



ARMA Steep-slope Committee

March 23, 2009

Alexandria, VA

***ARMA Cool Roof
Steering Group***

Darrel P. Higgs
Technical Manager
Owens Corning



ARMA Cool Roof Steering Group

- **Darrel Higgs, Owens Corning (Chair)**
- **Allan Snyder, CertainTeed**
- **Lou Hahn, GAF-Elk**
- **Helene Hardy Pierce, GAF-Elk**
- **Eileen Dutton, GAF-Elk**
- **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, ARMA**
- **Jim Baker, ARMA**



Cool Roof Steering Group 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.



***Cool Roof Steering Group Position
modified and approved by Board November 2008***

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

Key Targets

- AB32
- Title 24
- ASHRAE 90.1
- ASHRAE 189.1
- USGBC/LEED

Strategy Framework for Key Targets

- Objectives
- Audiences
- Delivery Method
- On-going Monitoring



Cool Roofing Strategy Discussion

See Hand-out Purpose, Position & Strategy Document



DOE Roof Assembly Grants Solicitation and Projects

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

- ***\$13.9 billion to subsidize loans for renewable energy projects;***
- ***\$11 billion toward a smart electricity grid to reduce waste;***
- ***\$6.4 billion to clean up nuclear-weapon production sites;***
- ***\$6.3 billion in state energy efficiency and clean energy grants;***
- ***\$5 billion to weatherize modest-income homes; and***
- ***\$4.5 billion to make federal buildings more energy efficient.***



DOE Roof Assembly Grants Solicitation and Projects

- ***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***



2008 Title 24

Important dates and information

- **Information at <http://www.energy.ca.gov/title24/>**
- **Code in effect August 1, 2009**

Key Actions

- **Q & A for Steep-slope—May 2009**
- **2008 Title 24 Education**



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



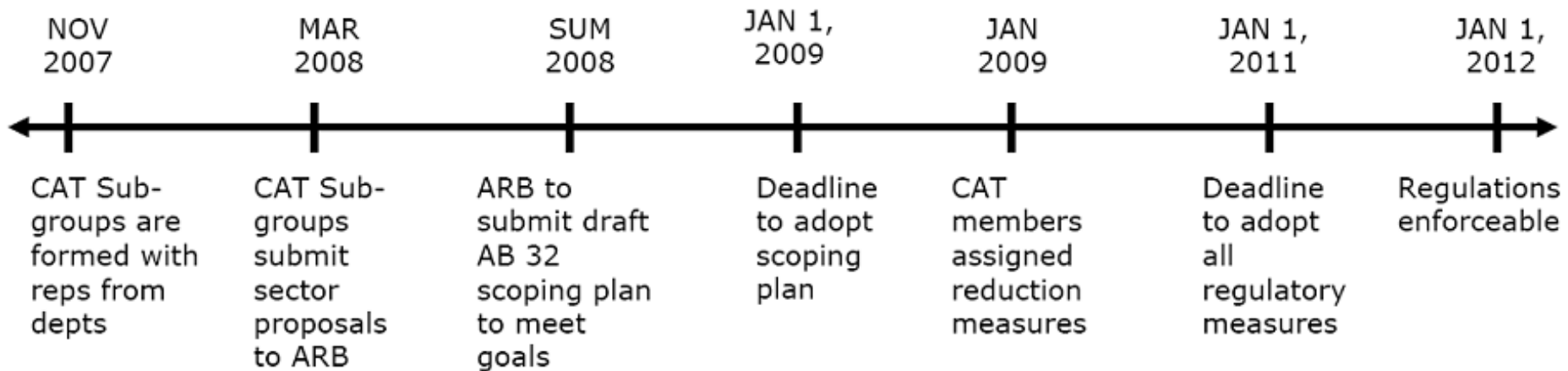
AB 32 CO2 Emission Reduction Goals

- **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	Land Use & Local Initiatives
Energy	Oil & Gas Refining
Including Efficiency	Manufacturing
Forests	Transportation
High Global Warming Potential	Waste Management/Recycling



