THE EVALUATION OF THE 2004-5 COMMUNITY ENERGY EFFICIENCY PROGRAM

CALMAC STUDY NO. BII0002

Submitted To:

The Building Industry Institute

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January 18, 2006

Table of Contents

List of Tables and Figures

Executive Summary

The Community Energy Efficiency Program (CEEP) is a voluntary program designed to encourage energy efficiency in the new residential construction market. Established in 1999, CEEP was designed to have local governments promote energy efficiency within new residential construction projects by providing certain benefits and incentives to builders at the point-of-permit in return for meeting specific CEEP standards. This process evaluation was designed to assess the effectiveness of CEEP. The evaluation plan included the following activities:

- Reviewed course material
- Conducted in-depth interviews with program management and administration staff
- Created an interim evaluation memo based on these discussions
- Conducted In-depth interviews with six code official participants
- Conducted In-depth interviews with six builder participants
- On-going review of evaluation findings with implementation team

Significant Findings

The research conducted for this evaluation uncovered a wealth of information that will be of benefit for future program planning efforts. The following is a synopsis of the findings that are included in the chapters of this report:

- **CEEP reached program goal**s – It is important to recognize that CEEP met all of its goals as set forth in the original 2004-05 plan. This is in spite of getting off to a very slow start.

- **CEEP program staff adopted many of the mid-course recommendations given as part of this evaluation** – This evaluation made a number of process related recommendations in mid-2005. To a large extend most of these were incorporated into subsequent implementation efforts. The program operated at a high level of efficiency and effectiveness over the last six months of 2005.

- **High level of code official awareness related to CEEP program** – During the interviews, code officials expressed an overall awareness of CEEP program elements. All of the respondents were familiar with the insulation and tight duct requirements and most with third-party inspection process and subcontractor requirements.

- **Difficulty providing CEEP benefits** – Code officials generally indicated awareness related to CEEP benefits; however, a number of code officials expressed difficulty in providing benefits. Reasons given for this difficulty

included lack of interest from builders, city commission perception of favoritism, or the inability to reduce fees or processing time for participating builders.

- **Builder confusion related to CEEP** – Overall, builders did not seem to have a grasp on the specific program benefits and some expressed confusion related to what services, if any, were offered by the different jurisdictions they build in. Early in the process evaluation, a lack of brand awareness of CEEP amongst builders and jurisdiction staff and lack of clear understanding of CEEP benefits and how to access them was evident.

- **Expedited process most important benefit to builders**– Overall, reducing the amount of time it takes from initiation of a project to final plan approval was most important to builders. This finding is in-line with what code officials perceived as the most desirable benefit for the builders.

- **Training essential and desired** – Code officials indicated that training is essential in order to perform their job at a high quality level. Training is expected of all staff related to many topics besides energy code. Code officials requested that more training be offered locally to help them control expenses and have additional staff trained more frequently. Approval of the training provided by ConSol was directly referenced by five of the code officials.

- **Jurisdictions overload an issue** – All code officials interviewed indicated that their staff had difficulty keeping up with current workload. This was in part due to high volume of new construction start activity and to the number of inspections that are conducted per home/development.

- **Varied perspective on collaboration between officials and builders** – Code officials tended to see their relationships with builders as mutually beneficial and rewarding and none of the code officials described an adversarial relationship. Builders' opinion, however, varied significantly from one jurisdiction to another. This was due to the differences in the time it took for plan approval from one jurisdiction to the next (e.g., one jurisdiction took 11 weeks for plan approval versus 10 months for another).

- **CEC Marketing material viewed favorably** – Code officials expressed a favorable view related to the marketing material from the CEC. Four respondents mentioned the CEC when asked where they acquired energy efficiency information. This included brochures and flyers that helped inform them regarding code changes. Code officials indicated that it would be helpful to receive a one page "cheat sheet" related to the upcoming code changes.

- **Builder support for code changes** – While there was some confusion expressed concerning the October change in code; builders expressed a high level of support for the code changes, even though it would mean some additional cost and time for them. They expressed a need to "level the playing field" since they indicated their companies were already building higher efficiency homes.

- **Lighting biggest concern with code changes** – Builders expressed concern with meeting the lighting requirements in the new code. They indicated that customers do not favor fluorescent lighting at current levels and will not want more of it in their homes.

- **Residential construction activity remains high**– The ongoing building boom was verified by both code officials and builders. Code officials and builders also anticipate increased activity in the short term (e.g., 2006-07).

- **Homes built in relation to code** – Interviews revealed a striking difference indicated in the number of homes built at or above code. Code officials indicated that the vast majority of homes are built at code. In contrast, the builders indicated at least 75 percent of their homes were built above the code minimum.

Recommendations

Cutting Both CEEP and the Residential New Construction Program at this Time Leaves a Void at a Critical Time

The change in the Title 24 code changes the landscape of energy efficiency in new construction. The elimination of the Energy Star incentives and CEEP leaves a void in energy efficiency in new residential construction. This study finds that almost no builders have plans to build homes above the new Title 24 code level and there are no incentives to push builders to build above code. More importantly, the survey finds that few builders have developed even conceptual plans or strategies for building at levels above the new Title 24 requirements.

It should be noted that passage of code changes is the last step in raising the efficiency levels of new construction. Before the code can be established and gain the necessary support, early-adopter builders must demonstrate that building at higher efficiency is feasible and viable in the marketplace. As the innovative steps that these builders take become accepted and desired, the practices become more mainstream, and gain enough support to be incorporated into code changes.

Prudent public policy provides technical support and financial incentives to the early adopters, and lowers that level of support as the practices become mainstream. Eliminating both the Energy Star incentives and CEEP will have the

effect of eliminating both the financial incentives and the local drivers that entice builders to build above code minimum standards just when it is needed again.

Continued Support of CEEP Makes a Lot of Sense Right Now

The most important assistance that builders need now is development support not financial incentives. There is a niche of builders who market themselves as energy efficient and help pull the market upwards towards greater efficiency. At this point, these builders have need for help in re-establishing a home type that is at least 15% above the new standard. The needed support may include design assistance, verification that designs meet new +15% level, technical assistance, and support with jurisdictions.

Granting large incentives per home as was done by the EnergyStar Homes program can be costly, particularly as the rest of the industry adopts techniques that the innovators have introduced. The CEEP program indicates that you do not need to grant these large incentives to have builders build at 15% above code. ConSol has shown that it can work directly with builders and local communities to help builders develop plans that are more energy efficient. This technical support does not require large amounts of financial incentives to get builders involved.

Right now, ConSol should be concentrating on supporting large participant builders in re-establishing themselves as building 15% above the new code. The kind of hand holding support that ConSol has been able to provide is exactly the type of service that can continue to bring new above code buildings into the market. However, because of the code change, it will be necessary for ConSol to start over with existing builders and bring their construction level to 15% above the new code.

This is a Good Time to Merge CEEP Brand into Energy Star

We have documented in last year's evaluation the trouble that BII has in marketing the CEEP brand and distinguishing it from Energy Star and Comfort Wise. This would be a good time to consider merging CEEP and Energy Star standards and developing a single, recognizable brand for the market.

Whether the CEEP or Energy Star brand name is used, this is a time where promotion of one recognizable label is needed. If we are to continue pushing for improvement in residential design and construction, then we need a label for high efficiency building to be recognized in the marketplace.

Establish CEEP as Energy Saving Program.

Continuation of CEEP as an information only program hampers the CEEP effort. The current climate in residential construction allows much greater support for

programs that are energy saving. CEEP operates in a manner in which documentation of energy saving is feasible and cost effective. One issue that will need to be addressed is when to credit a building's energy saving. Because CEEP works at the front end of the building process, it is easiest to count the buildings affected at the time they are permitted. This is the approach that has been used for all other new construction programs. Actual completion of the units may not take place until well after this point, and it is entirely possible that some permitted units will not be built. The program numbers should include an adjustment factor that nets out a percentage of savings to account for units not completed.

Establish 2006-08 Goals that Reflect Difficulty in Getting Progressive Builders Back to +15%

In setting goals for 2006-08, BII needs to recognize the slow process required to bring builders and compliant homes into the program. Therefore, the goals for 2006-08 should be incremental, starting small in 2006 and growing significantly through 2008.

Chapter One: Introduction

1.1 Description of CEEP[1]

The Community Energy Efficiency Program (CEEP) is a voluntary program designed to encourage energy efficiency in the new residential construction market. Established in 1999, CEEP was designed to have local governments promote energy efficiency within new residential construction projects by providing certain benefits and incentives to builders at the point-of-permit in return for meeting specific CEEP standards. The principal benefit comes in the form of an expedited plan approval and inspections and, less frequently, community recognition that the home/development is energy efficient. Individual jurisdictions determine their own benefit schedule, and, therefore, CEEP benefits may vary from one jurisdiction to another.

The Community Energy Efficiency Program works because it provides local governments with verifiable energy-efficiency improvements and superior quality construction. A CEEP standard home is built to exceed the Title 24 minimum standards by at least 15 percent. Through energy-efficient windows, tight ductwork, and more rigorous mechanical engineering requirements, this program guarantees substantial energy savings to the local government, consumer, and CPUC.

