

DOCKET

12-BSTD-1

DATE MAR 28 2012

RECD. APR 03 2012

**BEFORE THE CALIFORNIA ENERGY COMMISSION
OF THE STATE OF CALIFORNIA**

Attention: Docket No. 12-BSTD-1

Dockets Office
1516 Ninth Street, MS-4
Sacramento, CA 95814

**COMMENTS OF THE
CALIFORNIA BUILDING INDUSTRY ASSOCIATION
REGARDING THE
PROPOSED 2013 BUILDING ENERGY EFFICIENCY STANDARDS**

Filed by
Robert E. Raymer, PE
Senior Engineer/Technical Director
And
Michael G. Hodgson
CBIA Energy Committee Chairman
California Building Industry Association
1215 K Street, Suite 1200
Sacramento, California 95814

March 28, 2012

The California Building Industry Association (CBIA) is a statewide trade association representing over 3,000 member-companies involved in residential and light-commercial construction. CBIA-member companies produce over 90% of the new residential dwellings constructed in California on an annual basis.

Please be advised that the California Building Industry Association is strongly opposed to the Proposed 2013 Residential Building Energy Efficiency Standards.

CBIA's comments will be broken down into three categories; "General Comments" that focus on overall compliance impact and the state of the economy, "Specific (technical) Comments" associated with specific technical proposals within the standards and "General Policy Concerns".

Our opposition notwithstanding, CBIA would like to extend a special note of thanks to the CEC Staff, and especially to Mazi Shirakh, Patrick Saxton and Martha Brooks, for their efforts to address CBIA's individual technical concerns and for joining with CBIA in the effort to identify the overall compliance costs associated with the proposed standards.

General Comments

CBIA's opposition stems largely from the substantial and unprecedented cost increase associated with the draft proposed Standards. **Our independent life cycle cost analysis shows that the implementation of the Standards does not pay back within the 30 year life of the home.**

Moreover, given the historical and enduring downturn in our economy, CBIA is also deeply concerned with what can only be characterized as remarkably poor timing associated with the implementation of these Standards (effective 1/1/14), and the immediate negative impact these standards will have on jobs.

Compounding this considerable increase in stringency and cost is the implementation of the National Appliance Energy Conservation Act (NAECA) Air Conditioning Standards (effective 1/1/15), which causes the standards to effectively change twice in a twelve month period.

Lastly, it is very clear that the proposed Standards will cause a negative impact on small business, the building industry in general, housing affordability and jobs during the most difficult economic recovery period in the last 50 years. *Please note that our use of the term "housing affordability" relates to the ability to purchase a new home. CEC Staff uses this term to describe the cost of operating the home "post-purchase". While both definitions are important, a negative impact on the ability to purchase a new home will have a direct and negative impact on the short-term job market, especially throughout the entire Central Valley Region of California.*

Unprecedented Increase in Stringency = Unprecedented Increase in Cost:

Currently the CEC Staff is proposing to increase the overall stringency of the mandatory minimum standards by approximately 32% (25% CEC + 7% DOE). This is significantly more stringent than the 15% goal as indicated just 18 months ago and as stated in the AB 32 Scoping Plan (December 2009). If this 32% goal remains in place, it will be the single largest increase in the stringency (and cost) in the CEC's 35-year history.

The CEC has been updating the Residential Energy Efficiency Standards on a very regular basis. Over the past ten years, the CEC has increased the overall stringency of their standards by 50% {15% in 2002; 15% in 2005; and 20% in 2010}. This has led to a point of diminishing returns. The cost of getting that next (+1%) increment of energy savings is now costing 2-3 times more than what it did over the previous four updates of the Standards. And this will have an especially negative impact on housing affordability in the cities most impacted by the economic downturn.

