



ARMA Board of Directors

May 14, 2009

Chicago, IL

***ARMA Steep-slope
Committee Report***

Darrel P. Higgs
Technical Manager
Owens Corning



Cool Roof Steering Group (CRSG)

Purpose

To develop and implement the ARMA strategy to influence mandatory and voluntary initiatives associated with energy conservation, urban heat islands, air quality, and climate change as they relate to roofing products and systems.

Position (approved by Board 11/08)

ARMA views roof surface reflectance as but one component of the Whole Building Envelope Approach as an appropriate regulatory policy and design principle for energy conservation, mitigation of urban heat islands, and improved air quality. The Whole Building Envelope Approach is the best option for designing and optimizing performance-based, proven and cost effective commercial and residential buildings. It allows flexibility and consumer choice in the selection of roof systems.



Cool Roofing Strategy Development Framework

Energy Conservation

- ***US EPA Energy Star***
- ***CEC Title 24***
- ***ASHRAE 90.1***

Urban Heat Island

Air Quality

Climate Change

- ***AB32***

Green Building Standards

- ***USGBC LEED***
- ***ASHRAE 189.1P***



DOE Roof Assembly Grants Solicitation and Projects

Energy programs included in the bill is estimated at \$50 billion, including

ARMA Suggested Programs

- ***Steep-slope***
 - ***Cool Roof Map***
 - ***Actual Measurements***
 - ***Climate Zones***
 - ***Energy Savings***
- ***Low-slope***
 - ***Comprehensive Field Study of Roofs***
 - ***Cool Roofing Map***
 - ***Validating the modeling for insulation trade-offs***



Cool Roof Steering Group (CRSG): 2008 Title 24-2008

- **Effective August 1, 2009**
- **On-line information at www.energy.ca.gov/title24/**

Key Activities

- **Develop new Q&A for 2008 version of Title 24**
- **Complete new insulation trade off tables/calculator for 2008 version of the code**
- **Implement a communication plan to educate and inform the industry and public on the compliance options allowed in code**



Cool Roof Steering Group (CRSG): Title 24-2011

Proposed Schedule for 2011 Standards

Solicitation/Procurement RFQ & contract implementation for 2011 Standards Technical Support; develop templates for 2011 Standards	Nov '08 to June '09
Pre-Rulemaking Activities: Phase 1: Analysis of Measures Analysis of measures	June '09 to Feb '10 (Begin actual timeline)
Pre-Rulemaking Activities: Phase 2: Public Workshops 1. Scoping workshop, plus present info on weather data, TDV and cost effectiveness methodology (including scenario analysis) 2. Stakeholder workshops, focused on specific areas of proposed changes	Oct '09 to Feb '10
Pre-Rulemaking Activities: Phase 3: Drafting Standards and Rulemaking Documents Reconcile comments in preparation for draft regulation workshops, including analysis rework and markup of the Standards documents; conduct workshops for presentation of proposed draft revisions to Standards documents; incorporate the comments from the workshops into the final proposed first draft Standards documents; draft rulemaking documents; close Pre-rulemaking Docket	Feb '10 to Feb '11
Rulemaking Activities Open Rulemaking Docket; file Rulemaking documents with CBSC; develop 45-Day Language Standards documents; develop and complete APA (Administrative Procedures Act) process requirements for rulemaking process; CEC adoption of 45-Day Standards documents; file necessary documents with various required agencies; close Rulemaking Docket	Feb '11 to July '11
Post Rulemaking Activities Preparation and development of materials for CBSC approval	July '11 to Sep '11
Compliance Manuals and Software Development Compliance manuals, software development and review to begin upon adoption of Standards. Compliance manual and software publication to occur 6 months prior to implementation	June '11 to Feb '12
Adoption Date	June 15, 2011
Implementation Date	September 1, 2012



Cool Roof Steering Group (CRSG): ASHRAE 90.1

Key Activities

- **ARMA submitted comments (May 5, 2008)**
 - **Demonstrate that requirements are *NOT* cost effective**
- **Face-to-face meeting in Salt Lake City (June 20-22, 2008)**
 - **Eliminated steep-slope requirement**
 - **Reduce low-slope to CZ 1-3**
- **Next steps:**
 - **Awaiting new draft Addendum to be proposed for low-sloped roofs in CZ 1-2**
 - **30-Day Review Period**
 - **Considered on June 19, 2009 in Louisville, KY**



Cool Roof Steering Group (CRSG): ASHRAE 189.1P-Commercial Green Building Standard

