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CEC Staff
California Energy Commission
Sacramento, CA

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DOCKET**10-BSTD-01**

DATE Oct. 18 2011

RECD. Oct. 31 2011

RE: October 14 Stakeholders Meeting Docket RE-10-BSTD-01

At the October 14th Energy Committee hearing the Tile Roofing Institute provided testimony on several items of concern. This letter is provided as a follow-up to those comments to insure that the issues raised are clarified and part of the formal record from those proceedings.

Changes to Re-roof or alterations on steep slope roofs & Consideration for the Performance Compliance Approach for New Construction Low-Rise Residential**150.2 Res Additions and Alterations SUBCHAPTER 9 LOW-RISE RESIDENTIAL BUILDINGS—ADDITIONS AND ALTERATIONS**

In sub section 150.2 ALTERNATIVE TO SECTION 150.2(b)1Hi, the option for a ¾” airspace of a 0.85 equivalency has been removed. At the hearings, we formally objected to this proposed revision and requested that the ¾” option be re-inserted back into the current code. Our request was supported at the hearings by testimony from André Desjarlais of Oak Ridge National Lab, the asphalt shingle and metal industry associations.

The TRI has performed extensive scientific research with over 3 years of field data collected in actual applications. The research was performed at the ORNL facility under the direction of Andre and Dr. William Miller to quantify and validate the actual reduction in heat transfer to the roof system by the naturally occurring airspace, (sometimes called above sheathing ventilation (ASV)). This work was validated with the Monier Technical Centre in the UK who is recognized as a global expert in roof performance issues. The use of a quantified airspace as an insulating factor is a well established engineering principle and its application to roof systems is easily adapted. The work performed quantified the actual energy reduction found to the standard CEC roof being Asphalt shingles. This valid research has been released as published technical research papers by ORNL and has complied with peer review requirements.

The mission of the CEC is to create sound energy reduction programs as it moves towards the net zero energy requirements in 2020. As part of that focus, the CEC should be recognizing all options that will help reduce the heat transfer into the controlled space of the residential or commercial building resulting in lower energy demands of the building. The TRI would ask that the CEC revisit the issue of the ¾” airspace and consider adding the recognition for our proven research, and the simple fact that there is always an average airspace of about ½” to 3” between the roof deck and roof tile depending on the tile profile and application method, and that air has proven insulating properties.

Concrete or clay roofing tiles and certain metal roofing products can be installed in a variety of options that will provide an incremental increase in the amount of airspace found above the deck. These applications are known in our industry as the “Direct Deck” method where the tiles are installed to the roof sheathing, the “Batten” system where the tiles are installed on a nominal 1x2 batten, and a “Counter Batten” system where a vertical batten or spacer is installed with the horizontal batten above that. In each of these applications the actual average thickness/volume of airspace is increased. Roofing tiles are also manufactured in flat, medium and high profiled tiles that provide incremental increased airspace as well. The research performed provided increased energy reduction as the volume of airspace increased in the roof system. This is consistent with the fact that air has a known R-value.

The previous CEC code allowed the option of the ¾” airspace as a compliance option that only recognized the minimal amount of advantage that the airspace might provide. We feel the increase opportunities should not be left out of the proposed revisions moving forward. To not allow will preclude an option to recognize greater energy efficiencies.

We would suggest that a table of options for recognition of all of these options be incorporated into both the re-roof/alterations code and the performance path compliance software for the residential new construction code. The values would incorporate the benefit of the airspace and thermal mass as the airspace increased.

Item Description	R-Value Equivalent
Standard Roof – Asphalt Shingles	R- 0.2
Flat profile Tile – direct to deck:	R-1.28
Flat profile tile – single batten:	R-2.07
Flat profile tile – double batten:	R-2.47
Medium profile tile – double batten:	R-2.97
High profile tile – double batten:	R-3.47

The proposed CEC language includes the requirement of an R-4 above the deck option. We would suggest that the incremental reduction in energy costs could be recognized at a much lower value. We would suggest that options for offsets be allowed for an R-2 as a minimum. Combined with an Aged SR value of even a 0.15 would provide a significant savings over the standard asphalt shingle roof that is the base line of the energy comparison.

By referencing recognition of these values in a table of R-value equivalencies, it would be easy to incorporate these R-values into the retrofit requirements and the calculators the CEC is using for the performance based requirements on the new construction side.

Misconception of actual tile installation practice

During discussions with CEC staff it was noted that the CEC believes that flat tile, installed direct to the deck is the predominant method of application. The TRI wishes to correct this misconception and state that this application method is unique to certain areas of southern California. The majority of the state will find the use of profiled tile and in Northern California the use of a standard battens.

Calculator for Performance based calculations 150.1 Res General Performance and Prescriptive SUBCHAPTER 8 LOW-RISE RESIDENTIAL BUILDINGS-PERFORMANCE AND PRESCRIPTIVE COMPLIANCE APPROACHES FOR NEWLY CONSTRUCTED BUILDINGS

The TRI asked the CEC to consider adding footnotes since the airspace should be referenced and footnoted in the Alternative Calculation Method, Approval Manuals, and the Joint Reference Appendices for clarity to the performance based approach. In our review of the current proposed draft, it is not clear to us what will be allowed for offsets. By providing such information it will help clarify for the builders, design professional, and industry how to properly take advantage of all the options that might help increase the energy efficiencies.

Above roof deck insulation options

During the previous hearing we raised the issue of fire rated assemblies. With the R-4 above deck option being proposed, we asked that the CEC have discussions with the State Fire Marshal's office, the California Building Code and the International Build Code and Residential Code staff to better understand the potential conflict for fire and safety codes. Many of the areas now fall under the Wild Fire Urban Interface regulations. In addition the major codes now require fire tested roof assemblies. The CEC needs to better understand the issues and costs to these requirements. This may create a conflict of code, or a significant cost increase not recognized the CEC proposal.

Reference to External Standards

Within the proposed draft language are lists of ASTM, UL, FM, ANSI and other formal standards. The CEC should ask various industry associations that are active in these hearings for the latest versions to include. Once the current code is approved, it will preclude the recognition or revisions until the next code cycle for any standard. As the TRI we will help to identify those that may need to be revised.

The TRI would like to request the opportunity to further discuss these issues with the appropriate CEC staff. We would ask the Andre and ORNL be included in these discussions since their extensive research is the basis of the benefits we seek to have recognized.

We look forward to hearing a response, and look forward to the opportunity to discuss these issues or any other concerns that CEC staff may have.

Sincerely,
Rick Olson
Rick Olson
Technical Director

Cc. André Desjarlais, ORNL