

October 29, 2011

California Energy Commission via email (docket@energy.state.ca.us)

Re: 2013 Building Energy Efficiency Standards October Draft Language

To Whom It May Concern:

DOCKET**10-BSTD-01**DATE Oct. 29 2011RECD. Oct. 31 2011

The Cool Metal Roofing Coalition wishes to thank the California Energy Commission for allowing us to comment on the proposed changes for the 2013 Title 24 Building Energy Efficiency Standards. As a coalition of trade associations, companies and organizations, we represent all phases of manufacturing of cool metal roofing and these standards are very important to our membership.

Unfortunately, the October 13th and 14th workshop coincided with Metalcon, the largest metal roofing exposition and conference in the U.S., and most of our members could not participate in the workshop. We want the Commission to know that this situation notwithstanding, we continue to have a keen interest in the development of these standards, and wish to continue to be engaged as they evolve toward the final 2013 version.

We have two primary areas of concern regarding the 2013 draft language downloaded from the workshop website. They are Sections 140.3 and 150.2 as follows:

Section 140.3 – Prescriptive Requirements for Building Envelopes

140.3(a) 1.A.i.a. Roofing Products, Nonresidential Buildings – We are concerned about the change in minimum solar reflectance from 0.55 to 0.67 and the removal of Exception 2 in the same section. The CMRC sent a letter to Maziar Shirakh on July 19th stating our position on these changes. Essentially it was our concern that the proposed reflectance limit of 0.67 was lacking in substantiation of payback and related cost accuracy concerns. No response was received from the Commission. There is a report on the workshop website titled *Nonresidential Cool Roof Reflectance* that does address cost and payback term of the change for many roofing materials, but doesn't even mention metal roofs. Generally speaking there would not be a large cost increase in metal roofing in going from 0.55 to 0.67, but we feel that some investigation into metal roofing should have been in the report given the substantial market presence metal roofing has in California. We were disappointed to see that omission, especially given that we sent a letter in July requesting consideration.

We also see in this report that a continuous insulation tradeoff is being proposed to allow lower reflectance products to be used in conjunction with continuous insulation. Oddly, this is the same approach taken by Exception 2 which has been struck. What is even more confusing is that Section 4.7 of the report makes the following statement: "At present, there is no proposal to adjust the exceptions to Section 143(a)1. of the energy code." However, Exception 2 for metal buildings is clearly struck from the proposed language. We request that this exception be reinstated in the 45-day language.

Since none of the approaches addressed in the report seem to have made their way into the October draft language, it is difficult for us to provide formal comments. So, because of the amount of conflicting information we have, we can only say that we retain our original position outlined in our letter of July 19th and that metal be given due consideration. We have enclosed a copy of our letter for your reference.

Section 150.2 – Energy Efficiency Standards for Additions and Alterations in Existing Buildings that will be Low-Rise Residential Occupancies

150.2(b) 1.H.i. Low-Rise Residential Buildings with Steep Slope Roofs – Item a of the Alternative to Section 150.2(b)1.H.i. has been removed by the Commission. This alternative, known to our industry as Above Sheathing Ventilation, or ASV, was placed in the standards a few years ago after extensive research by Oak Ridge National Laboratories (ORNL) on the subject. Apparently, the Commission removed that provision due to concerns about fire propagation. However, we couldn't find any substantiation in the document set the Commission posted on the workshop website supporting that concern. We also understand that Andre Desjarlais of ORNL was at the workshop and gave testimony in favor of its reinstatement. We have included a copy of that testimony for your reference. We would like to be on record that we support Mr. Desjarlais' opinion and would like to see the provision reinstated. Please consider his testimony as part of our comment.

Again, we thank the Commission for allowing us the opportunity to provide input. The CMRC strongly believes that industry involvement is critical to standard development and that public standards be developed in a process with as much transparency as possible.

If you have any questions, please do not hesitate to call me at (281) 897-7764.

Sincerely,

A handwritten signature in black ink, appearing to read "Robert A. Zabcik". The signature is fluid and cursive, with the first name being the most prominent.

Robert A. Zabcik, P.E., LEED AP
Chair, Cool Metal Roofing Coalition Technical Committee

Maziar Shirakh

California Energy Commission via email (Mshirakh@energy.state.ca.us)

Re: Proposed Roof Reflectance Requirements
2012 Building Energy Efficiency Standards

Dear Mazi,

The Cool Metal Roofing Coalition wishes to thank the California Energy Commission for allowing us to comment on the proposed changes for the 2012 Title 24 Building Energy Efficiency Standards. As a coalition of trade associations, companies and organizations, we represent all phases of manufacturing of cool metal roofing and have a keen interest in these standards. As stewards of California businesses and employers of many Californians, we truly wish to see a win-win for all involved, especially during the troubled economic times we are all currently facing.

We have reviewed the proposed change to raise the low-slope aged solar reflectance requirement from 0.55 to 0.67 along with the proposed continuous insulation trade-off that will allow materials with lower albedos to be utilized. Although this change seems straightforward enough, we are questioning the rational and scientific basis for enough energy savings to attain a reasonable payback period.

We understand that the findings are based on numerous EnergyPlus runs for all climate zones in California and that a "substantial" energy savings was realized when moving from a reflectance of 0.55 to 0.67. However, there remain several unanswered concerns on our part.