- **General Committee Activity**
 - New committee met on January 24, 2009 in Chicago, IL
 - Committee met again on February 24-25, 2009 in Long Beach, CA
 - **Draft released for comment on May 1, 2009, due June 15, 2009.**
- **New Draft Standard Highlights:**
 - **5.0 Site Sustainability: Roofs (5.3.2.3)**
 - **Minimum 75% of roof covered shall meet:**
 - **Reflectance:**
 - **Minimum SRI of 78 low-sloped ($\leq 2:12$)**
 - **Minimum SRI of 29 steep-sloped ($> 2:12$)**
 - **And/Or comply with EPA Energy Star Program**
 - **Exception for climate zones 6,7 and 8**
 - **Prescriptive Option: Vegetated roof minimum depth of 3 inches**



Cool Roof Steering Group (CRSG): ASHRAE 189.1P-Commercial Green Building Standard

Recommendations:

- Continue to monitor and participate in ASHRAE 189.1P development process using 189.1P committee member, Merle McBride, OC
- Sustainability Council should research the cost of completing LCA/LCI/EPD data collection program and collect data to evaluate.
 - Gives the industry common data definitions and data limits as a benchmarking tool to support or opposed the development of various organizations attempting to define green/sustainability
 - Need to define the various types of asphaltic roofing systems so they are not defined outside the industry
 - Cost will vary depending on the number of systems defined and the extent of the data collected (PIMA~estimates \$70,000)
 - Time-line lag is estimated between 6 months and 1 year to complete



Cool Roof Steering Group (CRSG): AB 32 CO2 Emission Reduction

AB32 Goals

- **2010: Emissions at 2000 levels, 11% below business as usual. Reduction of 60 million tons**
- **2020: Emissions at 1990 levels, 28% below business as usual. Reduction of 173 million tons**
- **2050 Emissions at 80% below 1990 levels.**
- **Including the following sectors**
 - Agriculture**
 - Energy**
 - Including Efficiency**
 - Forests**
 - High Global Warming Potential**
 - Land Use & Local Initiatives**
 - Oil & Gas Refining**
 - Manufacturing**
 - Transportation**
 - Waste Management/Recycling**

AB32 Deadlines:

- **January 1, 2011—adopt all regulatory measures**
- **January 1, 2012—effective regulations**



Cool Roof Steering Group (CRSG): AB 32 CO2 Emission Reduction

- **AB32 Scoping Document only recommends**
 - **LEED Gold, or**
 - **LEED-EB Silver, or**
 - **CHPS (Collaborative for High Performance Schools)**
- **Million Solar Roofs Project (contradictory to cool roofing)**
- **It does state it will have a mandatory Green Building Standards Code by 2010, but gives no details**



Cool Roof Steering Group (CRSG): AB 32 CO2 Emission Reduction

Key Stakeholders

- **AB 32 Implementation Group**
 - Coalition over 100 members mostly organizations and a few large and small businesses
 - Mission to be a constructive voice in the process to meet AB32 while maintaining competitiveness and protecting the interest of consumers and workers
 - Developed six principles i.e. Cost-Effective Regulations and policies that keep jobs in California
- **CARB**
 - Cool Pavements w/ CalTran
 - Cool Roofing direct correlations—see cool communities below
 - Can Vegetative be “cool”
 - How do environmental artifacts i.e. dust etc impact cool roofing



Cool Roof Steering Group (CRSG): AB 32 CO2 Emission Reduction

- **California Attorney General (AG)**
 - AB 32 as a political opportunity
 - Cool Roofs is a solution to help meet AB 43
 - Targeting Title 24 as a vehicle to set Cool Roof requirement
 - **DORMANT per James Mattesich (Greenberg Traurig LLP)**
- **Global Cooling: Increasing World-wide Urban Albedos to Offset CO2 (Akbari, Menon & Rosenfeld)**
 - Paper to be peer reviewed for technical accuracy
 - CRSG will develop a position regarding paper
 - Climatologist Search for Review
 - James Voogt (No); Peter Fusaro (No); Eileen Claussen (No-response)
 - Climatic Change Journal—Will not release names of reviewers or review



Cool Roof Steering Group (CRSG): AB 32 CO2 Emission Reduction

- **Cool Communities Developers Group**
 - ARMA Meeting November 19, 2008
 - Next Conference Call Cancelled and Never Rescheduled
 - Moving to research for more back-up support
 - CEC and CARB combined forces to fund \$700,000 worth of research over 4 to 5 years
 - Obtain utility cost data and other to determine the extent and effectiveness of cool roofing
 - Conduct survey to determine how consumers and businesses can be encouraged to use cool roofing
 - Training for roofers and end-users of roofing materials on developments within the industry
 - Research new forms of asphalt with reflective pigments embedded



Cool Roof Steering Group (CRSG): AB32 Tool Kits

Small Business Tool Kit

- www.coolcalifornia.org/business/html
- CARB approved April 24, 2009
- “The Small Business Toolkit is a “one-stop shop” to facilitate voluntary greenhouse gas reductions. Many organizations have already developed useful information; these sites are linked from CoolCalifornia.org so that a busy small business owner need only go to a single site to be directed to all online resources. For those businesses without internet access, printed materials will be available.”