To participate in the program, builders agree to build new residential homes that exceed CA Energy Star standards and use improved construction techniques. For example, all builders participating in the CEEP are required to undergo thorough insulation installation training. The builder is subsequently required to use formal, tested insulation installation protocols developed by the building industry working with the California Energy Commission and a statewide group of energy-efficiency experts. If minimum insulation levels and installation quality are not maintained, the house does not qualify for CEEP. Insulation specifications are provided on the Building Industry Institute (BII) website. Training on proper installation of insulation occurs in a number of ways, including BII Builder Energy Code Training and training provided by the personnel who are responsible for inspecting and verifying proper installation. Such training is provided by the raters and subcontractors at no charge to this contract.

The benefits of CEEP include:

- Long-term annual energy savings through more energy-efficient new residential construction
- Electric peak demand savings through reduced cooling due to better windows, ductwork and mechanical engineering

[1] The information for Chapter One is taken from the 2004-2005 CEEP Proposal to the CPUC, revised date January 4, 2004, Confirmation #1099-04, pages 2-12 & 18-19.

- The active involvement of building officials in 13 local governments in a proven energy efficiency program
- Motivate builders to participate in CA Energy Star programs offered by PG&E
- Ensure that participating homes exceed CA Energy Star requirements
- Continuity and synergy with other major energy efficiency programs and entities across the State—without duplication
- Involve the building community in enhancing the quality and energy-efficiency of new homes
- Increase building community and local governments awareness of the relationship between energy efficiency and general community planning
- Active energy efficiency leadership from local government leaders
- Increase interaction between local government building officials, homebuilders and consumers on the advantages of energy efficient communities
- Increase positive press about energy efficiency in new residential construction
- New energy efficiency tools for local government officials, community leaders, developers, and builders
- A self-sufficient, sustainable program managed by each local government

1.1.1 CEEP Objectives

As outlined in the 2004 proposal, the program objectives for 2004 to 2005 are as follows:

- Recruit 20 new local governments to adopt the Community Energy Efficiency Program in PG&E's service territory
- Support implementation of CEEP in these new jurisdictions
- Solicit builder participation in CEEP in PG&E's service territory
- Cooperate with PG&E by supporting the California Energy Star program through CEEP
- Obtain builder commitment for at least 6,994 new homes to be built through CEEP (a CEEP home is counted when the builder submits compliant plans to the participating local jurisdiction)
- Educate and inform community leaders, local government planners, building officials, builders, and consumers about the economic benefits of energy efficiency in the residential new construction area
- Help local governments build self-sustaining energy efficiency partnerships with their constituents

1.1.2 Components of CEEP Operation

Program Management – The project is led by a partnership between the BII, the not-for-profit research and education arm of the California Building Industry Association (CBIA); CBIA itself; ConSol; and the Colorado Energy Group. This

management team educates local government officials, community leaders and developers using the best practices of proven community energy programs, face-to-face meetings, and extensive, targeted distribution of new, innovative educational materials.

Program Delivery – BII proposed to deliver this program, without duplication, and with seamless synergistic coordination with PG&E's CA Energy Star Home program, to 13 local governments over the two-year project timeframe. At least 50% of these building departments were to be in hard-to-reach areas. Builders were to be more strongly enticed to participate in CA Energy Star because of the additional benefits CEEP delivers to the builder (e.g., expedited plan check, local recognition, and reduced fees). Some builders have participated in CEEP without CA Energy Star incentives, demonstrating the strong motivation to builders that CEEP provides.

Builder Participation Requirements – Upon the local governments' decision to adopt and promote the CEEP, builder participation requirements are as follows:

- Before construction, each home plan must have a preliminary California Home Energy Rating System (CA HERS) rating of 87 or greater
- Each home must have an HVAC system designed to Air Conditioning Contractors of America (ACCA Manuals J, D, and S) requirements, and the design stamped by an engineer registered in the State of California
- The home must meet the California Energy Commission's "Tight Duct" criteria (less than 6 percent leakage)
- The home must exceed Title 24 by a minimum of 15%, indicating U.S. EPA ENERGYSTAR® Homes program compliance
- The builder must use detailed contractor scopes of work, and notify installing subcontractors (insulation, window, and HVAC) that scopes of work will be used as the basis for quality inspections
- Before final inspection, participating homes must have a final CA HERS rating of 87 or greater, documenting that they passed CA HERS inspection and diagnostics, and verifying the T-24 and enhanced features

Advisory Group – To help ensure that the CEEP remains broadly relevant and useful to a wide range of interests, this project employed an Advisory Group consisting of individuals representing a diverse array of local, state, and federal government; non-profit special interest groups (e.g., Natural Resource Defense Council); and building industry representatives (e.g., National Association of Home Builders, local builders). CEEP leveraged the tremendous resources available through each organization represented through this Advisory Group. This is a unique public/private partnership experienced in program development and delivery, economic development, and community energy education.

Marketing Plan – In addition to marketing directly to the targeted building departments and associated builders, BII provides the program message broadly to the industry. This is done through various methods including:

- Articles in publications such as California Builder magazine
- A short, color brochure (usually for the Building Department counter) for each jurisdiction that joins the CEEP
- Program information available via the web
- Circulate program information through personal contacts at the California Building Industry Association, the U.S. Department of Energy, the U.S. Environmental Protection Agency, and the news and print media

In addition to the marketing efforts outlined above, the program marketing and outreach plan includes:

- Contacting the targeted local jurisdiction's decision-makers about CEEP participation
- Assessing local needs and goals for participation in CEEP with local decision makers
- Meeting with local government representatives to create new implementation strategies and approaches for CEEP
- Briefing local government officials as required (Chief Building Officials, City Councils, Board of Supervisors, City Managers, etc.)
- Revising and individually tailoring CEEP as appropriate to meet each local government's needs and the needs of their respective constituents
- Assisting local governments with education and outreach for the program via technical assistance, "plan-check counter" literature, web links, magazine and newspaper articles, and training
- Working with builders to enroll their new subdivisions in CEEP

Customer Enrollment – The CEEP management team uses the same methodology to enroll customers that has proven successful over the last two years with over 70 other California local governments. Target markets are reached through each participating local government. Due to the voluntary nature of the CEEP, the approach is inclusive and consensus-based. The management team began by soliciting input on the 20 target jurisdictions from the Advisory Group. Where appropriate, Advisory Group members assisted with contacting the target jurisdictions.

After enrolling the local government in CEEP, the management team worked with the local government to decide which benefits they would provide to a CEEP builder (once the first CEEP builder has expressed interest). Narrowing down and finalizing the program details through this valuable technical assistance is a crucial and often time-consuming component of the CEEP. It requires constant contact with the local government, since priorities and the political landscape can change on a daily basis.

While concurrently signing up the local government to the CEEP, the BII management team aggressively pursues local builders likely to join the CEEP. The focus is on large production builders, while also encouraging smaller custom builders to join the program. Once the first CEEP builder commits to participate and agrees to build to CEEP standards, an introductory meeting is arranged between the builder and the local jurisdiction. At this meeting, expectations for the project are discussed. Finally, as the CEEP development is under construction (often for six months to a year), the CEEP management team serves both the local jurisdiction and the builder until the project is completed.

1.2 Overview of Evaluation Objectives

This section summarizes our research strategy related to the Community Energy Efficiency Program offered to the building community by the state of California. Issues related to the program and Title 24 code changes were explored with a sample of building code officials and with both participating and non-participating builders. This phase of research was intended to determine the effectiveness of CEEP outreach and CEEP messages in reaching the building industry. A broader objective is to determine how effective the program is in encouraging greater investment in energy efficiency in the new residential construction market and what specific challenges CEEP stakeholders have in addressing the new 2005 code standards.

This strategy conforms to the CPUC guidelines. Programs operated in 2004-2005 are guided by the CPUC Energy Efficiency Policy Manual, Version 2. The Policy Manual states that "Information only programs require an evaluation plan, but will not require monitoring and verification components." Each information-only program must develop an evaluation plan that addresses the following components:

- Providing up-front market assessments and baseline analysis, especially for new programs—(not applicable)
- Providing ongoing feedback, and corrective and constructive guidance regarding the implementation of programs
- Measuring indicators of the effectiveness of specific programs, including testing of the assumptions that underlie the program theory and approach
- Assessing the overall levels of performance and success of programs
- Informing decisions regarding compensation and final payments
- Helping to assess whether there is a continuing need for the program"

1.3 CEEP Program Accomplishments

Table 1.1 shows the program goals and accomplishments for 2004 to November 15, 2005. Note that the seven jurisdictions enrolling prior to program inception are not counted towards the program goal of 20 jurisdictions.

