

Thinking Outside the Box: New Strategies for Market Transformation in Implementation Programs

*Sophia Hartkopf, Heschong Mahone Group, Inc.
Heather Larson, Green Building in Alameda County
Amy Barr, Heschong Mahone Group, Inc.*

ABSTRACT

As issues surrounding climate change become increasingly important, and California's long-term strategic deadlines approach, the types of actions that efficiency-program managers need to take are expanding and becoming broader. This encourages managers to develop new approaches for program design that incorporate assessments of the program's impact on markets rather than simply counting directly attributable gross energy savings. Such market impacts include: improved standard practice, broader acceptance throughout sectors, and higher levels of expertise related to efficiency technologies. These changes in program design, focused on market transformation, provide the community with a set of skills and long term benefits which exceed current measurement of benefits directly attributable to programs.

To truly meet long term goals, programs need to have a holistic approach to community outreach. When altering program goals to include market transformation, implementers need new strategies for addressing participants and a set of metrics that weigh the benefits of changes in behavior and practice. These strategies include implementing an integrated design approach, leveraging partnerships and funding sources with like-minded organizations, and targeting emission reductions through energy efficiency and non-traditional measures.

Focusing on field experience and program successes in the West Coast building sector and comparing these lessons learned to traditional utility program approaches, this paper will explore new strategies for market transformation and approaches for measuring impact.

Background

In California, most utility programs offer rebates for individual energy saving measures, a system that is designed to change short-term consumer purchasing practices. These prescriptive or 'widget'-based energy savings are favored by utilities because, currently, regulators only give credit for savings which are directly attributable to the rebates provided by the program. Additionally, all program activities and measures must meet rigorous cost-effectiveness criteria, further limiting a programs' ability to promote non-energy benefits – the ultimate consumer selling point for energy efficiency.

Jurisdictions throughout the country are implementing supplementary local and regional initiatives, 'reach' codes and green building ordinances with the long-term goals of net-zero energy or similarly aggressive targets. If these aggressive goals are to be realized, program administrators will need to develop outreach and education mechanisms that move beyond directly-attributable, measure-based savings. They must adopt market transformation strategies for long-term impacts, rather than prescriptive rebates or incentives. Three comprehensive performance-based programs – a traditional utility energy efficiency new construction program, a green labeling retrofit program developed by public private partnership and implemented by a

non-profit, and a utility contractor network program – have focused on improving standard practices for energy efficiency/green design, construction and maintenance for the long term.

Traditional Market Transformation Strategies

Market transformation is defined by the California Public Utilities Commission Strategic Plan as “long-lasting sustainable changes in the structure or functioning of a market achieved by reducing barriers to the adoption of energy efficiency measures to the point where further publicly-funded intervention is no longer appropriate in that specific market” (CPUC 2008). The sustainability of market transformation efforts can be determined based on factors such as: private-sector uptake, relative irreversibility of changes, new codes and standards, fundamental changes in incentive offerings, and disappearance of inefficient technologies from the market.

The CPUC defines two primary types of indicators as necessary for facilitating market transformation: 1) proximate and 2) ultimate indicators. Necessary preconditions for market transformation, proximate indicators provide:

- Awareness, knowledge, and acceptance (change in fundamental beliefs)
- Availability of technology (across the region, especially in fastest growing areas)
- Trade ally infrastructure (at trade shows and prevalent on marketing materials)
- Decrease in incremental cost of energy efficiency

Ultimate indicators show structural changes in the patterns and adoption of the technology or behavior change. These indicators, whose changes closely relate to key barriers, provide:

- Market share and sales (percent of permits, number of jurisdictions adopting ‘reach’ codes)
- Saturation and prevalence of practices (among the early adopters)
- Changes in codes and standards
- Adoption of technologies or practices as industry standard

In addition, program or activity indicators reveal how well a program is meeting basic program objectives. The quantity of projects successfully completed within the program timeframe, the quality and overall effectiveness of a program implementers performance in a collaborative process (measured by the judgments of the participants); timeliness of the completion of key program objectives; and the cost of the delivery of the program (occurring at or below estimated costs); are examples of these indicators. Successful implementation is exemplified by the number of: developer/design firms receiving training, firms using design incentives, case studies published, presentations at conferences and trade shows.