Expected compliance costs by region:

As with past updates of the Residential Energy Efficiency Standards, CBIA has focused a great deal of time and effort determining the estimated cost of compliance as the regulatory proceeding moves forward. To date, our analysis shows the estimated compliance cost for the following regions of the state:

| | |
|---|-----------------|
| CZ 11: Roseville, Rocklin, Redding..... | \$5,929 |
| CZ 13: Central Valley (Madera, Fresno, Bakersfield)..... | \$5,847* |
| CZ 12: Sacramento Valley (Sacramento, Stockton, Modesto)..... | \$5,847* |
| CZ 14: LA/San Bernardino County..... | \$5,712 |
| CZ 09: Los Angeles..... | \$5,140 |
| CZ 10: Riverside County..... | \$5,046* |
| CZ 04: Bay Area | \$4,017 |
| CZ 07: San Diego..... | \$3,584 |
| CZ 01: Eureka..... | \$3,496. |

**It is worth noting that UCLA’s School of Economics recently identified California’s Central Valley and Riverside regions as those areas of the state that will take the longest to emerge from the enduring economic downturn confronting the state. This is the same geographical region where compliance costs associated with these Standards will be the highest.*

A breakdown of the individual costs is summarized in the following table:

| | |
|---|--------------------------|
| <u>Estimated Compliance Cost per Home:</u> | |
| DOE (Federal) Mandated HVAC Changes: | \$387 - \$619 |
| CEC Mandatory Statewide Measure Changes: | \$1,292 - \$1,477 |
| CEC Climate Zone Compliance Package Changes:..... | <u>\$1,569 - \$4,095</u> |
| Total Cost per Home:..... | \$3,496 - \$5,929 |

Bad Timing

General State of the Industry: California’s homebuilding industry is currently in the middle of the worst economic climate since industry began keeping statistics in 1955 (see attachment A-1). Economists predict for the next three to five years there will be an excessive inventory of homes from foreclosures which produces downward pressure on new home pricing from lower appraisal values and excessive supply. Both homebuilders and homebuyers are finding it increasingly difficult to obtain financing from lending institutions. Tightening of credit requirements and excessively large down-payments (20% and up) have knocked most homebuyers (including those with good credit ratings) out of the home buying market.

Major Cost-Cutting Efforts Underway: All of this has prompted many in the building industry to substantially change the design of the product they are marketing, including large reductions in square footage and (most importantly) significant cost-cutting measures aimed at reducing standard material and labor costs. More than ever, industry is focusing on reducing construction costs to a bare minimum. The “pricing pressure” currently confronting industry is depicted on *Attachment A-2*.

Marketing Challenges: Given the 45%-50% increase in the stringency in California’s energy standards over the past ten years, it is becoming extremely difficult to differentiate the “improved energy efficiency” value of a new set of energy standards from the standards they replace. Case in point: A home built to the 2010 Energy Efficiency Standards is a very energy efficient home. Given that California homes must already be built to the most stringent statewide energy standards in the country, how can industry effectively market the **value** of even tighter (and more costly) energy standards to a typical homebuyer who places price and location above all other considerations.

More Bad Timing

Recent Changes to California’s Building Codes: In the past 24 months, the State of California has implemented new mandatory building standards resulting in the single greatest increase in code-related construction costs in the past 50 years.

- **Energy Efficiency Standards (effective 1/1/10):** The most recent update to our mandatory energy efficiency standards increased the stringency of the state standards by 20% and added approximately **\$2,170** to the cost of a home being built in California.
- **Green Building Standards (effective 1/1/11):** In January of 2011, California implemented the nation’s first (and only) set of mandatory residential green building standards. Depending on the method of compliance chosen by the homebuilder, the cost of compliance with these new mandatory standards will range from **\$500 - \$2,000**.
- **Residential Fire Sprinklers (effective 1/1/11):** By far, the most onerous and costly mandate in recent memory is the state mandate for fire sprinklers in all new single-family dwellings. The cost of this new state mandate can vary substantially, especially if the local fire department or water purveyor adds on local code requirements (or fees) on top of what the state already requires. However, the minimum cost of compliance with the state mandate will add an estimated **\$3,000 - \$6,000** (\$2.00/sq.ft.) to the cost of a new home. Making matters worse, homebuyers generally do not like having these systems installed, which means this additional cost does little (if anything) to increase the marketability of the new home.