Table 1.1: CEEP Goals and Accomplishments

Jurisdictions	# of Jurisdictions	Homes Permitted in Jurisdictions Signed Up under Previous CEEP Programs	Homes Permitted in Jurisdictions Signed Up in Current CEEP Program	Homes Where Construction is Completed by 2005
Enrolled Prior to Program Start	6	1,276	3,080	1,939
Enrolled During Program	20	635	3,030	1,083
Total	26	1,911	6,110 (Total Qualified Units: 7,640)[2]	3,022
Goal	20	→	6,994	N/A
% of Goal Achieved	130%	→	109%	N/A

1.4 Study Methodology

The evaluation performed the following activities:

- Reviewed course material
- Conducted In-depth interviews with program management and administration staff
- Created interim evaluation memo based on these discussions
- Conducted In-depth interviews with six code official participants
- Conducted In-depth interviews with six builder participants
- On-going review of evaluation findings with implementation team

[2] "Total Qualified Units" is equal to the total number of "2004 – 2005 Committed Units" (6,110) plus the number of constructed "Committed 2003 Homes" (1,530)d

Chapter Two: Early Evaluation Findings

Early evaluation tasks included interviews with the CEEP implementation team, review of marketing materials, observations of CEEP marketing meetings with builders and jurisdictions, and in-depth interviews with both prospective and participating CEEP parties. An interim evaluation memo was created in June 2005 and presented to the implementation team. The information included in this chapter summarizes the information from the memo from the viewpoint of what can be considered for 2006 and beyond.

During this early evaluation, it was found that CEEP was close to realizing its goal of recruiting 13 jurisdictions, which allowed them to concentrate on working with builders and participating jurisdictions to reach the targeted number of homes for the program (n=7000). Key obstacles in reaching the home enrollment goal were identified as:

- Lack of brand awareness of CEEP amongst builders/staff and lack of clear understanding of CEEP benefits and how to access them
- The frenzied building boom provides little incentive for builders
- Confusion concerning the October change in code

Each of these factors could potentially contribute to distracting builders from entering agreements for CEEP. To address these challenges, recommendations were given for how to proceed in the remainder of 2005. Many of these recommendations were adopted by CEEP management. These recommendations are also worth noting since they can also serve the program well for the future:

- Prioritizing Resources for Builder Support
- Prioritizing Resources for Jurisdiction Support
- Develop Explicit, Specific Communication Materials for CEEP
- Develop Long-term Business Plan including Support Materials for Continued Funding

2.1 Prioritizing Resources for Builder Support

Given the finite resources of the CEEP implementation team, the first recommendation centered on prioritizing resources. This was doubly important because the change in code in October, 2005 was likely to have significant impact on CEEP enrollment potential. In order to reach the goals for 2005 and build a base for 2006, ConSol needed to determine which builders provide the best opportunities for CEEP enrollment. The keys to this task were to:

- Develop a prioritizing and tracking process
- Develop an organized approach to sales and promotion
- Develop clear goals for each contact

Develop a prioritization and tracking process. ConSol could not effectively market these services to every builder in the state. It was therefore suggested to develop a builder-assessment matrix that considered (or "scored") builder size, areas of activity, maturity of various development projects, and experience in building above minimum codes standards. With this assessment, ConSol can now determine what levels of intervention different builders require and how likely they are to enroll in CEEP. Further, in prioritizing builders, now uses the following classifications:

- **Prospects** – These are builders who have not participated in CEEP or who built homes above Title 24 standards. This classification of builder is likely to require significant hand-holding to get on board and this is a key consideration for allocation of resources. To bring these builders into the program, ConSol will need to meet with multiple staff perhaps multiple times (e.g., sales, design team, specifiers, purchasing, and project managers).

- **Clients (short term)** – Builders that have constructed homes 15% above Title 24 minimums. These represent 'experienced' builders that will need specific guidance on where existing/proposed developments can realize CEEP benefits in the short term (e.g, before October, 2005).

- **Clients (long term)** – These builders have constructed homes 15% above Title 24 minimums and will require specific design/build assistance in exceeding new code standards.

Organized Approach to Sales and Promotion. A new brochure was developed and represents an effective tool for introducing CEEP to a wider audience. It has been completed and made available for broad distribution. However, the brochure is not a viable means of securing increased CEEP participating on its own. Getting jurisdictions to enroll in CEEP and then getting builders in those jurisdictions to build CEEP homes requires program contacts on a person-to-person, organization-to-organization level. It was recommended that ConSol track these jurisdictions in a formal project management manner. We also recommended that once builders are prioritized, that ConSol prepare for each meeting with a potential builder in a consistent, organized manner.

Rather than offering a general introduction of CEEP and its benefits, it was recommended that, prior to meetings with builders, ConSol obtain a list of that builder's active and proposed projects, including locations and status, so that in the first meeting ConSol can show the builder the specific site/jurisdiction eligibility and benefits that are available to them. Once this is presented to the builder, ConSol can then quickly work with the builder to establish priorities and an action plan.

Develop clear goals. Each contact with a builder should be designed to bring the builder into the CEEP program. It was recommended that, ConSol should leave each meeting knowing:

- Which project or projects are a priority,
- Builder's timetable for these projects in terms of design, permitting and construction dates,
- The specific CEEP benefits (actual and potential) available to the builder/project,
- A specific agenda defining who will do what and when they will do it to complete the CEEP/builder transaction. This will include identifying and scheduling follow-up meetings between ConSol, appropriate builder staff and contractors, and jurisdiction personnel and timetable for services that can/will be delivered.

In light of the new code adoption, it was recommended that ConSol concurrently develop a strategy for helping builders shift from the 2004 code to the 2005 code environment. It is easy to imagine all builders welcoming a series of trainings that can provide specific "how to" instructions regarding meeting and exceeding new code minimums by using appropriate technologies in various climate zones.

2.2 Prioritizing Resources for Jurisdiction Support

ConSol has met its CEEP jurisdiction enrollment goals. It was recommended that contacts with, and the recruitment of, new jurisdictions should only occur when there is an identifiable building project that has a good chance of meeting CEEP that is being built in a not-previously solicited jurisdiction. In this case ConSol should concentrate its efforts on bringing builders and new willing jurisdictions together. It was recommended that ConSol should be in close communication with the enrolled jurisdictions that have active and potential projects in the pipeline to ensure that CEEP benefits are being provided as promised and on-schedule.

We also emphasized that ConSol work closely with Brentwood and other such communities to embed CEEP into the resource allocation point structure that is currently in place.

2.3 Develop Explicit Communication Protocols for CEEP and ComfortWise

With some builders, there is a lack of concrete understanding of CEEP *and* a lack of differentiation between CEEP from ComfortWise. Because ConSol is the CEEP contractor and the purveyor of all-things-ComfortWise, it is important that distinctions between the two are made clear to the building community. We recommended that ConSol make sure that each builder understands the following:

- CEEP program details and funding
- CEEP is a program that a builder can access independently
- ConSol can help navigate CEEP
- ComfortWise is a distinct for-profit service that can provide builders with many benefits and ensure compliance with CEEP standards.

The site visits and informational interviews conducted during this evaluation did not reveal any hints of conflict of interest.

2.4 Develop Long-term Business Plan including Support Materials for Continued Funding

We recommended that CEEP management begin development of a long-term strategy for CEEP. Because California needs programs that encourage progressive builders to build well above code, there seems to be a need to continue CEEP in the future in order to continue to push building efficiency higher. At this time, most progressive builders have not formulated plans that build at least 15% above the new code. The termination of the Statewide Energy Star Residential New Construction Program will leave a void of programs that encourage builders to build above code. CEEP is a good means of supplying technical assistance and support to builders and jurisdictions looking to build at above code levels.

Chapter Three: Interviews with Code Officials

This chapter summarizes our research related to the various public servants involved with code enforcement. It also includes the description of the methodology for the interview process and information related to the people interviewed. The subsequent sections present the feedback provided by this group. The topics of inquiry for the in-depth interviews are as follows:

- Market Information
- Perspective on Working with Builders
- Perspective on Energy Efficiency
- CEEP and CEEP Benefits
- Perspectives on 2005 Code
- Additional Suggestions or Comments

Six people involved with code implementation or enforcement were interviewed. By exploring pre-determined categories in detail, we sought to capture a clear picture of the current attitudes and awareness code officials have toward CEEP, as well as information that would be helpful for future program planning and implementation.

The sample of code officials was taken from the list of CEEP contacts as found at the program website. The people on this list are primarily the building officials for each of the jurisdictions that participate in the program. A total of 99 code officials were included on the list. Thirty four names were selected in order to complete the six interviews. The jurisdictions were separated into north and south and three interviews were completed with code officials from each region. These included Plan Examiners, Senior Plan Checkers and Building Officials.

The interviews included input from departments and jurisdictions of varying size and capability. For example:

- The largest department had 23 employees with nine building inspectors and seven plan checkers.

- The smallest department had five employees with three inspectors. This jurisdiction outsourced its entire plan checking responsibilities to a private firm.

- One additional jurisdiction outsourced a portion of its plan checking to an outside firm.

- One of the other smaller jurisdictions indicated they cross train people so they can fill in for various duties (e.g., plan checking is a shared duty among technicians).

3.1 Market Information

An understanding of current permit activity and staff workload is important to the program in that the busier the staff is the less time they will have in relation to managing and promoting CEEP activities. All respondents reported that they were extremely busy. For example, one code official indicated that on a scale of one to ten, where ten is extremely busy, they would score a ten. Another code official noted: "[Our] workload exceeds the capacity of the staff."

The message used to promote CEEP is dependent on the underlying economic conditions in the market. All of the respondents indicated that the residential construction market is very active. One code official noted the market is the most active it has been in his jurisdiction for the past ten years.

To further explore what is happening in the residential new construction marketplace, code officials were asked to estimate new construction starts for 2004, 2005, and 2006. This information is summarized in Table 3.1 below. Only one code official indicated that activity for 2005 would increase over the amount in 2004. None of the officials expect any increase in activity in 2006. This information indicates that code officials believe the market has hit its peak and is ready for a downturn.