In California, these traditional market transformation strategies have almost exclusively been implemented in non-resource programs that offer technical assistance, training and/or other activities, and do not claim savings based on the performance of the program. However, the strategies presented in this paper can additionally be applied to resource programs.

Three Example Market Transformation Programs

Three West Coast programs, introduced below, set an example of innovation and leadership in their respective regions. Market transformation strategies described in the following sections are illustrated through their activities, followed by a discussion of possible measurement approaches.

Pacific Gas & Electric Company, California Multi-Family New Homes (CMFNH)

California Multi-Family New Homes (CMFNH) is a utility-sponsored, energy-efficiency-incentive program providing comprehensive services for the multifamily new -construction market throughout the Pacific Gas and Electric Company's (PG&E) service territory. Implemented by a third-party company, the Heschong Mahone Group, Inc. (HMG), CMFNH facilitates deep energy savings through cash incentives, design assistance, as well as energy design workshops, training, and coordination with green and solar programs. Initiated in 2006, CMFNH works with multifamily building types including: attached townhomes, apartments, condominiums, senior and assisted living, supportive/transition housing, dormitories, and mixed-use developments. The program also addresses barriers to enrollment in market-rate, affordable, mixed-income, rental, and for-sale projects.

Though CMFNH is of small scope and budget, the program is successfully engaging participants and providing technical assistance to ensure multifamily professionals not only understand conceptually how to design and construct to exceed California's Title 24 Energy Standards, but also how to reach the highest level of energy savings feasible. During the 2006-2009 program years, CMFNH committed over 13,000 multifamily homes, saved 4,000 kW, 5 million kWh, and 550,000 therms, and trained over 1,000 multifamily industry professionals in multifamily design and modeling.

StopWaste.Org's Green Building Program in Alameda County (GBAC)

StopWaste.Org is a Joint Powers Authority (JPA) of 14 cities, unincorporated County, and the two sanitary districts within Alameda County. On behalf of these entities, the public agency administers funds that are generated via a fee applied to all tonnage sent to the landfill. With a mission to divert waste, the agency develops various programs, including Green Building in Alameda County (GBAC). GBAC recognizes that local government waste reduction funding can be leveraged towards efforts that will have broader scale impacts than simply focusing on the waste and recycling industry, and strives to create market transformation by engaging an array of stakeholders dedicated to broader environmental benefits such as water, waste, energy, transportation, and resources. GBAC provides policy and technical assistance, programs, tools, and grant funding to support local jurisdictions. Towards that end, GBAC provides funding through a partnership with the California non-profit Build It Green for ongoing development of a consumer-based residential performance labeling system, known as GreenPoint Rated (GPR).

GreenPoint Rated is the most widely referenced residential green building standard in California and it provides a third-party verification protocol for single family new construction, multifamily new construction and single family existing buildings. To address the existing multifamily housing stock, and help California achieve its AB32 emission reduction goals, StopWaste.Org and the Energy Foundation are jointly funding the expansion of Build It Green's GreenPoint Rated program to include multifamily existing buildings.

Energy Trust of Oregon, Trade Ally Network (TAN)

The Energy Trust of Oregon is an independent nonprofit organization dedicated to helping Oregonians benefit from saving energy and tapping renewable resources. Supporting customers served by Portland General Electric, Pacific Power, NW Natural and Cascade Natural Gas, the Energy Trust runs a number of energy efficiency and renewable programs targeting all sectors of the built environment.

The Trade Ally Network is a group of trade professionals, including electricians, lighting contractors, lighting equipment distributors, and manufacturers that support the Energy Trust Existing Buildings program. Initiated in 2003 by an Energy Trust subcontractor, Evergreen Consulting, the Lighting Trade Ally Network has been a resounding success for the Energy Trust of Oregon. The network is comprised of companies of many sizes covering a range of geographical regions including areas as small as a community to as large as the whole state.