| |
|---|
| <p>Summary: In the past 24 months, the State of California has implemented mandatory building standards that have added an estimated \$5,670 - \$10,170 to the cost of building a new home.</p> |
|---|

Staggered Implementation of NAECA Standard

The National Appliance Energy Conservation Act (NAECA) Standards going into effect one year after the updated California Standards take effect will seriously complicate the permitting process for production home builders. Builders will have to resubmit master plans. This could be avoided if instead of changing the budget when the 14 SEER federal manufacturing requirement goes into effect, the budget were to continue to use the 13 SEER, allowing equipment inventory to be absorbed over the next years.

In addition, CBIA strongly objects to the CEC's refusal to include the energy savings from this federal change as part of their "25% goal" for the 2013 Standards. Whether it is a federal or state mandate, the fact is "a mandate is a mandate". Looking back, the CEC has always included federal changes to appliance efficiency standards in their calculations of energy savings attributed to our state standards. To not include the savings attributed to the upcoming federal change as part of our state's goal of increasing stringency by 25% seems selective at best. To a homebuyer in Fresno, energy standards will get 32% more stringent via these standards, not 25%. And the initial cost impact associated with that 32% increase is very real.

=====

Specific (Technical) Comments

Roof Deck Insulation

As CBIA has reiterated in separate comments to the docket on August 5, 2011, August 12, 2011, and again on October 31, 2011 there are numerous problems associated with requiring insulation **directly** above or below the roof deck. Due to the technical issues involved, our builders and roofing contractors tell us that above-deck insulation can only be installed by adding a second deck over the insulation layer. The high cost of this method is not reflected in our cost calculations, as we chose the method of below-deck insulation for the prototype home.

In addition, there are significant moisture and warranty concerns when adding insulation to either side of the roof deck. Mandatory building standards are not an acceptable way to introduce a new building practice into the industry. CBIA is very concerned introducing new, unproven building practices into the 2013 Standards as a mandatory provision in the performance budget calculation. If these features survive in the 2013 Standards CBIA requests that the CEC state clearly in the Residential Manual that these practices are safe, do not cause moisture issues, and do not impact the warranty or integrity of the roof deck. In addition, CBIA requests clear "best practice" installation guidelines within the Residential Manual that builders can reference. CBIA feels that the requirement for deck insulation is unreasonable and simply serves to pad the energy budget, rather than as a measure that the CEC can reasonably expect builders to undertake.

It is also troubling that the cost effective measure of the radiant barrier is removed in favor of the deck insulation, despite the level of efficacy it has shown at a relatively low cost. Roof deck insulation causes enough technical difficulties that it would be wise to let builders gain experience with it as a compliance option before being introduced as a prescriptive measure.

Whole House Fans

The inclusion of whole house fans in many cooling dominated climate zones will substantially increase the attic ventilation requirements for many production homes; this will result in a doubling of the attic vents and roof penetrations. Can CEC staff demonstrate that it is feasible to require more roofs vents and meet the solar access requirement? When writing this requirement, the CEC believed that ventilation in new homes were being designed to 1/150, so that one story homes would require no additional vent area and two story homes may require 4-6 square feet of additional vent area. However, CBIA provided evidence that the majority of production homes are designed to 1/300 ventilation requirements. In the prototype home that CBIA used for analysis of the standards, there are 2123 ft² of conditioned floor area, requiring a 4246 cfm fan, and therefore 11.3 ft² of attic free vent area. The roof area is 1558 ft², which would require over 10 ft² if it were being vented at 1/150, which is close to the requirement for whole house fans. But in most cases, the attic is being vented at 1/300, which is just over 5 ft². The increased area is therefore around 6 ft² (864 in²) of vent or about 10 additional O'Hagin vents. For multifamily, over half of the new construction starts in 2012, this situation is exacerbated. CEC staff needs to explain how whole house fans can be installed in the three story stacked apartment complex.