The first concern is the applicability of computer modeling at such a high reflectance level. From our understanding, no confirmatory experiments involving high albedo roofs have been run against the computer models. In essence, you are extrapolating data points using a model outside of the domain in which EnergyPlus has been calibrated. Software is a wonderful tool that has made us all more productive, but as we all know, if you push software algorithms beyond their range of applicability, you run the risk of getting misleading results.

The second concern is that while energy savings could very well be realized at such a high reflectance level, how long does it take to pay for itself? Certainly roofing materials performing to this level must be more expensive in general than their less reflective counterparts. It would not be fair in our opinion to ask people to invest this additional expense in their buildings without reasonable payback justification.

In regards to the trade-off being proposed, is that payback period the same as the payback for the additional reflectance? We wonder because the trade-off has obvious departures from the prescriptive requirements currently in the code. Clearly, climate zone and roof construction type must be a factor in payback, yet they are not mentioned in the trade-off. Both of these parameters are reflected in the current code envelope requirements as well as the high albedo roofing passage in ASHRAE 90.1-2007.

The CEC has argued that energy modeling can always be used in lieu of the prescriptive requirements to avoid the shortcomings of its intentional simplicity. However, in industrial and light commercial construction, a market in which metal has a firm presence in California, performance compliance is not as common as prescriptive compliance in our experience. This is because most owners want to avoid bringing in yet another consultant into what should be a relatively simple project. It seems to us that the CEC may not be wholly considering all markets and roofing materials, including metal roofing, in its justification of these changes.

But most importantly, we are lacking the information we need about the study justifying these changes. This proposal has been thrust onto the docket in the last 30 days or so and we are concerned that an inadequate amount of time and transparency has been granted to consider the background research. In short, we think it would be in the best interest of all of the taxpayers and energy purchasers in the state of California to allow the stakeholders involved to thoroughly understand the science behind the proposal as well as ramifications of any conclusions that may be drawn from it.

Because of all of these concerns, we cannot in good faith support this proposal at this time. We welcome the opportunity to work with the California Energy Commission to address these issues and will make all reasonable efforts to meet and discuss them.

If you would like to discuss this further, I may be reached by phone at 281/897-7764 or by email at bobz@ncilp.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Robert A. Zabcik". The signature is fluid and cursive, with the first name being the most prominent.

Robert A. Zabcik, P.E., LEED AP
Chair, Cool Metal Roofing Coalition Technical Committee

CEC Testimony

Proposal

Request that the CEC reinstate Above Sheathing Ventilation (ASV) as a cool roof exception for both new and retrofit commercial and residential steep slope construction.

Energy Considerations

There is a wealth of research and data that demonstrates that ASV saves energy.

1. The convection flows through an inclined airspace were studied and published by Hollands in 1976. His work derived the basic theory on airflow through inclined airspaces that were preferentially heated.
2. Since 2006, ORNL has researched the energy savings benefits of ASV. In 2007, we developed a computer simulation that would account for the energy savings benefits of ASV and published this peer reviewed paper at ASHRAE. This model was used to determine that, in California, an ASV-mounted roof would perform equally to a roof having a solar reflectance 15-20 points higher.
3. In 2008, ORNL published a peer reviewed paper at ACEEE that demonstrated that energy savings associated with ASV.
4. As part of a project funded by the California Energy Commission, homes in Fort Irwin CA with a variety of roofing constructions were monitored. The energy savings benefits of the ASV roof were documented in this study.
5. ORNL is not the only US research organization to study the energy savings associated with ASV. Researchers at the Florida Solar Research Center (Beal and Chandra, FSEC) published a paper in 1996 documenting energy savings associated with a tile roof mounted on counterbattens.
6. In 2009, Roodvoets, Mallinger and Banks published a paper in the RCI International Conference that extolled the benefits of ASV for controlling roof surface temperatures.
7. Numerous international studies have been reported that quantify the benefits of ASV. In 2007, Ono published an article where he measured temperature reductions of up to 11°C on tile roof surface temperatures on a building in Handa City Japan.
8. In 2007, Nigel Cherry of LaFarge Roofing Technical Centre (UK) modeled the energy savings benefits of ASV and concluded that ASV improved the performance of tile roofs in CA Climate Zone 15 by 14-34%.
9. In the German Deutsches Institut für Normung (DIN) Standard 4108, Thermal Protection and Energy Economy in Buildings, ASV is required and minimum ventilation areas are tabulated within the standard.

Fire Considerations

There has been concern expressed that ASV will compromise the fire performance of roofing in CA. Consider that:

1. ASV is a common practice used in Southern CA. For years, most of the tile roofs installed in southern CA are mounted on baton systems effectively creating ASV. Since tile is the major roofing product used in new construction in CA, a huge inventory of ASV roofs already exist and the numbers are growing daily.
2. If there are concerns about drawing embers into the airspace above the deck, certainly there are numerous engineering solutions to this issue such as closure plates, screens, etc.
3. A recent ORNL paper published last month at the National Roofing Contractors Association (NRCA) 2011 International Roofing Conference showed that the ventilation air for ASV can be taken from the attic space instead of an open edge. As long as the attic is ventilated, ASV can be employed without the use of an outdoor source of air.

Closing Comments

The request to reinsert ASV back into the Energy Code is not a request to add some new technology to the list that presently exists. It is a request to simply give credit to a construction practice that is already widely used within the State of CA, that has demonstrated energy benefits, and can be deployed without compromising the fire performance of the roofing system.