

**Cool Metal Roofing Coalition
Comments for the
2008 California Building Energy Efficiency Standards**

The Cool Metal Roofing Coalition is a group of manufacturers and retailers that produce and sell products with cool pigment technologies and unique designs that help California reduce energy consumption. We view our energy efficient technologies—reflective pigments in Cool Metal Roofs, and, a beneficial airspace with Above Sheathing Ventilation (ASV)—as being part of the solution to reduce peak energy demand, mitigate urban heat island effect, and to help California meet greenhouse gas reduction targets. And the technologies offered by the Cool Metal Roofing Coalition provide these benefits while maintaining the roofing colors and consumer choices that are desired throughout California.

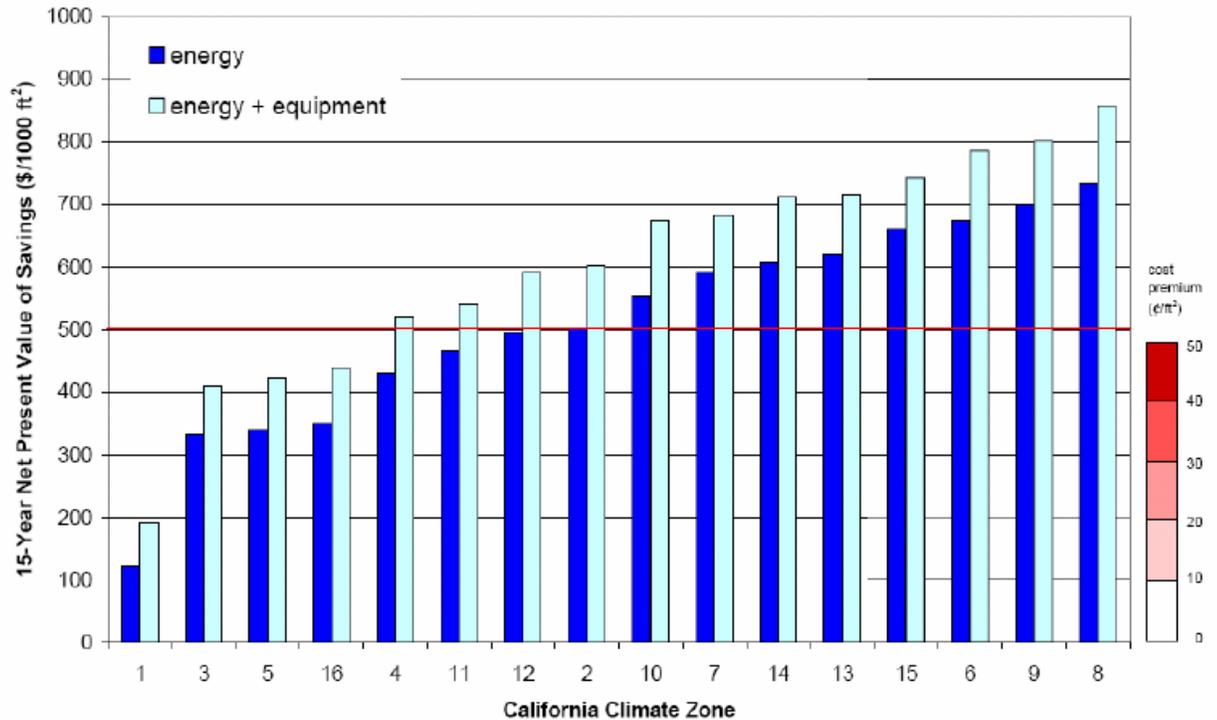
Our Coalition has actively engaged in the process to update the Title 24 building energy efficiency standards, and we look forward to continuing to work with CEC staff and Commissioners to be part of the solution in California. On July 10, 2006, we submitted a detailed Measure Information Template with our recommendations for prescriptive standards for cool metal roofs, and on March 7, 2007, we provided our recommendations to incorporate the benefits of Above Sheathing Ventilation.

We would like to take this opportunity to thank the Energy Commission and CEC staff for all of their efforts to work with affected stakeholders to collectively find cost-effective strategies to reduce energy demand. In particular, we appreciate that the proposed standards incorporate the suggested .25 TSR, which US EPA Energy Star program states can save up to 40% in cooling energy. We appreciate new language that recognized the substantial energy savings of “at least a ¾ inch airspace” being added to the roof deck. We also appreciate the use of updated cost numbers that accurately reflect current market costs.

We would like to continue to work with staff and Commissioners to address two outstanding issues: 1) the need to exclude additional climate zones that are not cost effective for low slope non-residential applications, and 2) the application of ASV to new construction.

(June 13, 2007)

- Cool Roof Prescriptive Requirements for Low Slope Non-Residential** – We are in agreement with the cost effective study that was performed as noted below:



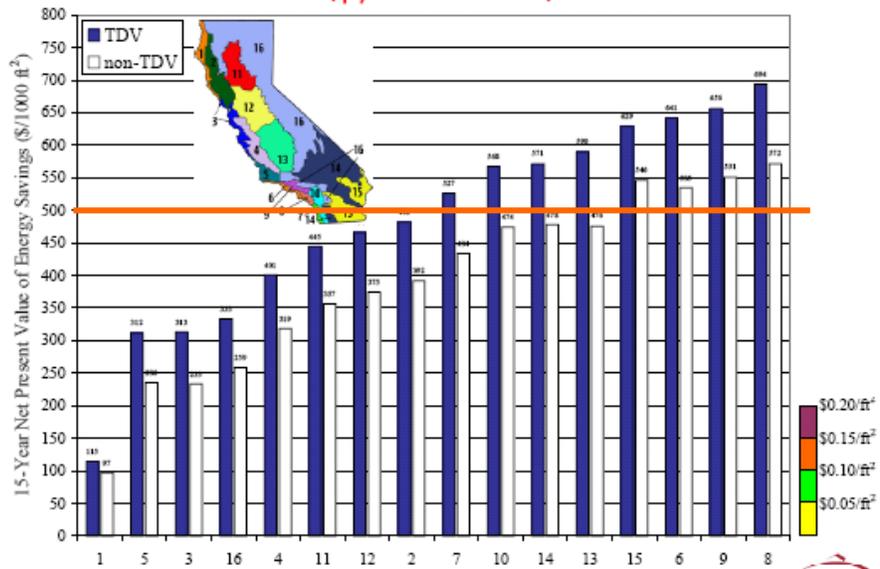
This analysis, that assumed a \$0.50/sq. ft. cost premium for cool roofing, indicated that Zones 1, 3, 5, and 16 should be excluded because cool roofing is not cost effective in those zones. Furthermore, Zones 4 and 11 are not cost effective unless the equipment savings are included.

Our position is that Zones 1, 3, 4, 5, 11, and 16 should all be excluded from the cool roof requirement. The rationale presented at the May 17 meeting by the CEC that Zones 3 and 5 should not be excluded because cool roofs are required in these zones in the 2005 Title 24, and that there was going to be a tradeoff given in these zones with regard to the prescriptive insulation requirement, is not justified by the CEC analysis, as illustrated above.

The position that these zones should be included because they are in 2005 is not consistent with the recent CEC analyses with the most up-to-date cost numbers, as illustrated above. In fact, if one looks at the analysis done for the 2005 Title 24, and uses the same cost premium of \$0.50/sq. ft, even more zones (2 and 12) would have been excluded as illustrated below:

15-Year Net Present Value of Savings (\$/1000 ft²)

\$0.50/ft² →



We also do not agree with the policy decision to include equipment costs in the analysis. This is not consistent with the assumptions made for all other roofing types and does not seem like an equitable standard. (It would be a particularly unreasonable assumption for alterations, where more efficient equipment will not likely be considered by building owners when making decisions on a new roof covering).

With regard to the proposed tradeoff in Zones 3 and 5 with insulation requirements, we are reviewing the recent report on this and are not in a position to evaluate it at this time, but it would be more consistent and reasonable to see the cool roof and insulation prescriptive requirements stand on their own merits, rather than artificially including zones in this manner.

We strongly recommend that the additional climate zones 3, 4, 5, and 11 be excluded from the 2008 cool roof requirements for low slope non-residential.

2. **Above Sheathing Ventilation (ASV)** The Cool Metal Roofing Coalition strongly supports the proposed language in the template submitted by the Metal Construction Association in March 2007. We feel that the cooling benefit from Above Sheathing Ventilation has been scientifically demonstrated and that the CEC has not fully included the six-year PIER/industry research project results.

The CEC's proposed cool roof equivalence for alterations (R=0.85 or greater above roof deck thermal resistance over a vented attic) represents the thermal resistance offered by a ¾" air space. The submitted study by ORNL demonstrated that natural convective airflow occurs in the air space created

from roofing products that are offset mounted. This passive cooling mechanism is supported by the laws of thermodynamics. The research shows that ASV is a viable prescriptive equivalence for cool roofing.

As mentioned above, we appreciate the language that recognizes the energy efficiency benefits of a ¾ inch space above the roof deck for re-roofing, alterations applications. And we strongly recommend that ASV also be applicable to new construction as well as alterations, as proposed in our March 2007 Measure Information Template for ASV. We support the wording as presently included in the proposed 2008 standards and look forward to presenting additional substantiating research results on this topic.

Thank you again for taking the time to incorporate stakeholder input and to work together to reduce California's energy consumption and associated climate change emissions, while allowing the use of roof colors desired throughout California.

Addendum with Editorial Suggestions

The Cool Metal Roofing Coalition continues evaluating all proposed updates to Title 24 and wishes to note several editorial items that the CEC should consider:

Section 118(i)1 - Exception - Default values for non-CRRC labeled products are not inclusive of all roofing types, such as membrane, metal other than tile. Suggest specifying "asphalt shingles", then "all other roofing" as second category but not listing separately.

Section 118(i)2 - The equation for determining the aged value of reflectance if only the CRRC initial value is known is incorrect. It should be $0.2 + 0.70(\rho_{\text{initial}} - 0.2)$. Also, this equation is only valid for nonresidential low-slope roofs, where the prescriptive aged value requirement is 0.55. Appropriate equations will have to be provided for the other roofing categories.

SRI equivalent - Where the equivalent SRI is referenced in several sections (e.g. Section 118(i)3, Section 143(a)1A), this needs to be determined for the aged reflectance to be consistent. As it stands, the equivalence is based on initial properties, which undermines the intent of basing the standard on aged performance. Clarification is needed on whether aged or initial values will be used to do the calculation of SRI. In a few places, also, SRI is misstated with a decimal rather than a whole number.

Suggest replacing "high-sloped" roof with "steep-sloped" roof, where it occurs which is more consistent with conventional terminology and what is used in the building codes. Also, a definition should be added for "steep-sloped" roof that would be a roof that has a ratio of rise to run greater than 2:12.

(June 13, 2007)