Over the past six years, the Lighting Trade Ally Network has grown from a dozen to over 126 companies and has saved over 102 million kWh through approximately 1,700 projects since its inception. Over 1,000 individuals make up the network, providing the Energy Trust with a large sales force that could not be replicated with internal staff alone. In addition, the network has contributed, on average, over 50% of the savings for the program and has brought over 95% of all lighting projects to the Energy Trust (70% of all completed projects).

‘Outside-the-Box’ Market Transformation Strategies

In light of the immense environmental challenges we face, in part due to our construction and building activities, a multi-pronged and comprehensive approach to market transformation is warranted. There are a number of less traditional, market-ready outreach strategies that can be implemented today in both utility and public/private-sector energy-efficiency programs. This section discusses several strategies utilized by the three programs introduced above, including:

1. Implementing an integrated design approach
2. Leveraging partnerships and funding sources
3. Targeting emission reductions through energy efficiency & non-traditional measures

Strategy 1 – Implementing an Integrated Design Approach

Implementing an integrated design approach encourages long-lasting changes in standard practice among the design, construction, and maintenance community to catalyze a market transformation in the built environment.

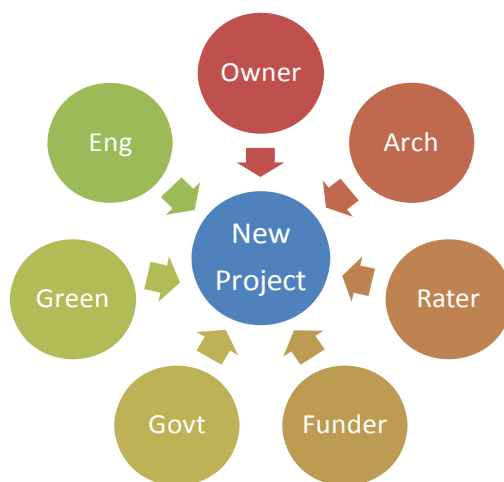
Provide technical assistance. Technical assistance, otherwise known as ‘design assistance,’ can be an integral part of a program’s service offerings. Program participants benefit from this by maximizing energy savings on their projects without the additional costs of hiring a larger project team. Implementers benefit because it is much easier to improve the efficiency of a program participant than to recruit new ones. Technical assistance is especially important in complex markets such as the new construction/comprehensive retrofit market where decision makers (owners and design teams) are determining the optimal and most cost-effective ‘package’ of energy efficiency measures to install in their projects. The process can also expose gaps in participant knowledge. Technical assistance will become even more important as programs begin

to implement the CPUC's goal of net-zero buildings by 2020 and promote integrated design through an iterative, parametric modeling approach.

Provide holistic incentive offerings. Diverse incentives can bolster the market impact of a program to reinforce integrated design approaches. Performance incentives encourage project teams to think holistically about the design and operation of buildings. By setting performance targets (i.e. x% better than code), participants are persuaded to think about interactions and synergies between energy efficiency measures. Instead of receiving a rebate for an individual measure, such as an energy efficient window, the participant will be more inclined to think about whether an investment in energy efficient windows will provide a larger energy benefit than, for example, an efficient water heater. In the interim, participants will learn that an investment in efficient windows has a measurable impact on the sizing and cost of space heating and cooling equipment for their project. Incentives focused on integrated design-teams at the project outset will ensure that energy efficiency interactions and synergies are discovered early.

Incentives should be targeted to the design team (energy consultant, architect, or other design professional) to encourage multiple players to play a role in transforming the build environment, rather than only offering incentives to the key decision-maker (i.e. the owner or building developer). Providing incentives to the design professionals is important because all players must be advocates to move the market to embrace energy efficiency or green practices. In addition, design professionals can better sell their clients (owners and developers) on program-participation when equipped with the tools and motivation from technical assistance/incentives. Lastly, involving multiple players (engaging teams rather than one target customer) opens new avenues for recruitment, since each discipline may now bring a project to the program (see Figure 1).