Hot-Water Plumbing Systems: 1" Pipe Length

CBIA still has concerns about the proposed restriction on the length of 1-inch pipe to 15 feet maximum per home (originally proposed to be 10 feet maximum). As the total amount of 1" pipe is decreased, a significant increase in the use of 1/2" or 3/4" pipe would occur. As such, the total length of plumbing pipe in the home would be increased because the use of smaller diameter pipe will increase more than the larger will decrease. The total water volume carried in the pipes would stay the same or increase depending on the home. The proposed rule will result in an increase in total pipe length in homes and therefore increased costs. CBIA is still unclear on how the measure will save energy, since it will increase the total length and volume of pipes carrying hot water in a typical home. CBIA recommends that the plumbing system requirements be a compliance option before being a mandate, so that it can be determined that the measure truly saves energy as expected.

Return Duct Sizing

Since most homes may not pass the fan watt draw test, builders will choose the larger return duct sizing option rather than risk noncompliance at final inspection. Adjusting plans to achieve compliance would become very costly and time consuming. This effectively doubles the size of the required HVAC return grills. Can CEC staff demonstrate there is room for this HVAC design in homes, especially in smaller attached, multi-story housing products such as apartments? CBIA considers the larger return duct feature to be a mandatory feature, since the fan watt draw test cannot be depended upon for compliance.

Solar Ready Requirements

While CBIA continues to have concerns over the ability to comply with this new provision on all homes in a production-style project, CBIA supports the amendments recently made to the Solar Ready requirements to provide reasonable room for exception due to shading from existing buildings, as well as the expansion of the acceptable orientation from the 150°-270° range to 110°-270°. As mentioned above, is it feasible to meet the solar ready requirements in climate zones where attic vents are doubled due to whole house fans required in Package A?