Table 3.1: 2004 to 2006 Home Starts

Respondent	2004	2005	2006
	Estimate	***Change from 2004***	***Change from 2005***
Code Official 1	900	Same	Decrease
Code Official 2	1,000	Same	Same
Code Official 3	550	Decrease	Decrease
Code Official 4	80	Same	Same
Code Official 5	250	Increase	Decrease
Code Official 6	70	Decrease	Same

To gain a better understanding of the housing stock, code officials were asked to describe the types of homes being built within their jurisdictions. Descriptions usually included the number of stories, square footage, and whether they were tract homes. Square footage ranges from a minimum of 1,500 sq. ft. to a maximum of 9,000 sq. ft. A typical size hovers around 2,500 sq. ft. Most homes are at least two stories. The majority are tract homes, except for one jurisdiction in which all of the homes are custom.

In addition to housing characteristics, code officials provided home price estimates for their jurisdictions. Estimated average range of prices varies significantly, as shown in Table 3.2.

Table 3.2: Price of New Homes

Statistic	Price
Average	$723,000
Standard Deviation	$319,000
Mode	N/A
Maximum	$1,200,000
Minimum	$440,000

Another market-related issue explored with code officials pertains to what is attracting builders to their jurisdiction. Not surprisingly, consumer demand for housing is the primary reason given. For example, one code official noted that their jurisdiction is one of the top places to live in the country. Another code official indicated that the quality of life is attracting people to live there. One other code official said that his jurisdiction has a much lower cost of living than is found in many areas of California.

The final market related question involves the number of homes being built at or above code. This information is useful for program staff as a comparison to goals established for penetration of Energy Star level homes. As shown in Table 3.3 below, the vast majority of code officials indicate that homes are typically built right at code. In fact, the average number of homes built right at code is 79 percent. Only one code official indicates a majority of the homes are built above code (60 percent). Related to the Energy Star level (15 percent or above), only four code officials indicate any homes built at or above this level.

Table 3.3: Homes Built in Relation to Code

Response	Avg	Std Dev	Mode	# @ 100%
At Code	79%	23%	100%	2
0 to 15% Above Code	13%	18%	0%	-
At least 15% above code?	8%	7%	15%	-

3.2 Perspective on Working with Builders

The success of CEEP depends largely on whether there is a functional working relationship established between the code officials and building community. If

each group views the relationship as adversarial, it would make it much more difficult for the program to achieve significant market penetration. Therefore, an important component of the research is to explore code official perceptions related to their relationship with builders.

Code officials generally indicate there is a good relationship with builders. For example, one code official said: "[We] work together as a team to provide a finished product to the public." Another code official jokingly noted: "As long as we aren't talking increases in fees it is pretty good." None of the officials describes an adversarial relationship with constituent builders.

To delve deeper into whether there are any barriers to working with builders, code officials were asked what were their biggest issues and concerns. None of the code officials voiced a concern specifically related to energy. The one concern mentioned by more than one code official pertained to assuring that builders install equipment and build the homes according to what is specified on the plans. For example, one code official said: "Bottom line is to gain code compliance; make sure plans reflect this as well as the actual construction that takes place." Two code officials indicated concerns with other codes (e.g., plumbing code) and infrastructure to serve the needs of developments (e.g., roads, sewers, and water) since only a portion of infrastructure costs might be covered by property taxes.

To explore the flip-side of the relationship, code officials were asked what concerns builders have expressed in working with their jurisdictions. Multiple responses were accepted. By far, the biggest concern that jurisdictions might be able to address is the time it takes for approval of plans (three code officials). Two code officials also noted excessive regulations, but this isn't something that can be readily changed in response to builder complaints.

3.3 Perspective on Energy Efficiency

The evaluation is also interested in the jurisdictions' perspectives on energy efficiency. An understanding of these perspectives will assist in the design of the marketing messages for the program. Code officials were first asked whether their jurisdiction or local government is interested in promoting energy efficiency. Their responses indicate that each community is at a different level and that marketing information tailored to individual needs is the best approach. For example, three of the code officials gave responses that show significant activity in promoting energy efficiency. For instance, one code official said: "Not only in new home construction, but look at cogeneration and other alternative energies. The city is progressive in looking at these issues." However, there is minimal promotional activity at the other three jurisdictions. One code official noted that the city staff are extremely busy and don't have much time for activities to promote energy efficiency measures. This person further noted that there would be time to put up CEEP flyers and that is about it.

How code officials approach the dissemination of energy efficiency information within their staff is also an important indicator. Do they go beyond the knowledge base required for code or just enough to perform code enforcement? The information given by respondents indicates the latter. For instance, one code official stated: "[We] try to keep abreast of changes with respect to the regulations. [We] can't influence design; we just enforce regulations." Another official noted: "They know the basic code standards [in relation to] the CF-1R forms."

Another issue explored with code officials is whether there are differences in the knowledge levels of staff members. The responses indicate two different approaches. One approach is to have experts who can inform the rest of the staff on specific issues such as energy efficiency. Two code officials described this arrangement. Another two also said there are unspecified differences in skill and experience levels at their office. The other approach is to have all employees trained at a consistent level including energy efficiency. For example, one of the code officials responding no said: "[We] Try to be on the same page so a consistent message is being given [to builders]."

Finally, we asked respondents where code officials turn to for energy efficiency information. Responses (multiple responses accepted) to this question are summarized as follows:

- Training offered by ConSol and utilities (five code officials)
- California Energy Commission (CEC) communications including website, emails and flyers (four code officials)
- In-house training (two code officials)
- Internal expertise (two code officials)
- Internet resources related to energy (two code officials)
- CEEP staff (one code official)

One person said that there isn't enough training offered by the state when asked this question.

3.4 CEEP and CEEP Benefits

Code officials are an integral partner in whether CEEP is considered a successful program. An important first step is gaining a better understanding of their familiarity with the program. Code officials were first asked whether all of the staff within their jurisdiction are familiar with CEEP. Three code officials responded yes and three responded no.

Next, they were asked how many employees are involved in CEEP administration. Three code officials indicated that only the main contact listed on the CEEP website is involved in CEEP. Typically this is the Building Code Official for the jurisdiction. One code official said two people were involved (the Building Official and the Deputy Building Official). One respondent indicated that all

employees deal with the program. The other respondent indicated no one is involved, because there have not been any CEEP related projects in his jurisdiction.

Code officials were then asked what benefits they currently provide to builders who build CEEP homes. One code official indicated that his jurisdiction offers reduced processing time for plan check and reduced fees for the energy portion of the permit fees. Two of the other jurisdictions provide only the reduced processing time with one of these jurisdictions currently considering a resolution in the city council to officially recognize the program. The latter jurisdiction is the only one in which a code official mentioned anything about recognition as a benefit, before the interviewer mentioned recognition later in the interview.

Three of the code officials said that they are unable to provide any additional services. One code official indicated that the public officials feel that the benefits would be subsidizing certain new construction at the expense of the taxpayer. One other code official indicated that "it is too hard to do the things that are suggested." He also noted that CEEP staff ensured him that if an eligible project was identified in his jurisdiction that they would call him and help with the details. The other code official said that they already have low fees and quick turn around times and couldn't really offer anything additional to builders (other than the CEEP program information brochure).

Code officials were then asked if they are having any difficulty in offering the services and, if so, to explain this further. Four of these code officials indicated they are having trouble providing the benefits with three of them responding for reasons similar to what they provided when asked what benefits they are providing (i.e., the three officials noting no current benefits). The other code official responding yes indicated that no one has requested these benefits yet within their jurisdiction.

Next, code officials were asked from their perspective what program benefits are most important. Their responses are as follows:

- "Most obvious is to save energy and reduce the number of plants needed to generate power."
- "Reducing process time—land use takes the longest and would be a good one to reduce [for developers]."
- "For local jurisdictions there aren't any benefits. [It is] marketed that jurisdiction needs to provide carrot to builder and this makes his job harder…CEEP [staff] did not really come and help him when he ran into problems promoting this within his city and with other officials…"
- "Cost reduction"
- "Speed things up for the builders."
- "Only benefit is the reduced turn around time."

Code officials were then asked what benefits they felt builders value the most. The responses can be summarized as follows:

- Expedited permit processing including plan check a first priority (five code officials)
- Recognition for being a green or CEEP builder (two code officials)
- Reduced fees first or equal priority (one code official)

When asked their opinion on the best way to market the program to builders, code officials provided the following feedback:

- "Not sure—harder to market given the changes coming up in October. Rebates will help."
- "Go to developer organizations [like the] Building Industry Association."
- "Sell to city officials and also sell to builders and developers as a marketing tool for them—better value homes for homeowner and cheaper to maintain."
- "Have to make it worth their while—[the builders] need an incentive since the homes are already sold prior to being built [custom homes in this jurisdiction]."
- "Promote the fact that we will use less energy in the long-run."
- "Probably through trade agencies like the Building Industry Association. Also [could market it] through the contractor licensing board since they have a mailing list and could send information to contractors."

Finally, code officials were asked a set of yes or no questions related to the program. The questions along with a summary of the responses are shown in Table 3.4. The results in the table illustrate that there is a high level of awareness related to program elements.