Figure 1. Diverse Team Members Influence New Construction



Illustrative example: CMFNH technical assistance & incentives. In the case of California Multifamily New Homes, the program provided the option of design assistance to all participating projects. As part of this design assistance, participants were offered support in exceeding the California Title 24 Energy Standard by a minimum of 15%. Primary support included determining the best possible combination of energy measures (resulting in the largest compliance margin in excess of the Title 24 Energy Standard), while also facilitating the cost-estimation process with the project team to determine the cost-effectiveness of the measures. Additionally, the program provided the participant and design team with a final summary of energy measures (and third-party verification items) which had been decided on by the project team with assistance from the program. This energy measure summary not only informs the participant of the committed measures for their project, but could also be used as a resource for future projects, allowing participants to follow a similar approach on their next projects.

Technical assistance also helped to identify gaps in participant expertise with Title 24 energy modeling software and integrated design practices. The third-party plan review conducted

by HMG compared the architectural plans to the Title 24 documentation to ensure consistency and accuracy. It was determined that the majority of energy models submitted to the program fell below the 15% compliance threshold. In many cases the plan review exposed that the project fell below current code compliance.

In addition to falling below the minimum performance threshold of 15% (or below code compliance), it was determined that the energy consultants were not accurately modeling the buildings in Title-24-compliance software. For example, buried ducts or low leakage ducts in conditioned space (verified by a HERS rater, or Home Energy Rater) were selected without understanding that these measures would, if selected, have to be field verified. In the case of both examples above, two or three additional verification measures must be completed in addition to the selected measure. Thus, HMG's review showed many energy models were overly optimistic due to poor modeling and a lack of deep understanding of the implication(s) of the measures.

As the California Title 24 Energy Standards become increasingly stringent, technical assistance will increase in importance. To address this challenge, both CMFNH and other California utility programs, such as California Advanced Homes Program (CAHP) and Savings By Design, are implementing an escalating dollar (per kWh, kW, therm) incentives that increase with every percent in excess of Title 24. This further encourages participants to not only think about their project holistically, but also to reach for deeper levels of energy savings. This will also prepare them for pending reach codes, green building ordinances, and net-zero energy goals, thus helping meet community goals requiring a transformation of the market place.

Measurement of the impact of the integrated design approach. To measure the effectiveness of providing technical assistance, pre- and post-intervention designs should be compared. In the case of CMFNH, on average, projects came to the program at 12% better than code. After design assistance projects were performing an average of 20% above code, based on a comparison of original Title 24 documentation submitted to the program versus the final Title 24 documentation once enrolled in the program. Follow-up with participants will also begin to uncover direct influence or spillover effects. For example, these could include the number of projects the previous program participant plans to build in the next year and how their projects would be influenced by the lessons learned from program's technical assistance.

Strategy 2 – Leveraging Partnerships and Funding Sources

Leveraging partnerships with like-minded organizations is a second approach that can be implemented to broaden market penetration. Unlike typical marketing pathways, coordination is often a more effective marketing tool than direct customer/participant marketing through email, flyers, trade show exhibits, and other outreach activities. It can be appealing to concentrate program efforts within the boundaries of the specific target market, however, this tends to encourage a rather narrow approach, where coordination between like-minded programs is not considered. Some organizations are in a good position to partner with utility programs including: other utility programs, green programs, trade organizations, local governments, and community outreach organizations. Coordination will substantially reduce a program's need to 're-invent the wheel' in order to reach their marketing and outreach goals. Most importantly as related to market transformation, partnerships can reach a larger share of potential participants with a smaller budget than would be possible if each partner handled marketing-activities separately.

Internal utility program coordination. Utility programs themselves are in a great position to partner with other programs within their utility as well as regionally. Though this is not often recognized, lead sharing can occur easily between programs within the utility sector. Lead sharing is particularly beneficial when programs address different aspects of the same market. For example, one program may address energy efficiency and the other renewable energy. Less obvious coordination can also be beneficial to programs which address differing markets or even, in some cases, competing markets. A participant is likely to be grateful if a program is transparent with the participant regarding the different options for incentives. In most cases, it is better to determine the appropriate program for the participant up-front rather than later discovering they are ineligible and/or a better fit for another program once resources have been invested. Coordination between utilities can also reduce marketing costs as one organization can represent multiple programs at conferences, presentations, and other events. Increased communication between programs can also prevent double-dipping.