Local Government Tool Kit

- TBD: Not released yet



Cool Roof Steering Group (CRSG)

Members

- **Darrel Higgs, Owens Corning (Chair)**
- **Allan Snyder, CertainTeed**
- **Lou Hahn, GAF Materials Corporation**
- **Helene Hardy Pierce, GAF Materials Corporation**
- **Eileen Dutton, GAF Materials Corporation**
- **Sid Dinwiddie, PABCO**
- **Tim Kersey, Siplast**
- **Kirk Goodrum, Siplast**
- **Aaron Phillips, TAMKO**
- **John Goveia/Phil Dregger, Pacific Building Consultants**
- **Andre Desjarlais, Oak Ridge National Laboratories**
- **Reed Hitchcock and Jim Baker, ARMA**



Reflectance Certification Task Force (RCTF)

Purpose

- **To evaluate alternate and more efficient methods of certifying solar reflectance of roofing products surfaced with granules**
 - **Reduce need for extensive/lengthy certification cycles**
 - **Reduce cost for testing**
 - **Simplify and streamline Cool Roof Rating Council (CRRC) ratings for new formulations and products**

Key Strategy

- **Use Granule Reflectance as a way to Qualify Shingles**

Revised Strategy (per 11/08 Board Direction)

- **Granule Reflectance Data Base tabled due to limited business impact and resources needed to implement**



Reflectance Certification Task Force (RCTF)

Key Stakeholders

- **Cool-Colored Roof Materials Project Advisory Committee (PAC)**
 - **Sponsored by California Energy Commission (CEC); Lawrence Berkeley National Lab (LBNL) and Oak Ridge National Lab (ORNL)**
 - **Correlate the Solar Reflectance of a Shingle to its Granules**
 - **Roofing Industry Trade Associations are members of PAC**
- **Cool Roof Rating Council (CRRC) Participants**
- **EPA Energy Star Program Participants**
- **ARMA Members**



ARMA Reflectance Certification Task Force (RCTF)

Current Activities

- **Collected and reviewed data from EPA Energy Star Website**
 - 3 year aged reflectance data reflectance for ARMA Manufacturers did not decrease and in some cases increased
 - All 3 year aged data is from 3rd party approved AITLs
- **Recommendation made to CRSG to consider removal of 3 year aging as a requirement for rating solar reflectance.**
 - TF felt the target audience is not CRRC but the California Energy Commission (CEC), Energy Star Program, and other such regulatory bodies who set the requirements.
 - CRSG added into Purpose, Position and Strategy
 - Key will be 2011 CEC Title 24 requirements
 - CRRC Technical Committee is considering the removal of 3 year aged data upon review of CRRC and US EPA Aged Data



Reflectance Certification Task Force (RCTF)

Current Activities

- **Informed CRRC that ARMA would not proceed with the development of Granule Reflectance Database**
- **CRRC Technical Committee voted to submit the ARMA Granule Reflectance Database project as part of their research grant proposal from the American Recover and Reinvestment Act Funds (ARRA)**



ARMA Reflectance Certification Task Force

Members

- **Rich Lee, Momentum Technologies (Chair)**
- **Frank Klink/Jeff Jacobs, 3M Industrial Minerals**
- **Allan Snyder, CertainTeed**
- **Phil Kehoe/Ingo Joedicke, ISP Mineral Products**
- **Darrel Higgs, Ed Harrington Owens Corning**
- **Aaron Phillips, TAMKO**
- **Lou Hahn, Eileen Dutton GAF Materials Corporation**
- **Andy Lodge, IKO**
- **Jim Baker, ARMA Staff**



ARMA-NRCA Quality Control Task Force

Purpose

- **Develop a consensus Quality Control document that provides guidelines and corrective actions of asphalt shingles during the application process**
 - **Focused on the prevention of application of problems**

Key Activities

- **Met in conjunction with ARMA March Committee Meetings**
- **Planning to meet with ARMA Summer Committee Meetings in Chicago, IL**



ARMA-NRCA Quality Control Task Force

Members

- **Bill Woodring, GAF Materials Corporation (Co-Chair)**
- **Allan Snyder, CertainTeed**
- **Daniel DeJarnette, GAF Materials Corporation**
- **Darrel Higgs, Owens Corning**
- **Tom Bollnow, NRCA (Co-Chair)**
- **Dane Bradford, Bradford Roofing**
- **Dave Karel, Garlock-French Roofing**
- **Bob Kulp, Kulp Roofing**
- **Bruce McCrory, Kiker Corporation**



Ventilation Task Force—Roof Assembly Ventilation Coalition

Mission: To study, monitor, and promote the interests of steep slope roof assembly ventilation through sound theory backed by scientific data.