Table 3.4: Awareness of Program Features

Question	Yes	No	Total
Are you aware of how the third party inspection process works?	5	1	6
Are you aware of the requirements related to installing insulation?	6	-	6
Are you aware of the requirements related to tight ducts?	6	-	6
Are you aware of the subcontractor requirements for the program?	5	1	6
Total	22	2	24

3.5 Perspectives on 2005 Code

Understanding where code officials are at in relation to the October code changes is important in understanding what other benefits could be provided through CEEP or other programs. Given that the interviews took place in August and September of 2005, it is not surprising that all of the code officials were familiar with October changes and employees had been oriented or trained with respect to the new codes. Given code changes were imminent at the time of the interview, code officials were still interested in additional support related to enforcing Title 24 changes including:

- Additional training particularly if it could be located in general proximity of their jurisdiction. Inexpensive, half-day sessions are preferred to multiple day trainings.
- Continuing training that allows for code official input into what they are experiencing in the field.
- Support in educating the building community, beyond just the biggest builders in the state, on what the changes are in the codes and how to address these changes in the planning stages. One code official noted: "Builders are learning by the correction notices instead of material that could be sent from CEC or other groups."
- One page outline of all the changes that could be used as a "cheat-sheet" when an inspector goes out to a site.
- Other sources of information like:
    - Brochures or pamphlets
    - List of contacts for questions (could be reached via the 800 number)
    - Design manuals
    - On-line blueprints

Given the importance of training, code officials were also asked what kinds of training would be most beneficial to them. The following topics were suggested by more than one respondent:

- General code training (three code officials)
- How to provide better public service (two code officials)
- How to conduct plan check (two code officials)
- Building inspection techniques (two code officials)
- Electrical and plumbing code (two code officials)

3.6 Additional Suggestions or Comments

In closing the interview, code officials were asked for any additional feedback. Often times, this final open-ended question provides a wealth of information for the implementation team. Helpful comments given by respondents include:

- **Ghost-writing services** – One service that CEEP staff could provide is the ghost writing of articles for the local jurisdictions. These articles could be used in internal distributions or public newsletters that go out within the cities. CEEP could possibly help write material to distribute to city councils in relation to passing resolutions.
- **Personal visits** – A suggestion was made to have CEEP staff visit the participating jurisdictions more often to provide assistance in building support for CEEP and the benefits of energy-efficient homes. This could include a brief presentation on key energy code changes and how they might impact the particular jurisdiction involved with the presentation (i.e., personalize the presentation).
- **Tightening ducts** – A comment was made that builders aren't tightening ducts and instead focus on using more efficient windows or insulation to remove the need for duct testing. This could be an issue to explore and present the benefits/costs of conducting business in this manner.
- **Code requirements** – Another comment indicated that "Code requirements are becoming too specific to each room in the house (lighting is an example)." CEEP staff could address why this is important in program literature.
- **Timing of code changes** – Another suggestion involved the timing of regulatory activity. A code official noted that: "[It would be] easier to have code changes implemented at one time. [Currently] energy regulations go into effect at one time, fire codes at other times and handicap access at another."

3.7 Summary of Significant Findings

The following significant findings are evident from the research conducted with code officials:

- **New starts at high levels** – Code officials have seen a high level of new home starts within their jurisdictions. However, their responses suggest that this trend is expected to slow in 2006.

- **Jurisdictions workloads are high** – All of the code officials indicate that their staff could not keep up with current work load. This is in part due to high new start activity in the past two years. It is also due to the number of inspections that are conducted per home (one code official indicated six inspections per one new home).

- **Training essential and desired** –Code officials note that training is essential in order to perform their job at a high quality level. Training is expected of all staff related to many topics besides energy code. Code officials also requested that more training be offered locally to help them control expenses and have additional staff trained more frequently. Training provided by ConSol was directly referenced by five of the code officials.

- **Cordial relationships with builders** – All of the code officials view their relationships with builders as friendly and working together to provide a high quality product to the public. Code officials also indicated that builders place a priority on expediting the plan approval process as compared to reduced fees or other program benefits that can be provided.

- **CEC communications and marketing material viewed favorably** – Code officials expressed a favorable view related to the material from the CEC. Four respondents mentioned the CEC when asked where they acquired energy efficiency information. This included brochures and flyers that helped inform them regarding code changes. Code officials also indicated that it would be helpful to receive a one page "cheat sheet" related to the upcoming code changes.

- **Difficulty expressed in providing CEEP benefits** – Four of the six respondents expressed difficulty in fulfilling CEEP program benefits. Three of the code officials indicated they were not providing any CEEP benefits currently. Reasons given for this difficulty included lack of interest from builders, city commission perception of favoritism, and the inability to reduce fees or processing time any further.

- **High level of awareness related to CEEP elements** – Only two program elements received any "no response" from code officials. The third party inspection process and subcontractor requirements each received one no response when code officials were asked whether they were aware of how these elements worked.

Chapter Four: Interviews with Builders

This chapter summarizes our research related to the interviews with residential home construction professionals. It also includes the description of the methodology for the interview process and information related to the people interviewed. The topics of inquiry for the in-depth interviews are as follows:

- Market Information
- Determining Standard Practice
- Perspective on Working with Jurisdictions
- Perspective on Energy Efficiency
- CEEP and CEEP Benefits
- Perspectives on 2005 Code
- Additional Suggestions or Comments

Six in-depth interviews were completed with builder representatives. The list of builders to be contacted was agreed upon by ConSol and the evaluator as being a representative sample for the interviews. The list of builders was primarily derived from people that attended a Building Energy Code Training course during 2004 or 2005. This research was undertaken to secure a snapshot of the marketplace and program-related activities and was not intended to be a statistically significant study.

The first step as part of the interview process was to develop a profile for each of the builders interviewed. This information was derived from the available contact information and information provided during the interview. Characteristics for each builder gleaned from the interviews are as follows:

- **Builder 1** – This Company is not participating in CEEP; however he is aware that it exists and has been exploring participation. The geographic region in which he operates is primarily the San Francisco Bay (East). The company is expecting to build one subdivision next year with approximately 50 homes. The average price of these homes is expected to be approximately $950,000.
- **Builder 2** – This Company is not participating in CEEP and was not aware the program existed. However, once CEEP benefits were described, this person expressed an interest in learning more. The primary geographic region for building homes includes the San Francisco Bay Area (North), Napa County and Sonoma County. They are expecting to build 325 homes in eight to ten subdivisions in 2006. The average cost of homes they are building is approximately $650,000.
- **Builder 3** – This Company is not participating in CEEP even though he is familiar with the program. They are not sure how to take advantage of CEEP benefits at the current time. The geographic region in which they operate includes California & Nevada with this person's primary responsibility being Orange County, Sacramento and San Diego. In the

areas in which he has primary responsibility, they are anticipating 2,200 new homes in an unspecified number of subdivisions (100 percent will be built in developments). The builder did not provide an average cost for these homes.

- **Builder 4** – This Company is participating in CEEP and he has a favorable opinion regarding the program. The primary geographic region in which they build homes is Palm Springs area. They are expecting to build 160 homes in five subdivisions. The average cost of these homes is $700,000.
- **Builder 5** – This Company is not participating in CEEP and was not aware that the program exists. He didn't think that the jurisdictions in which he builds homes are participating although he was going to find out. Primarily, the geographic region in which they operate is the cities of Delano and Dinuba. They are planning on three developments next year with a total of 180 homes built. The average cost for the homes is expected to be $190,000.
- **Builder 6** – This Company is participating in CEEP and, to the best of his knowledge, the program is viewed favorably. He works for a large company and his division has primary responsibility for homes built throughout the San Francisco bay area. His division is planning on building 950 homes next year and these will be in approximately 25 different developments. The average cost of these homes is approximately $800,000.

4.1 Market Information

To gain a better understanding of current and anticipated market conditions, information was requested from builders related to how many homes they anticipate building. This information is illustrated in Table 4.1 below. Builders are expecting an increase in market activity as all of the builders indicate that they anticipate building more homes in 2006 than they built in 2005. For example, Builder 1 anticipates building 50 homes in 2006 even though he did not build any in 2005.

Table 4.1: 2005 to 2006 Home Starts

Respondent	2005	2006
	Estimate	***Change from 2005***
Builder 1	0	Increase
Builder 2	200	Increase
Builder 3	1,700	Increase
Builder 4	6	Increase
Builder 5	140	Increase
Builder 6	800	Increase

An important issue for CEEP is how the design/build process works within each company's structure. Only one company completes the entire process in-house and that happens to be Builder 6. The other five companies start the design process in-house with conceptual drawings and then hand off the drawings to an architectural firm to finish the design. For example, Builder 2 said: "We do not have in-house architects or engineers…we have a product design department that creates the conceptuals and drives the architectural process." This finding suggests that CEEP staff needs to incorporate a larger and more diverse audience than just builders when designing program marketing material, training and recruitment campaigns.

4.2 Determining Standard Practice

What builders perceive as their standard practice in relation to code is important for program design. As illustrated in Table 4.3, builders believe that their practices are already beyond code since all of the builders indicated at least 75 percent of their homes were built above the minimum code levels.[3] The question was clarified to mean Title 24 code prior to the October changes. Builder 2 did not specify 100 percent because he said to build more homes above code level would require: "more opportunity in product design, availability of additional products and cost feasibility of incorporating these products."

