November 28, 2007

California Energy Commission
1516 Ninth Street, MS-29
Sacramento, CA 95814-5512

Dear Sirs:

I am writing to comment on the 2008 Title 24 45-day language document that is presently out for review (Docket No. 07-BSTD-1). The specific focus is on the roofing portion of the standard with only two comments being forward at this time. Please see the comments below:

- This comment is on the Section 143(a)1Ai4 that states

4. Roof constructions that have thermal mass over the roof membrane with a weight of at least 25 lb/ft².

The comment is focused on the minimum ballast weight of 25 lb/ft^2 (psf) that identifies the weight at which a ballast roof performs as a Cool Roof. First, the recognition by California Energy Commmission (CEC) that there are other roof systems that can provide equal performance to a Cool Roof is good to see but the ballast weight called out for is at the higher limit of what the testing data has shown to achieve this performance level. As chairman of the SPRI committee, Thermal Performance of Ballasted Roof Systems that directed the study at Oak Ridge National Laboratories, we have been observing the test program for three years. In the test, three ballasted weights were used, 10 pounds per square foot (psf) (the standard minimum limit for a ballasted system), 17 psf, and 24 psf. The test results showed that both the 17 and 24 psf designs out performed the Cool Roof control. This was reported in the presentation given at the RCI conference on “Cool Roofs, Cutting Through the Glare” in May of 2005. This report showed data for the first year of the study. The two-year report on the test program showed this performance continuing with the 17 and 24 psf designs in fact increasing their performance lead over the Cool Roof control system (this report can be found on at the SPRI website, www.spri.org. The three-year report that is in editorial review at the moment continues to show this performance edge. In additional to this, information was supplied to CEC on this subject. This information started with the presentation to CEC showing the work that was done on Cool

Ballast roofs and how they preformed against highly reflective roofing. In summary, this presentation showed the Cool Ballast system to be equal to or better than a highly reflective roof membrane when the ballast weight is above 15 pounds per square foot. Ballast also had the unique characteristic of delaying the heat buildup moving about 30% of the cooling load into the off-peak hours. In this presentation, it was stated that work was on going with the study running a full three years for which the report will be issued in January.

At second report was given to CEC at the public hearing showing how the Cool Ballasted System performed energy wise in the different climate zones. This data was build off the physical data from the ballast study and applied to the climate zones looking at both standard energy costs and TDV energy. Again it showed the solid performance of the system.

The 25 psf ballast most definitely provides a system that will perform as a Cool Roof but at this weight leaves a lot of buildings without this cool ballast option because of dead load limits. At the same time, the SPRI study shows 17 psf ballast also out performs Cool Roofs. Based on the SPRI study, the weight limit should be a minimum of 17 psf or greater than 15 psf as the weight at which a ballasted system will provide Cool Roof performance. The recommended language for the sentence is

"Roof constructions that have thermal mass over the membrane with a weight ~~of at least 25 lb/ft^2~~ greater than 15 lb/ft^2."

SPRI would be glad to supply any of the data reports, RCI presentation, two-year report, and a draft copy of the three-year report to CEC in support of this requested change to the proposed standard. This similar recommendation has been sent to ASHRAE to address similar wording for their inclusion of the thermal ballasted system in the 90.1 standard.

- This comment is on the Section 149(b)1Biv. There is a minor word change recommended to improve the understanding of the statement show below:

iv When roofs are exposed to the roof deck or recover boards are exposed in nonresidential and high-rise residential buildings and hotels and motels with low-sloped roofs shall be insulated to the levels specified in Table 149-A.[33]

The recommended language for this sentence is as follows:

"When roofs are exposed to the roof deck or recover boards are exposed <u>during the removal of an existing roof system</u> in nonresidential and high-

rise residential buildings and hotels and motels with low-sloped roofs shall be insulated to the levels specified in Table 149-A."

These are the extent of the comments on the 2008 Title 24 standard. If you need any clarification or have any questions on the comments, please contact me by email or phone (717-245-7040).

Best regards,

Richard J. Gillenwater