



**California Building Industry Association**

1215 K Street  
Suite 1200  
Sacramento, CA 95814  
916/443-7933  
fax 916/443-1960  
www.cbiam.org

**2011 OFFICERS**

*Chairman, President & CEO*  
**MICHAEL J. WINN**  
Michael Winn Associates  
Sacramento

*Vice Chairman*  
**RAY PANEK**  
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Stockton

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Home Builders Association of Kern County  
Bakersfield

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Home Builders Association of Tulare & Kings Counties  
Visalia

North State Building Industry Association  
Roseville

August 12, 2011

California Energy Commission  
Dockets Office, MS-4  
1516 Ninth Street  
Sacramento CA 95814-5512  
Via email: [docket@energy.state.ca.us]

To: Mazi Shirakh  
SUBJECT: **Docket number 10-BSTD-01**  
**Staff Workshop on Proposed Package A for 2013 Standards**

<b>DOCKET</b>	
<b>10-BSTD-01</b>	
DATE	AUG 12 2011
RECD.	AUG 12 2011

The California Building Industry Association is the statewide building industry trade association with over 5,000 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.

The California Building Industry Association has several concerns with the prescriptive package requirements being proposed for the 2013 Standards. These fall into the categories of water heating, wall insulation and framing, roof deck insulation, HVAC, and the solar roof requirement.

**Water heating**

The package requires the amount of 1" pipe between the water heating and the manifold to be 10 feet or less. This is a major change from current plumbing installations. A quick field survey found typical 1" hot water mains from the water heating running from 16 feet to 62 feet prior to branching or feeding a manifold block. None were found to be 10' or less. These 1" lengths without any smaller branches to plumbing fixtures exceed the CEC proposal for compact plumbing design. The CEC's water heating proposals for 1" maximum length as well as compact design do not reflect market practices. There seems to a lack of evidence on how these proposed systems can be practically designed for the market. Major changes for the construction industry do not happen quickly. CBIA has asked the plumbing industry to comment on the cost and practicality of these changes. If found to be cost effective and implementable, this type of change should be introduced as a compliance option with in 2013, with an energy credit proportion to the hot water savings. If the installation is found to be cost effective and implementable then it should be considered for the 2017 Standards review process. We expect feedback from the plumbing industry on this change shortly.

**Wall insulation and framing**

The CEC reported incremental cost data for wall insulation and 2x6 lumber seem significantly low when discussing this with industry representatives. CBIA has asked insulation and lumber industry groups to respond to the docket regarding cost and availability. The vast majority of exterior wall framing is currently 2x4 studs. A significant concern is the cost of adding 50% more fiber to the walls (from 2x4 to 2x6 framing). Accurate pricing of 2x6 along with market prices for insulation will substantially add cost to the CEC's proposed wall and insulation proposals. The cost effectiveness of wall systems will need to be revisited with current market pricing. CBIA has also received input from the timber industry that using 2x6 studs will result in the need for more trees per home than standard 2x4 construction. What impact will using more trees per home have on greenhouse gas reduction?

**Roof deck insulation**

CBIA concerns with roof deck insulation were enumerated in a separate comment to the docket on August 5th, and include moisture accumulation, product availability, warranty, heat and fire



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safety, and roof leaks due to compression of expanded polystyrene (EPS) during installation. Concerns over moisture due to the presence of the roof deck insulation in contact with wood were raised in the APA bulletin titled Technical Topics: Wood Moisture Content and the Importance of Drying in Wood Building Systems (TT-111A, March 2011), which states “the direct application of some insulation material may limit the ability of wood structural panel sheathing to dry.” Heat and fire safety concerns include the ASTM rating for EPS and XPS at 165°F, a temperature that can be exceeded under normal conditions, possibly voiding the warranty and causing unsafe conditions. Furthermore, the State Fire Marshal’s office tells CBIA that the addition of above deck insulation will probably require a retesting of all roof assemblies under ASTM E108 to determine class A, B, and C for each assembly. CBIA also has concerns with builders being able to meet California Wildland Urban Interface Code (WUI: revised July, 2011) under the proposed roof deck insulation measure. Another issue with the roof deck insulation is the compression of the EPS from nailing during installation, creating a situation where asphalt shingles cannot lay flat and therefore will not seal properly causing roof leaks and warranty issues.