[3] The builder that indicated zero homes built in 2005 was asked if they would have built any homes in 2005 what percent would have been built above Title 24 minimums.

Table 4.3: Number of Homes Built Above Code before October 2005 Code Change

Range	#	%
0 to 24%	-	0%
25 to 49%	-	0%
50 to 74%	-	0%
75 to 99%	1	17%
100%	5	83%
Total	6	100%

To further explore how energy efficiency fits into standard practices, builders were also asked to describe their company's approach to energy-efficient home construction. The following comments illustrate their approaches:

- Builder 1 – "We were the first builder to incorporate Energy Star and Comfort Wise Home in same house."
- Builder 2 – "Highly focused on energy efficiency in design and development."
- Builder 3 – "Embracing it—building all homes to Energy Star levels."
- Builder 4 – "The owner wants to give back to community as far as saving energy by using green building design."
- Builder 5 – "We like to be ahead of the curve related to energy efficiency—work on it before it is mandated."
- Builder 6 – "Extremely proactive in energy savings."

It is interesting to note the almost universal enthusiasm for building well above code, and the contrast between these builders' perceptions and those of the code officials in the previous chapter. We note that the sample of builders interviewed here is not intended to represent the average builder. It is quite likely that builders that attend ConSol activities are more likely to embrace efficiency.

4.3 Perspective on Working with Jurisdictions

The success of the program depends heavily on builders and code officials working together. When builders specified the biggest challenges they face in the permit process, they overwhelmingly point out the time involved in receiving approval for plans. For example, Builder 6 said the jurisdictions don't have enough inspectors and plan checkers to do the work. He says that it should take 3 weeks from submitting plot plans to approval and that it is taking 4 months in one city. One other concern mentioned is the staff turnover in jurisdictions. The example given by Builder 4 is that he had worked with five different planning directors in the past year.

Builders that work in multiple jurisdictions have the opportunity to compare and contrast service delivery. For example, five of the six builders work in more than one jurisdiction. and the majority of these builders find a difference among the jurisdictions. Three of these builders (two of these builders have not participated in CEEP) see a significant difference in services, particularly related to how fast plans receive approval. An example that illustrates the differences is in moving from a tentative map to a final map. One city is able to finish this process within six months while another takes ten months. For plan approval, one city takes 11 weeks while another city takes ten months. Builders note that some jurisdictions seem severely understaffed with respect to inspectors.

However, there is conflicting evidence on whether these differences really impact the businesses of the builders. Only Builder 2 finds these jurisdictional differences influence his decision where to build. The other four builders say it does not affect choice and that factors, such as land price, have more of an impact. This suggests that jurisdictional differences are more of an annoyance to builders than a hindrance to where they conduct business.

The conflicting information arose when builders were asked whether the differences significantly impacted profitability. Four of the builders believe this is the case. Builder 1 said: "[it] can go from a profit to a loss based on the jurisdiction." Builder 2 noted: "the carrying cost is higher for these delays as well as the indirect construction costs." Builder 5 had a different opinion and said that it did not heavily impact profit and the bigger difference is land cost.

Given the above information, builders were then asked what they considered the most important point in the permitting process. The following summary of their comments (grouped by similarity) illustrates a diverse array of opinions with the processing time being a common element for many of the builders:

- Builder 1 – "The overall time from conception to approval is crucial to a project."
- Builder 2 – "Being able to procure building permit in timely fashion."
- Builder 6 – "Approval of plot plans from Public Works and Planning."
- Builder 5 – "Really just obtaining the permit."
- Builder 3 – "Entitlement process is most important."
- Builder 4 – "Inspection process is important."

Prior to conducting the interviews, there was a question on whether officials are receiving or exchanging information differently with builders than they had in the past. Builders are evenly split on whether this is occurring. Two of the three builders indicating a change are CEEP participants. These three builders added:

- "Email has been an improvement—just a communication improvement related to questions. It would be good if you could electronically send

check sets—after approval looks immanent than could send in signed copies."

- "Email is a new way…if he has a plot plan for approval and it has an error he receives an email that this happened—can get it corrected much faster. Communication is one of the most important factors in expedited processing."
- "[The city] just started a focus entitlement program that will speed up process for green builders."

4.4 Perspective on Energy Efficiency

Understanding builder perceptions and positions related to energy efficiency is important to the design of CEEP and in the marketing approach to take with builders. It is apparent from these interviews is that the majority of builders in which we reached view energy efficiency favorably. When asked to describe their organization's orientation to energy efficiency, all of companies consider themselves leaders in energy efficient new construction. For example, three builders specifically mentioned they were green builders. Builder 1 added: "we want to continue to be on the forefront for solar power and alternative energy and high quality energy efficiency projects."

The majority also viewed energy efficiency as a driver in the marketplace as four builders support this position. Builders responding yes added comments like "big factor in the market place," or "huge sales point because of the cost of energy," or "if homeowners don't do it, the planet won't be around to long." However, two builders do not believe that energy efficiency is an important driver. However, Builder 1 holds the opinion that it would be a driver in the future. Builder 5 said that none of the people look at the homes he builds and ask questions about energy efficiency. The sample of builders was not large enough to explore regional differences and this might be a useful research endeavor in the future.

To explore potential marketing channels and partners, another topic discussed with builders pertained to where they acquired information related to energy efficiency. The following is a summary of the sources builders turn to for this information (multiple sources accepted):

- Consultants, such as Consol (four builders)
- Government, such as the city or Environmental Protection Agency (two builders)
- Manufacturers or suppliers (two builders)
- Utilities (one builder)
- Building Industry Association (one builder)

Crucial to program success is an understanding of the decision-makers related to the design/build process within the builder companies. Builders were asked how many people within their organization have influence. Builders typically denote

two to five people within their organization establish policy pertaining to how energy efficiency is incorporated into the design/build decisions. There is not an apparent difference in the responses due to the size of the company. Departments of importance include Product Design, Marketing, Construction, and Forward Planning. Builders also note that energy consultants and architects outside the company could have a major influence in this process. A follow-up question was asked to determine the best way of reaching these people. All of the builders indicate sending an email would work best.

An important component of promoting energy efficiency in California is the Home Energy Rating System (HERS). Builders were asked to provide their opinion related to the HERS process and how it was working for them. Builder 4 and Builder 6 are in favor of the program. Builder 6 said: "Outstanding, [the process] works well and is helpful in producing good homes. For 30 years I have been building homes and think [the process] is good." Other comments from builders suggest either limited experience with the process or tended to lean towards improvements were needed. Three quotes that illustrate these opinions are as follows:

- Builder 1 – "I prefer that the inspections were greater in number—the Energy Star peer review looks at 15 percent [of homes] and gives rating on this. It should be higher—[closer to] 50 percent."
- Builder 2 – "We are just getting into it…over the next six months we will be taking projects one at a time into this process."
- Builder 3 – "[The process is] pretty cumbersome—because ConSol and others have trouble communicating ratings to the HERS website, [the utility] has problems reading the information and then getting rebate to our company. [The problem is] not consistent among CA utilities—bigger problem in San Diego."

4.5 CEEP and CEEP Benefits

An important topic to explore with builders related to CEEP and the benefits the program provides. First, the following statement was read so that all of the builders had at least a minimum amount of information related to CEEP:

> Builders who choose to participate in CEEP commit to building homes that exceed California's Residential Building Energy Efficiency Standards (Title 24) by at least 15 percent. In return for building more energy efficient housing, participating local governments provide special recognition and other enticements (which could expedite plan check and reduce permit fees) to the participating builders.

After the statement was read, builders were asked if they were familiar with the program. Responses indicate minimal involvement as only two builders familiar

with the program are participating (Builder 4 and Builder 6). Two of the builders were not familiar with the program and did not recollect hearing anything about it prior to the interview (Builder 2 and Builder 5).

Next, builders were asked their perspective on the benefits offered through the program. Generally, there is confusion on what benefits are provided by jurisdictions in which these builders operate. Three of the builders are confused due to the lack of understanding on how to take advantage of program benefits. One builder noted: "[Benefits are] good, but I don't know how to take advantage of these benefits." Another builder is uncertain about benefits because he does not believe cities really could expedite the permit process. Builders providing positive feedback express a general sense that all benefits are good. These builders consider an expedited entitlement process and recognition for building energy efficient homes the most desirable benefits.

As a follow up on their perspective, builders were asked which features are most important to them. An expedited process is of most importance to the majority of builders since five of the builders indicate this as an important feature. Three builders said that an expedited process for plan approval is of first importance to their business. Builder 4 commented: "[It would] help if the planning process worked more efficiently through the whole process of land development through final construction approval." Two builders also favored reduced fees; however, they consider reduced fees of secondary importance to faster approval. Builder 5 prefers that minimum mandates for energy efficiency be established for homes instead of offering CEEP benefits. Builder 6 was not sure which benefits are most important to his company.

Builders were also asked if they noticed gaps or major differences in CEEP benefits from one jurisdiction to the next. Only one builder responded with something other than not sure or not enough experience. Builder 3 commented: "I contacted a Senior Building Official and he had no idea that he was part of CEEP—he wasn't aware of anything [at the time of the call] and he said he would get back to me and he never called back."