Green program coordination. Efficiency programs can benefit from direct coordination with green programs. Today's market has placed increased importance on green measures as well as efficiency measures. Efficiency and green programs have obvious synergies: projects participating in an efficiency program are likely to be interested in a green program and vice-versa. These opportunities are especially important as a utility program can bring incentives and technical expertise in energy efficiency (the cornerstone of green building) while green programs can bring marketing assistance and green expertise to the table.

Local government coordination. Local governments can play an instrumental role in influencing a project in its conceptual planning and schematic design phase. They can ensure that appropriate programs are advertised to developers and planners before the projects reach later design-stages. There are a number of ways this influence can take place. One of the most obvious is to ensure that program materials are available at the building departments' permit and planning counters. Training building department staff training on program types and availability can help communicate program offerings to organizations and individuals building projects throughout the region. Additionally, local governments can provide mandatory or voluntary measures encouraging projects to take advantage of program services. These measures could take the form of a green and/or energy efficiency ordinance, where levels of efficiency and green program criteria must be met. Local Government Partnerships help to facilitate successful influence. One of the most challenging aspects of local government outreach is attributing successful green building ordinances as well as voluntary measures to the utility program goals. Utilities need regulatory guidance in order to fully enter this arena.

Trade ally coordination. Perhaps the ultimate outreach strategy is to develop a mutual support network between programs and trade professionals, otherwise known as a trade ally network. Unlike the other approaches described, this approach is not widely used in California. Using this approach, a program builds a network of professionals who become the outreach arm for the program in return for trainings, recognition, incentives, sales tools and technical assistance. Program support from trade organizations is a positive way to build respect for the program at the grassroots level. These organizations can assist programs in spreading the word about programs to their membership through regular correspondence. In addition, adding a new and different voice to a marketing campaign will resonate more effectively to trade professionals.

Illustrative Example: GBAC Broad Stakeholder Engagement & Leveraged Funding.

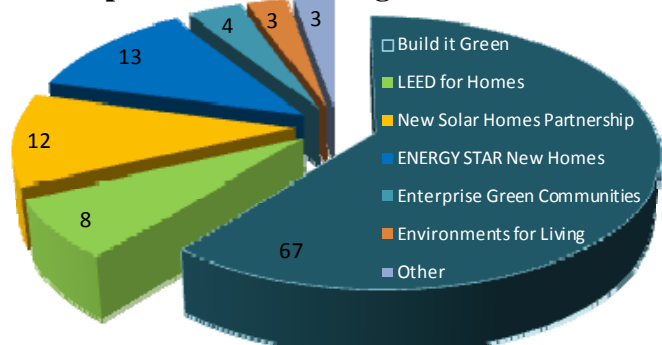
The Green Point Rated Existing Home Multifamily program targets participation from primary stakeholders such as multifamily developers, building owners and operators, homebuyers, homeowners & tenants. Secondly the program targets public agencies, Housing Authorities, utilities, and financing programs. In approaching these actors, the primary goal is to deliver a program that creates value and offers clear benefits to property owners. The secondary goal is to influence public policy and incentive programs within the California to utilize GreenPoint Rated (GPR) as a tool for implementing climate action plans and as a third-party verification mechanism for supporting financing tools such as Property Assessed Clean Energy (PACE) districts, energy-efficient mortgages and green loan funds. Aspects of the development which illustrate how this program is maximizing the benefit to the broadest number of potential participants are as follows:

- Conducted program comparisons of relevant standards, rating systems, HUD programs and funding sources to ensure complementary program design.
- Provided assistance to pilot projects, approximately 900 dwelling units in 13 projects, to secure funding/assistance for upgrades through sources such as: utility incentives, Low Income Housing Tax Credits (LIHTC), Housing and Urban Development (HUD) Green Retrofit Program, Weatherization Assistance Programs (WAP), LISC Green Property Needs Assessment (PNA) and training, National Housing Trust, and Green Communities.
- Working with a team of technical consultants and the California Energy Commission HERS II staff to develop a GreenPoint Rated software module within the Energy Pro Title 24 code compliance tool.
- Provided \$1,600 scholarships to HERS raters/field verification experts to attend GPR Existing Home Rater Training (to seed a pool of Raters for the pilot projects).
- Allocated \$75,000 in stipends and technical assistance to pilot projects through the existing StopWaste.Org Green Building Design Assistance & Grants program.
- Incorporated the project to: *Retrofit Bay Area*, a \$10.75 million State Energy Program award from the California Energy Commission to the Association of Bay Area Governments (ABAG) that includes additional funding to develop the infrastructure for multifamily retrofits; and *Retrofit California*, a \$30 million Retrofit Ramp-Up award from the Department of Energy, which includes a green labeling pilot project based upon GPR.
- Facilitate Statewide stakeholder input by hosting meetings at Utility locations to engage input early in the program design process
- Convening the Multifamily Sub-group of the EPA's *HERCC (Home Energy Retrofit Coordinating Committee)* in collaboration with other Multifamily *ARRA funding awardees*, the CEC and various local government and utility entities and Enterprise Green Communities to cost-share on program infrastructure and design, and to improve the HERS II's rating, auditing and benchmarking protocols for both low- and high-rise multifamily buildings.
- Sponsor BPI Multifamily Building Analyst and Operator trainings developed for NYSERDA's and HUD's multifamily performance programs.

Illustrative example: CMFNH program coordination. CMFNH coordinates extensively with other utility programs and is recognized for being a valuable resource for understanding finance and resource program offerings within and outside of the utility sphere. Key activities include:

- Lead sharing of, on average, five leads per month with other utility and green programs within California such as utility Residential New Construction programs, GreenPoint Rated, LEED for Homes, and Enterprise Green Communities. As a result, CMFNH projects participated in a number of other programs, as illustrated to the right (Figure 2).
- Coordinating presentations and exhibits at conferences, trainings and other events and ensuring that other program material was always on hand at these venues. For the 2010-2012 program this approach will continue and will be bolstered by the current PG&E restructuring effort, which is encouraging programs to coordinate more frequently and provide regular measured success of this coordination.
- Engaging local governments to inform their constituents about this and other PG&E programs. Local governments recognized the benefits of the programs and displayed program materials on their counters. The City of Berkeley is an example of a successful partnership; it requires builders to contact CMFNH before applying for a building permit.
- Leveraging partnerships with like-minded trade organizations such as the California Association of Building Energy Consultants (CABEC) through regular interaction with their energy-consultant membership.

Figure 2. CMFNH Project Participation in Other Programs



Illustrative example: energy trust trade ally network (TAN). Engaging trade allies in program activities is a process pioneered in the Northwest at the Energy Trust of Oregon. The network strategy leverages market-based skills and existing sales channels and is founded upon business-to-business relationships which benefit the customer, ally and the Energy Trust. Four core values shape the strategy for the network, 1) keep it simple; 2) consistent and timely communication; 3) develop long-term, meaningful and valued relationships; and 4) work at business speed.

In addition to maintaining a comprehensive directory and website, the program provides lighting-analysis tools, trainings, financial incentives, streamlined paperwork, and dedicated support for high-performing trade allies, all of which motivate market actors to sell and complete energy-efficient lighting projects. The program developed an Excel workbook which integrates the program application, lighting analysis, financial analysis, a sales letter and an incentive estimate, which used by allies to make sales to prospective customers. To streamline this process, a timeline is in place that requires submittal of projects during the first week of the month. This reservation window encourages allies to complete the sale in a timely manner. To further encourage this, all reservations are processed by the Energy Trust within 30 days.

To join the network, a company must submit an application showing they have requisite experience to promote the Energy Trust programs and adequately conduct efficiency upgrades. In addition, customer references and proof of insurance are required. To maintain an active status in the network, each ally must complete at least one Energy Trust lighting project a year.