- Identify and develop a repository of data regarding roof assembly ventilation as it relates to construction practices, energy efficiency, structural, economics, roofing and system durability, ice damming, health issues, and moisture and/or temperature control.
- Review of repository and potentially pursue research where data is lacking to support steep slope roof assembly ventilation.
- Monitor developments and champion steep slope roof assembly ventilation with regard to technology and acceptance of such technology.
- Educate specifiers, builders, architects, engineers, building code officials, municipalities, the public and other parties as to the benefits of proper roof assembly ventilation.
- Advocate on behalf of roof assembly ventilation stakeholders when steep slope roof assembly ventilation is questioned.



Ventilation Task Force—Roof Assembly Ventilation Coalition

KEY FOCUS:

- **Communicate and Educate the Roofing Industry on the positive net effects of attic ventilation**
 - **IRE 2010 Presentation and other industry venues**
 - **Article Development**
 - **Florida Forum, June 2009**
 - **Professional Roofing Sustainable Roofing Piece**
- **Develop Codes Positioning in Conjunction with ARMA**
- **Research Task Force to support ARMA's/ASHRAE Research R-TAR for attic ventilation**



Ventilation Task Force—Roof Assembly Ventilation Coalition

2010 IRE Abstract: Roof Ventilation – What You Need to Know to Help Your Customers Make the Right Choices and How You Can Avoid Design and Installation Errors



Ventilation Task Force—Roof Assembly Ventilation Coalition

Codes Development w/ ARMA

- **Must have balanced approach**
 - Maximum of 50% at the top.
 - More Intake is required
 - 50% to 60% at the Intake
 - One single method.
- **Exhaust Vents should be placed at**
 - At the ridge or
 - 3 feet below the ridge (vertical plane)
 - Exception for situation where framing precludes the installation of the product
- **Included other types of roof venting**
- **Correct measurement of attic space (floor sq. footage)**



Ventilation Task Force—Roof Assembly Ventilation Coalition

- **Ventilation Task Force:**
 - Helene Hardy Pierce, GAF Materials Corporation (Chair)
 - Ed Todd, Atlas Roofing
 - Allan Snyder, CertainTeed
 - Darrel Higgs, Owens Corning
 - Lorraine Ross, Intec Consulting
 - Aaron Phillips, TAMKO
 - Jim Baker, ARMA
- **Charter Members (including ARMA):**
 - Air-Vent, Inc., of Dallas, TX;
 - Benjamin Obdyke of Horsham, PA;
 - Canplus/Duraflo, of Canada;
 - Diversi-Plast, Inc., of Minneapolis, MN;
 - GAF Material Corporation, of Wayne, NJ
 - Hunter Panels, Inc, of Portland, ME;
 - Lomanco of Jacksonville, AR; and
 - Metal-Era, Inc., of Waukesha, WI.



ARMA Sustainability Council (ASC)



Accomplishments

- Defined sustainability position through development of an ASSSTF mission statement
- Identified steep-slope green attributes
- Developed key audience list and message points to promulgate green message
- *Joined forces with ALSSTF to develop common areas for mutual advancement, support and defense under the “ARMA Sustainability Council.”*



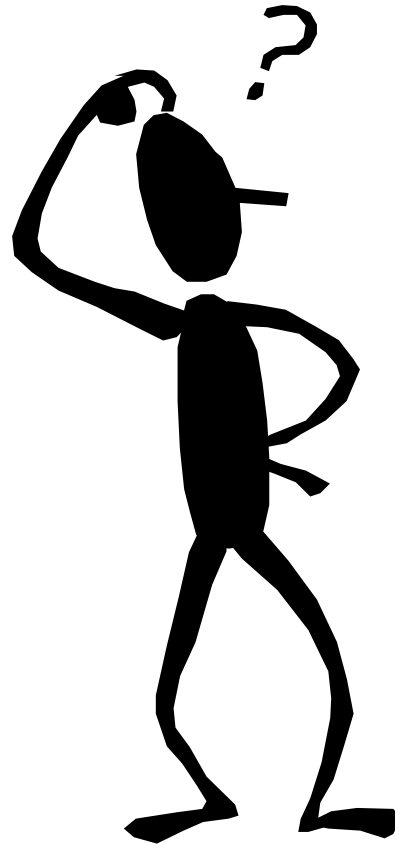
ARMA Sustainability Council (ASC)

Members

- **Robert Kluttz (Chair)**
- **Sidney Dinwiddie**
- **Helene Hardy-Pierce**
- **Darrel Higgs**
- **Ed Kane**
- **Tim Kersey**
- **Andy Lodge**
- **Aaron Phillips**
- **R. Allan Snyder**
- **Travis Truek**
- **Travis Wallace**
- **William Woodring**



Questions?





Actions:

- **Approve the ARMA Steep-slope Committee report as presented?**



Thank you!