FW: ARMA Letter: May 4, 2012

Yasny, Ron@Energy
Sent: Tuesday, May 15, 2012 3:18 PM
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12-BSTD-1 Please post

From: Shirakh, Maziar@Energy
Sent: Tuesday, May 15, 2012 3:16 PM
To: Hitchcock, Reed
Cc: Ware, David@Energy; Bozorgchami, Payam@Energy; Brehler, Pippin@Energy; Yasny, Ron@Energy; Pennington, Bill@Energy
Subject: ARMA Letter: May 4, 2012

Reed B. Hitchcock
Executive Vice President
Asphalt Roofing Manufacturers Association
750 National Press Building
529 14th Street, NW
Washington, DC 20045

RE: ARMA Comments and Supporting Data on Proposed 2013 Building Energy Efficiency Standards, California Energy Commission Docket No. 12-BSTD-01

Mr. Hitchcock:

This letter responds to your recent letter, dated May 4, 2012, expressing concerns that the Asphalt Roofing Manufacturers Association (ARMA) has with the cool roof solar reflectance values being proposed for the 2013 Building Energy Efficiency Standards (Standards). Your letter focuses on two primary concerns: (1) the proposed R-value required for roof/ceiling insulation that would be allowed to be installed for trading off the energy effects of a roofing product having a lower solar reflectance than the proposed minimum prescriptive value, and (2) the cost assumptions used to develop and substantiate the energy savings of roofing products with a higher solar reflectance than required by the current 2008 Standards.

Your letter speaks briefly about the proposed solar reflectance value for both steep and low-slope roofs, but its discussion and attachments target solely the proposed solar reflectance values for low-slope roofs. Hence, our response will focus on the Energy Commission's development of proposed solar reflectance values to describe cool roof attributes for low-slope roofs used in nonresidential, commercial building construction.

Insulation and Solar Reflectance Tradeoff
Your letter suggests that the proposed 2013 insulation tradeoffs for cool roofs would result in a "substantial penalty" for using insulation in lieu of a cool roof product with a higher solar reflectance based on results from the Department of Energy's (DOE) Cool Roofs Calculator (http://www.ornl.gov/sci/roofs+walls/facts/CoolCalcEnergy.htm). In other words, staff's proposed insulation tradeoffs would require higher R-values than those estimated by the DOE Cool Roofs Calculator. We agree that this calculator is helpful in understanding comparative energy savings between roof insulation and a cool roof product, but its underlying assumptions and calculation procedures prohibit an even-handed comparison with those used to develop the proposed insulation tradeoff R-values for the 2013 Standards.

Analytical assumptions, prototype buildings and overall methodologies that were employed supporting the development of the 2013 Standards have been well documented and were established early in the process. All

documents being relied upon to develop the Standards continue to be available for use and review on the Energy Commission's website (http://www.energy.ca.gov/title24/2013standards/rulemaking/documents/). In addition, extensive technical support for the 2013 Standards was provided through the Investor Owned Utilities' (IOUs) California Statewide Utility Codes and Standards Program. This program's intent is to achieve significant energy savings through the development of reasonable, responsible, and cost-effective code change proposals. Under the IOU Codes and Standards Program analytical research is sponsored in support of several key areas to help improve building energy efficiency. Results and recommendations of this research are produced in Codes and Standards Enhancement (CASE) study reports, many listed on the Energy Commission's website noted above.

One particular document to note on the Energy Commission website is, *Methodology for Determining the Statewide Impact of Title 24-2013 Nonresidential Standards*, which lays out nonresidential prototype buildings and all analytical assumptions being used for energy and cost effectiveness analysis. When ARMA previously brought to staff's attention the results of the DOE Cool Roofs Calculator compared to those being proposed by staff at the time in public meetings held this past Fall and Winter of 2011, staff and other interested parties noted the significant differences in assumptions being used between the two approaches. For example:

- Differences in the prototype building: size, roof area, envelope and glazing thermal effects, building use type
- Differences in operation schedules: assumed internal gains,
- Differences in analysis period: truncating the effects of weather through regression equations versus use of hourly weather data covering all 16 statewide climate zones
- Differences in cost effectiveness: use of standardized DOE averaged cost data for select regions versus Energy Commission approved time-dependent valuation (TDV) calculation of energy budget consumption

In summary, it does not seem unreasonable that results from the DOE Cool Roofs Calculator differ from those proposed by staff for the 2013 Standards. The underlying analytical assumptions employed by the DOE Cool Roofs Calculator are sufficiently different than those used to develop the proposed 2013 cool roof requirements that a fair comparison is impossible.

Cost Assumptions

The attachment to your letter is from Gnarus Advisors, LLC. and lists twelve items that are critical of the cost data being used by staff to support the proposed cool roof requirements. Overall, this letter suggests that staff and its technical contractor, Architectural Energy Corporation (AEC) did not utilize an appropriate methodology to gather cool roof cost data, and insufficient information was described in AEC's report of February 8, 2012 to draw conclusions supportive of staff's proposal.

We believe the cost data is supportive of the range of roof products used in nonresidential construction and is representative of market and geographic differences. Staff and AEC made every effort to ensure cost information was gathered of sufficient breadth to draw reasonable conclusions upon. In public meetings held this past year in June, September and October issues related to the cost of roofing products were discussed and ARMA was asked repeatedly by staff for assistance, but none come forward.

Comments presented in your letter suggest that the cost data is not valid; however, we believe the survey sent to the roofing industry and the collected cost information is characteristic of product costs from across the state for the variety of roofing products typically encountered in commercial building construction. These costs include material, labor, and equipment costs from those actively engaged in the roofing industry and are currently selling and installing roofing in California. This cost data represents a solid foundation for the Energy Commission to base the proposed roof solar reflectance of cool roofing efficiency measures. Costs and energy savings benefits of the proposed cool roof measure were clearly presented and are part of the record.

Moreover, ARMA has provided no contrary cost data to demonstrate that cool roof products that meet the proposed solar reflectance levels are not cost effective nor has suggested any means to gather “better” cost data that could possibly lead to results that would drive towards a different conclusion.

We look to ARMA and the entire roofing industry as an integral partner in California’s efforts to improve building energy efficiency and help meet state mandates for a cleaner economy.

Sincerely,

Mazi Shirakh, P.E.
Senior Mechanical Engineer
California Energy Commission