General Policy Concerns

Cost Effectiveness

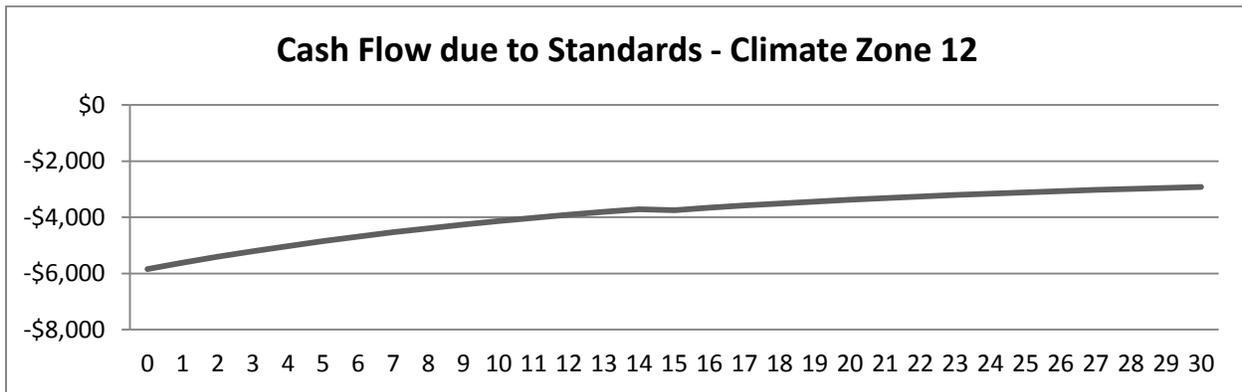
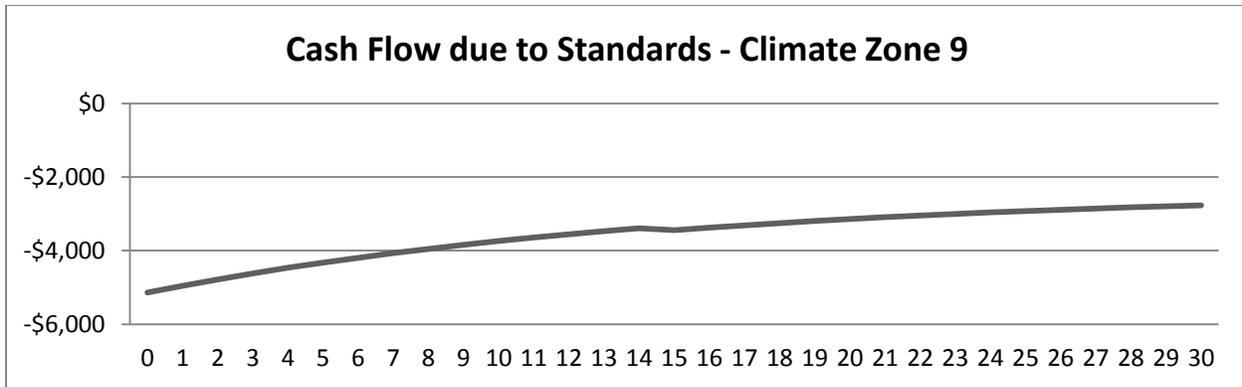
CBIA does not believe that the proposed standards in their entirety are cost effective. The Warren Alquist Act (PRC 25402) requires that the standards “*shall be cost-effective when taken in their entirety and when amortized over the economic life of the structure compared with historic practice*”. CBIA interprets this statute to mean that the entire regulatory package be cost effective over the life of the building as opposed to each individual measure being cost effective. From what we have seen to date, the CEC has only evaluated cost effectiveness in terms of **individual** measures. When the entire package of energy measures is considered, less energy is saved than the sum of energy saved by each measure implemented individually, due to interactions between envelope, heating and cooling, and lighting measures. When evaluated in this way, with a discount rate of 8.3% (consisting of a 2.5% ten year average inflation rate¹ and a 5.9% ten year average mortgage rate²) and energy cost and escalation rates from California Energy Commission’s Annual Energy Outlook 2011³, only one climate zone (CZ 15) will be cost-effective to build to compliance. ConSol’s cash flow analysis used a 30 year life span, with some equipment being replaced at the 15th year. The payback in the only climate zone which ever pays back (CZ15) takes 19 years before the cash flow becomes positive. In the all other climate zones, cash flow does not become positive within the 30 year life of the home. In most cases, at 30 years, the difference in cash flow is from -\$1,000 to -\$3,000. The cash flow analysis for all 16 Climate Zones can be found in an appendix attached to this comment letter. The table and graphs below show examples for Climate Zones 9 and 12

| | |
|--|----------|
| Constants | |
| Discount rate | 8.3% |
| Electricity cost today (\$/kWh) | \$ 0.16 |
| Electricity cost escalation rate | 2.1% |
| Gas cost today (\$/therms) | \$ 1.16 |
| Gas cost escalation rate | 2.1% |
| Climate Zone 9 cost and savings | |
| Reduced annual electricity (kWh) | 237 |
| Reduced annual gas (Therms) | 138 |
| Initial incremental cost of compliance | \$ 5,140 |
| Climate Zone 12 cost and savings | |
| Reduced annual electricity (kWh) | 547 |
| Reduced annual gas (Therms) | 133 |
| Initial incremental cost of compliance | \$ 5,847 |

¹ http://inflationdata.com/inflation/inflation_rate/historicalinflation.aspx

² http://www.mortgagenewsdaily.com/mortgage_rates/charts.asp?Y=2002&M=1

³ [http://www.eia.gov/forecasts/aeo/pdf/0383\(2011\).pdf](http://www.eia.gov/forecasts/aeo/pdf/0383(2011).pdf)



Jobs and Housing Affordability

CEC acknowledges significant increase in cost; however they state the energy savings and the resulting decrease in monthly utility bills are significantly in excess of the initial cost. With an initial increase in cost, fewer people will be able to afford homes in the first place, since energy efficiency is not part of a mortgage qualification. **A decrease in homes sold means fewer construction-related jobs, which will result in a net decrease in jobs.**