A monthly newsletter is sent to allies updating them on the lighting program, training opportunities within and outside the Energy Trust, tax credits, submittal requirements, and program staff contacts. High performing allies, determined by project volume and energy saved,

are assigned individual program coordinators who help build strong relationships and improve communication. Regular technical assistance and trainings are provided to all allies. The Energy Trust also offers a cooperative (co-branding) marketing program. Lastly, annual ‘outstanding contribution’ awards are given and case studies developed to support top performing allies.

Measurement of the impact program coordination. The impact of program coordination can be measured through Social Network Analysis (SNA). SNA is increasingly used for program evaluation, especially in the education and public health sector. SNA’s primary goal is to assess the value of collaboration as a strategy to improving program outcomes, foster innovation and provide for long-term sustainable change. Inter-disciplinary sharing of information, best practices, and lessons learned can increase program effectiveness. By illustrating the connection between multiple groups, a sociogram can measure the impact of coordination. An example sociogram (Figure 3) illustrates how this approach could be applied in the energy efficiency and green building program sectors. Figures within the rectangles represent different sectors of the building-professional sphere and overlapping figures represent ‘boundary spanners’ who act in more than one sector.

Figure 3. Sample Social Network Analysis (SNA) of Program Coordination



Strategy 3 – Targeting Emission Reductions Through Energy Efficiency & Non-Traditional Measures

Incorporation of energy efficiency measures is rarely driven solely by an interest in saving energy, but rather is driven by a variety of interests including increasing occupant comfort, reducing utility and operating costs, adding amenities such as daylight and healthier interior environments, increasing property value, and green marketing opportunities. Integrating this approach into programs can result in larger resource and greenhouse gas savings by increasing interest and participation in energy efficiency programs, as well as by capturing emissions reductions from measures that might not meet cost-effectiveness criteria required for incentives. Of the three strategies described in this paper, this one can be considered the most cutting edge.

Illustrative Example: GBAC Sustainability Approach and GPR Existing Home Multifamily

The Green Building Alameda County (GBAC) program takes a sustainability approach to waste reduction by relating environmental strategies such as Construction and Demolition Debris Reuse and Recycling with strategies developed through the robust utility energy efficiency industry. Towards that end, the following is a sample of GBAC program activities which marry energy efficiency with green building measures:

- Assist jurisdictions in Alameda County with energy/green building ordinances and applications to CEC and California Building Standards Commission (CBSC). GBAC worked with Gable & Associates to produce 2008 Title 24 energy cost-effectiveness studies for jurisdictions within the County. This study was subsequently funded by PG&E for their entire service territory as part of their codes and standards enhancement program.
- Establish a partnership with the US Environmental Protection Agency (EPA) and the San Francisco Department of the Environment to integrate the ENERGY STAR® High-rise & Indoor Air Plus® Pilot Programs for multifamily into GreenPoint Rated (GPR).
- Provide funding for the development of a GreenPoint Rated Existing Home module within EnergyPro, one of California's T-24 energy code compliance software programs to be consistent with the CEC HERS II Program.
- Offer technical assistance and grants to Non-profit Developments to meet GPR or LEED standards. This program coordinates with utility programs to streamline participation.
- Host energy efficiency trainings and stakeholder meetings to ensure consistency with GPR and utility incentive programs.

Measurement of the Impact of Targeting Emission Reductions through Energy Efficiency and Non-Traditional Measures

Through the example of the GBAC activity of developing the GPR Existing Home Multifamily retrofit program, measurement of the successful implementation of this approach is as follows:

- Credible standards that will result in quantifiable improvements in energy efficiency. The minimum requirements for energy efficiency, water efficiency and resource conservation will demonstrate significant reductions in greenhouse gas emissions. The GPR consumer label for multifamily buildings demonstrates how much better these buildings perform compared to conventional ones in California.
- Participation by developers and property managers. If the standards, cost or complexity are too high, the program will lack participation, and therefore have little impact on reducing greenhouse gas emissions. The program must be accessible to the mainstream, not seen as an exclusive program.
- Endorsement by local/state government agencies: Cities and state agencies promote GPR Multifamily Existing Homes or link their programs to it.
- The GreenPoint Rated consumer label adds value to green homes in California. This goal will depend on the GPR brand gradually gaining visibility in the market for new and used homes, much like the Energy Star label for appliances.