When asked whether there was anything ConSol could do to bridge the connection between the builder and jurisdiction, Builder 4 provided the suggestion that ConSol could spend more time with jurisdictional planning departments as part of an educational effort. A comment indicative of other builders' responses is: "not sure that they could do anything beyond what they already do."

Finally, builders were asked if they were familiar with any other efforts that effectively linked the builder and jurisdictions. The two suggestions from builders are to have associations, like the Home Builders Association and Builder Industry Association, serve as an intermediary and to encourage more cities to utilize 3rd party plan checkers to expedite the process.

4.6 Perspectives on 2005 Code

Builders' perspectives on the upcoming code changes are important given that raising code requirements has an impact on energy efficiency benefits of building CEEP-qualified homes. All of the builders are aware of the October 2005 code changes as expected since the interviews were conducted in August and September of 2005. Generally, builders are in favor of the code changes. Comments in support of the changes included:

- Builder 1 – "[It is] good for everybody. Hopefully the products will be available in time."
- Builder 4 – "[It is a] step that needs to be taken to put everybody on a level playing field."

A couple of the builders expressed concerns related to lighting as illustrated by the following three comments:

- Builder 2 – "While the changes are good, they are challenging—hard to find the products you need, especially exterior lighting. Fluorescent and time sensors are a challenge. Making new homes more energy efficient is great, but should be doing much more in making older homes energy efficient."
- Builder 5 – "[We] have not done anything heavily yet. Lighting might be a little troublesome since designers have to look at things differently for customers—homeowners might not like the aesthetics."
- Builder 6 – "Title 24 makes homes so tight that homes can't breathe so mold is an issue. I dislike fluorescent lighting and so do most people…people tear it out once they are in their homes."

To ascertain how these changes might impact business processes, builders were asked how the code changes would impact the design/build process. Generally, the builders were of the opinion it would not have a major impact and would primarily result in different equipment selected. Four of the builders are concerned that the biggest impact would be on lighting. Builder 3 added that it would increase the cost of the homes they build by about $7,500 per home.

Finally, builders were asked what types of assistance, if any, they need in order to comply with the new code. None of the builders are currently in need of anything in addition to assistance that ConSol is currently providing (e.g., training, consulting services). For example, Builder 6 noted: "No extra assistance needed right now. The purchasing director works directly with ConSol on Title 24 and getting this put into the plans." Builder 2 added: "[We] already integrated these changes into homes a month ago."

4.7 Additional Suggestions or Comments

Builders were given the chance to add any suggestions or comments that they would like as a way to close the interview. Two builders took this opportunity and provided the following comments:

- Builder 1 – "I would like to think that in California that energy efficiency becomes more of a requirement and less of an option."
- Builder 4 – "[We have] 100,000's of dollars tied up waiting on building and land permits."

4.8 Significant Findings

Significant findings that were evident from the research with builders include:

- **Builders are constructing efficient homes** – Five of the builders said that 100 percent of their homes were above the minimum code. Evidence suggests that this is in part due to preparations for the code changes in October 2005. There are also at least two builders that are building homes at the Energy Star level.

- **Expedited permit process most valued CEEP benefit** – Overall, reducing the amount of time it takes from initiation of a project to final plan approval is most important to builders. Evidence from the builders' perspectives on working with jurisdictions supports this finding. This also takes precedence for all of the builders as a benefit they would like to see as part of CEEP.

- **Energy efficiency considered a driver** – Energy efficiency is considered a driver in the marketplace by a majority of the builders. Three of the builders interviewed also indicate they considered themselves green builders.

- **Confusion related to CEEP** – Overall, the builders do not fully grasp the program benefits. Two builders were not aware of the program at all. Two additional builders are confused related to what services, if any, are offered by the jurisdictions they are active in. This is the case for one builder even though the jurisdiction of interest is listed on the CEEP website.

- **Support for code changes** – Builders expressed a high level of support for the code changes, even though it means additional cost and time for them. They desire a level playing field since they are already building higher efficiency homes.

- **Lighting biggest concern** – Five of the builders are concerned with meeting the lighting requirements in the new codes. They indicate that

people do not prefer fluorescent lighting at current levels and will not want more of it in their homes.

Chapter Five: Relevant Information from BECT Builder Survey

A builder survey was conducted as part of the Building Energy Code Training Project. We inserted several questions in that survey that were relevant to the CEEP program. The results are presented here.

5.1 Characteristics of Attendees

The survey started with 667 email addresses of attendees to both the builder and jurisdiction sessions. When the invitation was broadcast to these addresses 90 were returned as undeliverable shrinking the sample to 577. From this sample we received 81 completed surveys; a response rate of 14 percent.

The composition of the 81 respondents is shown in Table 5.1.

Table 5.1: Composition of Respondents

	Number of Respondents	Percentage of Respondents
Builder/Developer	51	63.0%
Subcontractor	3	3.7%
Supplier	2	2.5%
Architect/Designer	8	9.9%
Local government planner or code official	17	21.0%
Total	81	

5.2 Familiarity with Codes

We asked all respondents to gauge how familiar they were with the existing (2001) code before they attended the seminar. Table 5.2 shows the results broken down by respondent type. Most attendees (83%) were at least somewhat familiar with the existing code. Subcontractors and architects/designers were the least familiar.

Table 5.2: Familiarity with the Existing Code

	Builder	Subs	Suppliers	Architects	Code Officials	Grand Total
Very familiar	16		1	3	7	27
Somewhat familiar	29		1	1	9	40
Not very familiar	5	2		4	1	12
Not at all familiar	1	1				2
Grand Total	51	3	2	8	17	81

5.3 Future Course Attendance

Respondents were asked the likelihood that they would attend BII courses if they were held in 2006. The responses, shown in Table 5.3, indicate a lukewarm desire for additional course attendance by these respondents. Courses that provide specific instruction on meeting the 2005 code requirements were the most likely to be attended in the future.

Table 5.3: Likelihood That Respondents Would Attend an Additional BII Course in 2006

	Extremely likely	Somewhat likely	Somewhat unlikely	Extremely unlikely
2005 changes to Title 24	6	7	28	36
How to specify/design buildings that meet the 2005 Standards	15	7	25	28
How to specify/design buildings that exceed the 2005 Standards	12	10	22	28
Lighting requirements/lighting opportunities in 2005 Title 24	5	5	26	43
The use of Home Energy Rating System	7	11	37	19
Meeting 2005 Title 24 in different climate zones	14	21	22	17

5.4 Awareness of CEEP

We asked the respondents if they had ever heard of the Community Energy Efficiency Partnership (CEEP). CEEP is a companion program also run by the Building Industry Institute that recruits local jurisdictions to support energy

efficient new home construction by rewarding builders for building homes 15% above Title 24 standards. As Table 5.4 indicates, very few of the attendees had a clear understanding of CEEP and only 2 out of 81 had previously participated. Given that all BECT courses include a small segment on CEEP, this low awareness is surprising.

Table 5.4: Awareness of CEEP Program

	Builder	Subs	Suppliers	Architects	Code Officials	Grand Total
Yes, I have been involved with projects that have qualified for CEEP	2					2
Yes, I am aware of the program, but I have never participated	16		1	1	5	23
Yes, I have only heard of the program, but I have never participated	10				7	17
No, I am not aware of the program	23	3	1	7	5	39
Grand Total	51	3	2	8	17	81

5.5 Builders Current Activity and Efficiency Level

We asked each builder to provide the number of homes they build each year. These results are summarized in Table 5.5. Most of those attending are the larger production builders. Only three of the 37 respondents built 20 or less homes in 2004.

Table 5.5: Attendee Builders Activity in 2004 and 2005

	2004	Projected 2005
Mean	444	492
Standard Deviation	456	498
N	37	36
Minimum	0	0
Maximum	2400	3000
Median	198	250

We then asked the builders to classify what percentage of their homes were built to code, built above code or built to 15% or more above code. The results are:

- 14 builders build to code only 100% of the time
- 3 builders build to above code 100% of the time
- 19 builders build to ES or above 100% of the time.
- 5 builders sometimes build to code and sometimes build to above code
- 2 builders sometimes build to code and sometimes build to 15% above code
- 3 builders sometimes build to above code and sometimes build to 15% above code
- 3 builds build at all three levels

When we weight the categories by the number of homes built we find the results shown in Table 5.6.

Table 5.6: The percentage of homes built by efficiency level, weighted by total homes constructed by respondents

	Percent
Homes built at code	28%
Homes built above code	25%
Homes built at 15% above code	47%

We then asked the respondents to classify how they were responding to the new code requirements. The survey was performed in late September early, October just as the new code was coming into effect. Table 5.7 shows the results. We also asked those respondents, who were not already meeting the new code requirements whether their firms had figured out how they will meet the code requirements. These results are shown in Table 5.8.

Table 5.7: How Are Respondents Dealing with New Code Requirements?