New housing currently is competing with the foreclosure market. In the most recent Wells Fargo Housing Opportunity index they estimate that California has from three to four years of excess inventory from foreclosed housing. In the Central Valley foreclosures of recently built housing is selling around \$130,000 while entry level new housing starts at \$185,000. Both housing products have been built to stringent energy codes (T-24 2005 or 2010). Given this differential in pricing it is easy to understand why housing starts are at historic lows. The 2013 Standards are adding \$3,400 to \$6,000 of new construction costs which further exacerbate this differential. In addition, as new home pricing is increased fewer Californians can afford those homes. NAHB estimates that for every \$100 of cost increase 270,000 Americans are priced out the national market. **These Standards will unfortunately drive more potential homeowners from purchasing new homes and thus are short-term job-killers.**

Simply put: The substantial cost increase attributed to these proposed standards will add significant, additional “cost pressure” to a new home construction market already facing historically difficult economic conditions. When combined with the cost-impact of the other

recently implemented building code cited earlier, this additional cost pressure will clearly slow down, or in some instances, stop new projects that are under consideration. **Either of these outcomes will result in fewer jobs for the short term and further hinder California's emergence from this enduring economic downturn.**

Significant Reduction in Available Compliance Options

The CEC is proposing to move a substantial number of existing "compliance options" into the "prescriptive packages" which are used to generate the required energy budget for the home. And since the CEC is not adding a similar number of "compliance options" to replace those that have been removed, designers are going to have a much harder time finding a set of features that are both marketable and meet the CEC minimum requirements for compliance. This will make the transition from the current standards to the new proposed standards much harder than in previous updates of the regulations.

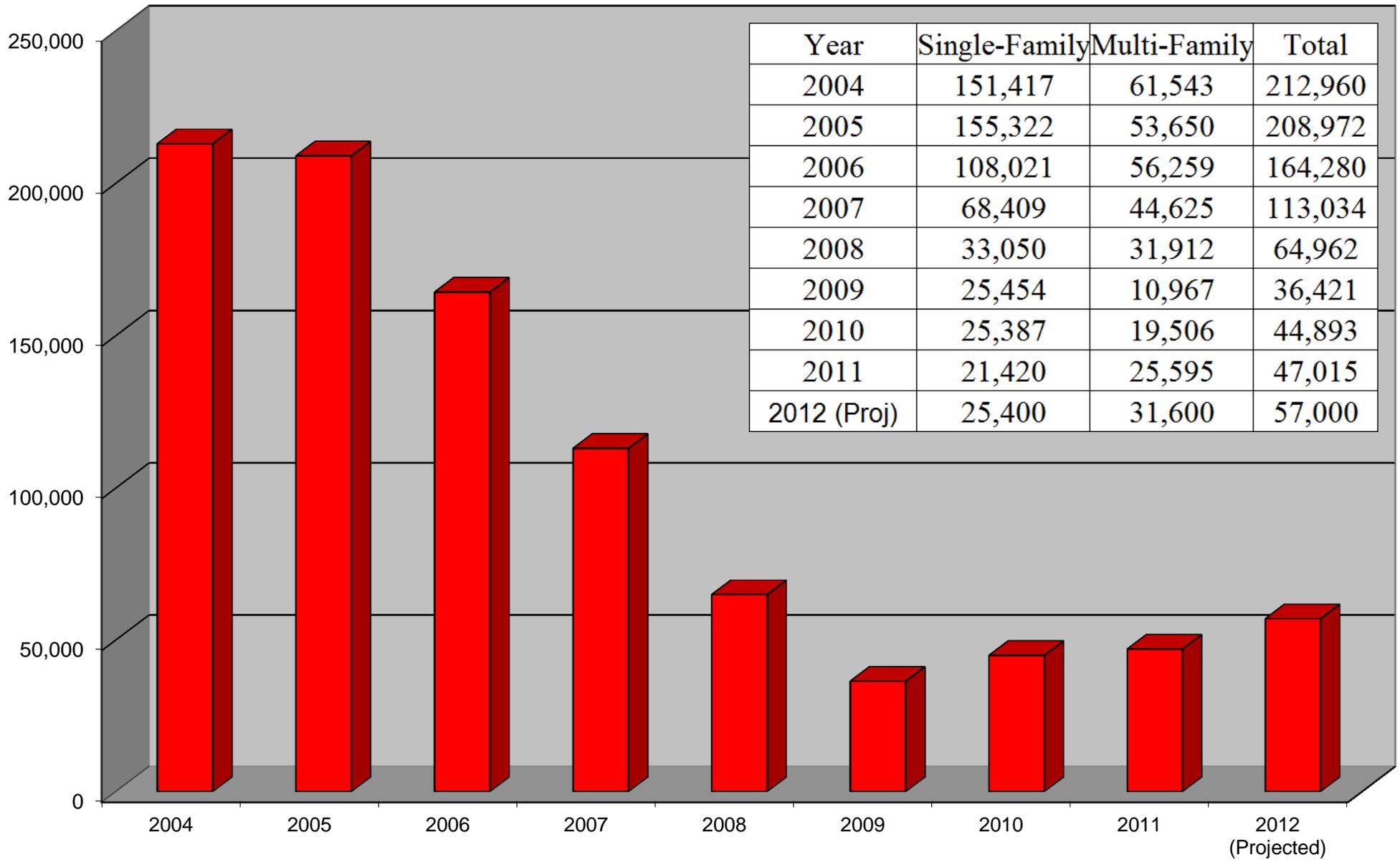
Priorities:

- **New homes vs existing homes:** For the past several years and for the foreseeable future, industry is adding only **1/3 of 1%** to the total housing stock each year. So, for the three year period these standards will be in place, they will ultimately impact approximately 1% of our total housing stock. However, of the 13,433,728 existing homes and apartments in California, 9,153,400 (68%) were constructed under building standards containing no required provisions for energy efficiency. **Simply put, 2 out of 3 homes in California have never had to comply with any energy efficiency mandate whatsoever.** Yet, almost all of the regulatory focus exerted by the CEC over the past 12 years has focused almost entirely on the new housing stock. In 2008, a study funded by the California Homebuilding Foundation (CHF) found that retrofitting existing homes with energy-efficient features was four to eight times more carbon- and cost-efficient than adding further energy-efficiency requirements to new housing. This discrepancy has only increased as the standards this cycle are increasingly subject to the problem of diminishing returns. If California is to reach its greenhouse gas reduction goals, the CEC, along with other agencies, will need to significantly reevaluate their priorities and start focusing on the existing building stock.
- **Plug-load and its impact on "zero-net energy":** Approximately half of the electricity consumed in homes is related to "plug load" and is not covered by the energy efficiency building standards. Until the CEC effectively addresses (and reduces) overall plug load in a home, the cost of achieving "zero net energy" will remain prohibitively high. Numerous studies by very diverse groups estimate the cost of ZNE compliance to range from a low of \$40,000 to a high of \$80,000. CBIA estimates the cost of ZNE compliance in a 2,400 square foot home to be \$58,000 with 2/3's of that cost attributed to the large PV solar unit needed to provide the annual energy needs of the dwelling. Unfortunately, implementation of the proposed energy efficiency standards will do very little to reduce the significant "plug load" in these homes.

Other Policy Points:

- **Alternative Prescriptive Packages:** CEC Staff has made reference to several Alternative Prescriptive Packages that will be part of the upcoming standards. In particular, staff has referred to a “marketable” prescriptive package that includes PV solar as a tradeoff measure and another that includes some manner of “plug load” strategy as a tradeoff. Industry is very interested in seeing these packages as soon as possible.
- **Simplification of compliance documentation:** In short, CBIA strongly supports the position of the California Building Officials (CALBO). There has been and remains a great need to simplify compliance documentation required by the CEC.
- **Availability of Certified Compliance Software:** CBIA supports having certified compliance software readily available at least 9-12 months prior to the effective date of the standards.
- **Reach Standards/New Solar Home Partnership and diminishing returns:** In terms of unintended consequences, the significant increase in stringency (and the related increase in cost) of the proposed minimum standards will have a very negative impact on the local adoption of “reach standards” as well as overall industry use of the New Solar Home Partnership. Given that the incremental cost in achieving the next (+1%) increase in energy efficiency has more than doubled, the cost of implementing local “reach codes” will prompt strong opposition by most local industry groups. This will be in stark contrast to industry’s general response to such proposals in recent years past.