- Tax incentives/rebates and financing available for energy improvements that are linked to the program. GreenPoint Rated will be seeking opportunities to link this program to state and utility programs as they are being developed.
- Energy and Climate Action Plan adoption of the methodology to develop CO₂e reduction estimates for installed green building upgrades through the GreenPoint Rated Climate Calculator. A preliminary estimate of CO₂e reduction potential from this multifamily existing buildings program using Air Resources Board methodology for voluntary retrofits and the CEC forecast Data referenced in an Itron potential study for number of existing multifamily Units by 2016, is shown below in Table 1.

Table 1. Potential Greenhouse Gas Reductions from the Existing Multifamily Sector

Approx 2,421,635 Existing Multifamily Units by 201							Existing Residential			
Assumptions			Sources				Metric Ton CO ₂ e per MWh		4.42E-01	
Total # homes	2,421,635		CEC Forecast – Itron Study				Metric Ton CO ₂ e per m. gal		3.85E+00	
kWh/home	6,300		Annual statewide res consumption per CEC				Metric Ton CO ₂ e per Therm		5.21E-03	
Therms/home	440		Annual statewide res consumption per CEC							
Homes sold/yr	~500,000		Various – about 3.75%/yr							
Annual water use	141,839		Based on 134 gal/person/day and 2.9 pp/hh							
Target Year	Total % Renovation	Cost	Total # Renovation	Annual MWh Reduction	Annual MMTherm Reduction	Annual M. Gal Reduction	MTCO ₂ e Total			
25% improved energy performance							Energy		Water	Total
2010	2%		48,433	76,262	5	1,717	33,716	22,747	6,606	68,069
2011	4%		96,865	152,563	11	3,435	67,433	55,494	13,211	136,139
2012	6%		145,298	228,845	16	5,152	101,149	83,242	19,817	204,208
2013	8%		193,731	305,126	21	6,870	134,866	110,989	26,423	272,277
2014	10%		242,164	381,408	27	8,587	168,582	138,736	33,028	340,346
2015	12%		290,596	457,689	32	10,304	202,299	166,483	39,634	408,416
2016	14%		339,029	533,971	37	12,022	236,015	194,230	46,240	476,485

Opportunities & Challenges

The coming decades present both immense opportunities and numerous challenges to the program implementation and evaluation industry. Market transformation presents an opportunity to build skills within the industry which will lead to long-term market changes. However, current regulatory structures limit access of public funds to ‘low-hanging fruit’ which have largely disappeared. This paper highlights how programs can transform the marketplace despite regulatory hurdles by leveraging funding from a variety of sources with goals that can be combined together into a comprehensive package. For these and many other market transformation approaches to be readily adopted by mainstream programs, regulators, program designers, implementers, and evaluators alike must begin a dialogue about how to value these effects. While this dialogue is complex, it is nonetheless necessary to meet and exceed the goals and aspirations of the communities within which we work.

References

- Alameda County Waste Management Authority (StopWaste.Org). **GreenPoint Rated Existing Homes Program**. 2010. www.stopwaste.org. Oakland, CA.
- California Public Utilities Commission (CPUC). **California Energy Efficiency Strategic Plan, Appendix A**. 2008. Sacramento, CA.

California Public Utilities Commission (CPUC). **Market Transformation and Energy Efficiency, CPUC Energy Division Workshop Presentation.** 2009.

Hartkopf, S. **Green Noise and the Marketplace: Clarifying the Energy Efficiency Signal and Implementing Successful Outreach for New Construction Programs.** 2009. ACEEE Behavior Conference. Heschong Mahone Group, Inc. Washington, DC.

Penuel, W., Sussex, W., Korbak, C., Hoadly, C. **Investigating the Potential of Using Social Network Analysis for Educational Evaluation.** American Journal of Evaluation. 2006.

Stiles, G., Mathews, L., Spring, R. **Conception, Care and Feeding of a Lighting Trade Ally Network in Oregon.** 2009. Energy Trust of Oregon. Portland, OR.