	Build 100% at code	Build some at code and some above code	Build 100% above code but not at Energy Star	Build some (<10%) at Energy Star	Build 100% at Energy Star or above	Grand Total
We are doing nothing as of yet		1				1
We are planning how to comply with the new standard, but we have not yet made any changes to the building specifications			1		1	2
We are beginning to incorporate the requirements of the new standard into the homes we are now designing/building	10	2	1	2	5	20
The homes we are designing/building now are compliant with the new standard, and they will continue to be so after October	3	3	1	4	3	14
The homes we are designing/building now are exceeding the new standard, and come October we will be building homes that are above the new standard	1			1	8	10
Don't know					2	2
Grand Total	14	6	3	7	19	49

Table 5.8: Has Your Company Figured Out How to Build Homes at the New Code?

	Build 100% at code	Build some at code and some above code	Build 100% above code but not at Energy Star	Build some (<10%)at EnergyStar	Build 100% at Energy Star or above	Grand Total
Yes, we have figured it out	5	1	2	1	4	12
We have figured some things out, but still have some areas to work out	2	1		1	2	6
No, we have not figured out how we will build homes after October	1					1
Don't know	2	1				3
Grand Total	10	3	2	2	6	23

We asked an open ended question of builder respondents who are not yet meeting new code to give us a list of their biggest challenges in meeting the new code. The answers have been classified into categories in Table 5.9. We also asked this group if assistance would be useful in helping them configure their houses to meet the new code. These responses are summarized in Table 5.10. It appears as though these builders would find design assistance helpful.

Table 5.9: Biggest Challenge in Meeting New Code for Builders Not Yet Building to New Code

	Number
Lighting	12
HERS	4
HVAC	1
Don't Know	4

Table 5.10: Would Assistance Be Helpful--Asked of Builders Not Yet Building to New Code

	Number
Yes, extremely valuable	5
Yes, somewhat valuable	7
No, it would not be something we would use	3
Don't know	5

We asked those builders who had previously built some or all of their homes at the EnergyStar level of 15% above code, whether they had defined procedures to build homes 15% or better above the new code. These results are shown in Table 5.11. Most of these builders have yet not figured out how to build at this level.

Table 5.11: Has Your Company Figured Out How to Build Homes at the 15% above the New Code?

	Build some (<10%)at EnergyStar	Build 100% at EnergyStar or above	Grand Total
Yes, we have figured it out	3	5	8
We have figured some things out, but still have some areas to work out	3	6	9
No, we have not figured out how we will build homes after October		5	5
Don't know	1	3	4
Grand Total	7	19	26

We also asked these builders, who had previously built some or all their homes at the EnergyStar level, to name the biggest challenges facing them in building to 15% above code. Their responses are categorized in Table 5.22

Table 5.12: Biggest Challenge in Meeting 15% above New Code

	Number
Lighting	5
Costs	7
Not Knowing What Measures Will Be Needed to Reach +15%, Not Know What EnergyStar Will Look Like	6
Getting Information to Trades	4
Getting Code Approval	2
Cool Roofs	1
Don't Know	4

We also asked these builders, who had previously built some or all their homes at the EnergyStar level, if design assistance would be useful in helping them build houses 15% above the new code. Table 5.13 shows that 15 respondents would find that a useful service.

Table 5.13 Would Assistance Be Helpful--Asked of Builders Not Yet Building to New Code

	Number
Yes, extremely valuable	5
Yes, somewhat valuable	10
No, it would not be something we would use	7
Don't know	5

Chapter Six: Policy Recommendations

This section presents a final look at the research conducted in relation to CEEP. First, a comparison of responses between building code officials and building professionals is undertaken primarily to find common themes and areas in which opinions differ. Finally, we discuss recommendations related to all of the analysis presented in this document.

6.1 Comparison of Responses

The interviews for the building code officials and builders had similar questions in which we can compare responses for the two groups. Significant findings evident from the comparison include:

- **Residential construction activity** – Code officials indicated a very active market currently with the expectation of similar activity to a slight decrease in the future. Builders concur with the fact that it is an active market, although the builders are anticipating increased activity in at 2006.

- **New home prices** – The average price of homes was $723,000. Builders also indicated a similar average price of $658,000. Both groups expressed a large variation in the estimates of new home prices.

- **Homes built in relation to code** – The most striking difference indicated in these interviews were the number of homes built at or above code. Code officials indicated that the vast majority of homes are built right at code. In fact, the average for the group of code officials was 79 percent built right at code. In contrast, all of the builders indicated at least 75 percent of their homes were built above the code minimum and at least one was building all of their homes at the Energy Star level.

- **Perspective on jurisdiction/builder collaboration** – Code officials tended to see their relationships with builders as mutually beneficial and rewarding. None of the code officials described an adversarial relationship. Builders' opinion on jurisdiction relationship varied significantly from one jurisdiction to another. Most often this was due to the difference in the time it took for plan approval from one jurisdiction to the next (as illustrated in the example regarding 11 weeks versus 10 months for plan approval).

- **Energy efficiency resources** – Code officials and builders shared the common resource of consultants as a source of information. This included the training offered through BECT for both groups. A possible chain of information was identified as code officials indicated the CEC is a resource of information. Two builders indicated government resources including the jurisdiction as a potential resource. It might be possible to

build on this and distribute energy efficiency information to the building community through the building code officials.

- **CEEP benefits** – Code officials indicated overall awareness of CEEP benefits; however, three of the officials indicated they really weren't able to provide or fulfill benefits at the present time due primarily to high workload and resource constraints. This is a potential explanation for the confusion expressed by builders in what CEEP benefits were available in jurisdictions in which they worked. Reduced processing time of permits and plan checks was the benefit perceived to be most valuable by builders and code officials.

- **Types of support in relation to code changes** – Code officials expressed an interest in a one-page outline of CEEP, additional staff training, and education for the entire building community. Builders expressed an interest in continuing the existing training offered by ConSol. Builders did not express an interest in any additional services at this time.

6.2 Recommendations

Cutting Both CEEP and the Residential New Construction Program at this Time Leaves a Void at a Critical Time

The change in the Title 24 code changes the landscape of energy efficiency in new construction. The elimination of the Energy Star incentives and CEEP leaves a void of resources in promoting energy efficiency in new residential construction. Significantly, this study finds that almost no builders have plans to build homes above the new Title 24 code level. There are no incentives to push builders to build above code. More importantly, the survey finds that few builders have even developed conceptual plans for building at levels above the new Title 24 requirements.

It should be noted that passage of code changes is the last step in raising the efficiency levels of new construction. Before the code can be established and gain the necessary support, early-adopter builders must demonstrate that building at higher efficiency is feasible and sellable. As the innovative steps that these builders take become accepted and desired, the practices become more mainstream, and gain enough support to be incorporated into code changes.

Prudent public policy provides technical support and financial incentives to the early adopters, and lowers that level of support as the practices become mainstream. Eliminating both the Energy Star incentives and CEEP has the effect of eliminating both the financial incentives and the local drivers that entice builders to build above minimum code standards just when it is needed again.

Continued Support of CEEP Makes a Lot of Sense Right Now

The most important assistance that builders need now is development support not financial incentives. There is a niche of builders who market themselves as energy efficient and help pull the market upwards towards greater efficiency. At this point, these builders have need for help in re-establishing a home type that is at least 15% above the new standard. The needed support may include design assistance, verification that designs meet new +15% level, technical assistance, and support with jurisdictions.

Granting large incentives per home as was done by the EnergyStar Homes program can be costly, particularly as the rest of the industry adopts techniques that the innovators have introduced. The CEEP program indicates that you do not need to grant these large incentives to have builders build at 15% above code. ConSol has shown that it can work directly with builders and local communities to help builders develop plans that are more energy efficient. This technical support does not require large amounts of financial incentives to get builders involved.

Right now, ConSol could be concentrating on supporting large participant builders in re-establishing themselves as building 15% above the new code. The kind of support needed is exactly the hand holding that ConSol demonstrated was possible in bringing new buildings into the CEEP program this year. However, because of the code change, it will be necessary for ConSol to start over with existing builders and bring construction levels to 15% above the new code.

This is a Good Time to Merge CEEP Brand into Energy Star

We have documented in last year's evaluation the trouble that BII has in marketing the CEEP brand and distinguishing it from Energy Star and Comfort Wise. This would be a good time to consider merging CEEP and Energy Star standards and developing a single, recognizable brand for the market.

Whether the CEEP or Energy Star brand name is used, this is a time where promotion of one recognizable label is needed. If we are to continue pushing for improvement in residential design and construction, then we need a label for high efficiency building to be recognized in the marketplace.

Establish CEEP as Energy Saving Program.

Continuation of CEEP as an information only program hampers the CEEP effort. The current climate in residential construction allows much greater support for programs that are energy saving. CEEP operates in a manner in which documentation of energy saving is feasible and cost effective. One issue that will need to be addressed is when to credit a building's energy saving. Because CEEP works at the front end of the building process, it is easiest to count the

buildings affected at the time they are permitted. This is the approach that has been used for all other new construction programs. Actual completion of the units may not take place until well after this point, and it is entirely possible that some permitted units will not be built. The program numbers should include an adjustment factor that nets out a percentage of savings to account for units not completed.

Establish 2006-08 Goals that Reflect Difficulty in Getting Progressive Builders Back to +15%

In setting goals for 2006-08, BII needs to recognize the slow process required to bring builders and compliant homes into the program. Therefore, the goals for 2006-08 should be incremental, starting small in 2006 and growing significantly through 2008.