HOUSING PRODUCTION IN CALIFORNIA 2004-2012



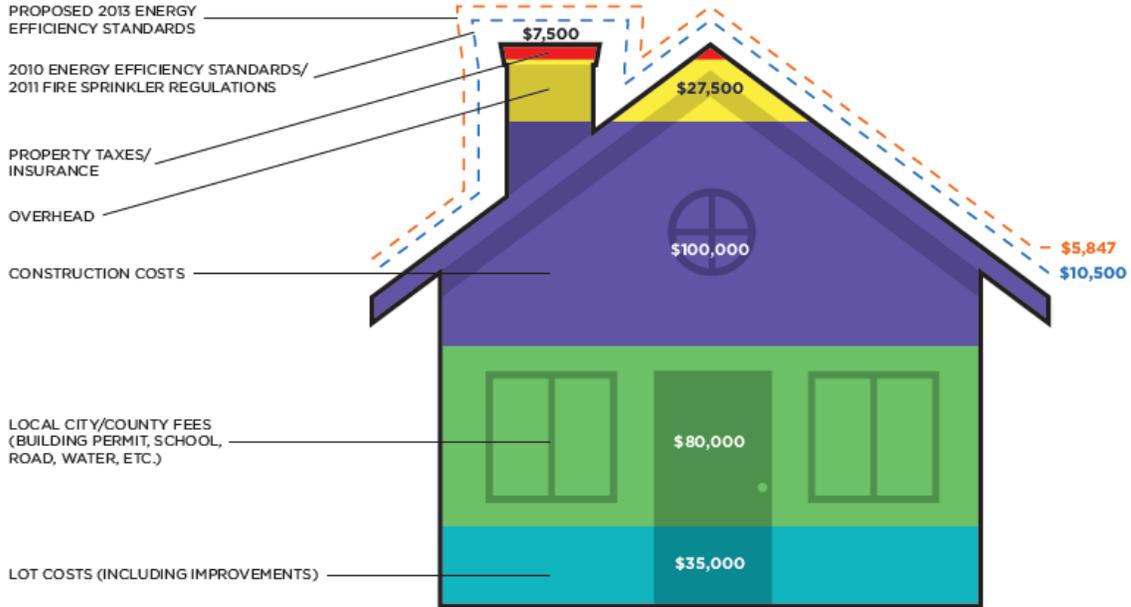
■ Annual Permit Totals

Data Provided by: Construction Industry Research Board

CONSTRUCTION COSTS DON'T ADD UP

NO CONSTRUCTION = NO JOBS

| | |
|---|--------------------|
| DEVELOPMENT COSTS FOR A HOME IN RANCHO CORDOVA, CA | = \$250,000 |
| ADDED STATE-IMPOSED REGULATORY COSTS 2010-2011 | (+) = \$ 15,847 |
| TOTAL | = \$265,847 |
| MEDIAN PRICE (NEW AND EXISTING) FOR RANCHO CORDOVA, DEC. 2011 | (-) = \$201,750 |
| DIFFERENCE BETWEEN COST OF CONSTRUCTION AND MEDIAN PRICE | = \$ 64,097 |



| | |
|---|--------------------|
| DEVELOPMENT COSTS FOR A HOME IN LANCASTER, CA | = \$202,000 |
| ADDED STATE-IMPOSED REGULATORY COSTS 2010-2013 | (+) = \$ 15,046 |
| TOTAL | = \$217,046 |
| MEDIAN PRICE (NEW AND EXISTING) FOR LANCASTER, DEC. 2011 | (-) = \$130,000 |
| DIFFERENCE BETWEEN COST OF CONSTRUCTION AND MEDIAN PRICE | = \$ 87,046 |

