram that is incorporated in the BayREN E3 roll up budget is valued at $4,333,000, rather than the fully approved budget (pending CPUC authorization of the Single Family Loan Loss Reserve and the Multifamily Capital Advance Program) of $6,925,000. As a result, the total BayREN budget in the roll up E3 is valued at $23,975,750, $2,592,000 less than the fully approved $26,567,750.

Upon receipt of this comment from PG&E, ABAG reviewed all E3 Calculators posted to http://www.abag.ca.gov/bayren/ on January 14, 2013. Without further direction as to the discrepencies noted by PG&E, ABAG believes that the sum of all sub-program E3 calculators match the roll up E3s.

PG&E also comment that several measures have program type = RET (representing Early Replacement) in Column K of the E3 calculators. If these are early retirement measures, then the second baseline columns should be populated so the cost effectiveness can be calculated correctly.The BayREN will discuss with the Commission's Energy Division the most appropriate treatment for developing a second baseline.

Finally, PG&E commented that the Spillover rate of 5 percent is not included in the E3 calculators, which is inconsistent with the EE Decision (OP 37). In response, the BayREN omitted offering E3 calculators with a spillover rate of 5 percent as a conservative estimate of program energy savings.