#### HVAC – airflow and watt draw verification vs. larger ducts

The new requirement for verification testing of HVAC system air flow, or alternatively for venting ducts of increased size, will force builders into the default larger returns ducts and multiple returns. The (optional) verification test when performed currently fails in 90% of cases the first time it is done in a home. To make sure they receive a final occupancy permit home builders will choose to follow the return air duct table sizes rather than risk not passing the verification testing to remove the possibility of failing this test at final inspection and then having to add unplanned energy features to the home to achieve compliance. Builders will use the duct sizing method of compliance except where they are not eligible or unable to do so due to design such as in multiple zone situations. Costs provided by the CEC for this measure do not seem to reflect accurately the larger ducts and multiple returns. We will be investigating the expected cost for the size increase for return ducts and returns. These larger returns while a good design idea is a significant change compared to current industry practices, and such big changes don’t come quickly in home building. If found to be cost effective we would strongly encourage such a big change be made in stages, specifying this measure as a compliance option in this code cycle, rather than a mandatory requirement.

#### Whole house fan

The whole house fans have been proposed as a requirement in Packages A3 and A3b have yet to be defined. CBIA would like to understand the minimum specifications for these fans so the industry can cost their installation. Do these fans have an efficiency requirement (W/cfm)? Is there a limit on noise these fans can make (sones)? Is there a requirement for the louvers to be insulated? If so, to what level? What are the costs and availability of whole house fans the CEC is proposing?

#### Solar roof requirement

CBIA is concerned about the solar roof requirement since this requirement deals with aspects of the design that are dependent on whole-neighborhood planning, such as street layout and house orientation. In today’s housing market and in the foreseeable future (5+ years) the lots the industry will build houses upon have already been plotted and been approved in subdivision maps. Are these subdivision maps exempt from this requirement? If not and there are lots where this requirement cannot be met then is it anticipated that this lot is unbuildable? Are there plumbing or routing requirements to be considered when complying with the solar roof requirement? If so, what are the costs to comply with those requirements?



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CBIA would like to expand the potential eligible roof area from 150-270 degrees to 110-270. NREL's Subdivision Energy Analysis Tool (SEAT) paper to ACEE in 2008 states on page 4: For PV and SHW, relatively low tilt angles (say, at roof tilt) can be used because much of the energy is collected during the summer. At these low tilt angles, collector azimuths can differ significantly from due south with little reduction in performance. For example, in Fresno, with a collector tilt of 25 degrees (mounted flush on a 5:12 roof), collector azimuths up to 75 degrees west of south and 70 degrees east of south suffer only a 10% reduction in annual incident radiation

For multi-family housing, eligible roof area should be expanded to include parking structures and common building areas.

CBIA feels that requiring solar roof areas for all new homes is seeking too much in too short of a time. We would strongly recommend the CEC split this requirement into two separate proposals wherein compliance credit is given for those homes that comply with this starting in 1/1/14 prior to implementing a mandate in 1/1/17. An alternative, although more complex from a compliance perspective, would be for the CEC to require a certain percentage (i.e.: 50%) of all new homes in a project (50 units or more) to provide the solar ready requirements starting 1/1/14 and for 100% to provide this starting 1/1/17.

CBIA has many questions about above the current prescriptive package. We appreciate the CEC's responding to our questions so we can generate code compliant installation criteria for our members to cost. Once we have this data and the appropriate technical we will respond to the cost effectiveness of the requirements of Package A3 and A3b.

Sincerely,

Robert E. Raymer, P.E.  
CBIA, Technical Director  
Energy Committee

Michael G. Hodgson  
Chair, CBIA

Cc: Chair Robert Weisenmiller  
Commissioner Karen Douglas  
Deputy Director Panama Bartholomy  
Bruce Wilcox, CEC lead consultant for 2013 Residential Standards