AB 32 IMPLEMENTATION TIMELINE





AB 32 Scoping Plan

Specifics within the scoping plan regarding building and green building standards

- **It recommends only**
 - **LEED Gold, or**
 - **LEED-EB Silver, or**
 - **CHPS (Collaborative for High Performance Schools)**
- **It does state it will have a mandatory Green Building Standards Code by 2010, but gives no details**



AB 32: The Global Warming Solutions Act

- **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
- **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)**



AB 32: The Global Warming Solutions Act

- **Global Cooling: Increasing World-wide Urban Albedos to Offset CO2 (Akbari, Menon & Rosenfeld)**
 - **Climatologist Search for Review**
 - **James Voogt (No); Peter Fusaro (No); Eileen Claussen (No-response)**
 - **Climatic Change Journal—Phone Call Update**



AB 32: The Global Warming Solutions Act

- **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**



AB 32: Tool Kits

- **Local Government Tool Kit**
 - CARB approval May 2009
- **Small Business Tool Kit**
 - www.coolcalifornia.org/business/html
 - CARB approval April 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.”**



AB 32: Small Business Tool Kit

The screenshot shows a web browser window displaying the 'Cool California' website. The browser's address bar shows the URL 'http://www.coolcalifornia.org/business.html'. The website's header includes the 'COOLCALIFORNIA.ORG' logo and a 'Font Size' selector. The main content area is titled 'BUSINESS' and features a 'DRAFT' notice: 'These materials are currently in draft form and will be finalized by the April 2009 Board meeting. Send comments on the draft material to Kyra Naumoff at knaumoff@arb.ca.gov.' Below this, several key questions are listed: 'What is AB32 or the Global Warming Solutions Act?', 'Why should Small Businesses work with the State to achieve AB32 goals?', 'How might AB32 impact Small Businesses?', 'What is the Small Business Toolkit?', and 'Why did the Air Resources Board develop a Small Business Toolkit?'. A link for 'General Resources for Small Business Owners' is also provided. The left sidebar contains a navigation menu with links to 'HOME', 'ABOUT US', 'BUSINESS', 'CARBON CALCULATOR', 'TAKE ACTION', 'CLIMATE CHAMPIONS', 'RESOURCES', and 'FEEDBACK'. Under 'BUSINESS', there is a 'Business Award' section with sub-links for 'Cost-Saving Action Area', 'Energy Efficiency & Conservation', 'Green Building', 'Green Transportation', 'Recycling & Waste Reduction', 'Water Conservation', 'Environmentally Preferable Purchasing', and 'Renewable Energy'. At the bottom of the sidebar, there is a 'Join our mailing list' form with a 'Submit' button. The browser's taskbar at the bottom shows the 'start' button and several open applications, including 'Inbox - Microsoft...', 'Microsoft PowerP...', and 'Cool California - ...'. The system tray on the right shows the 'Internet' icon, a '100%' zoom level, and the time '2:05 PM'.



AB 32: The Global Warming Solutions Act

BUSINESS AWARD

COST-SAVINGS ACTIONS

- **Energy Efficiency & Conversation**
 - Links and info on reducing electricity usage—EPA Energy Star Etc.
- **Green Building**
 - LEED Green Current Buildings
 - Resource Links to LEED, EPA, and other local area government green building resources
- **Green Transportation**
- **Recycling & Waste Reduction**
- **Water Conservation**
- **Environmentally Preferable Purchasing**
- **Renewable Energy**



AB 32: The Global Warming Solutions Act

FINANCIAL RESOURCES

- Show me the money—where it is—where to get help

CALIFORNIA CASE STUDIES

- Green Building
 - [Orchard Garden Hotel, San Francisco, California](#)
 - Total Bill Savings: 20% of energy bill annually
 - San Francisco's first truly eco-friendly hotel is “green” from the ground floor to the rooftop.

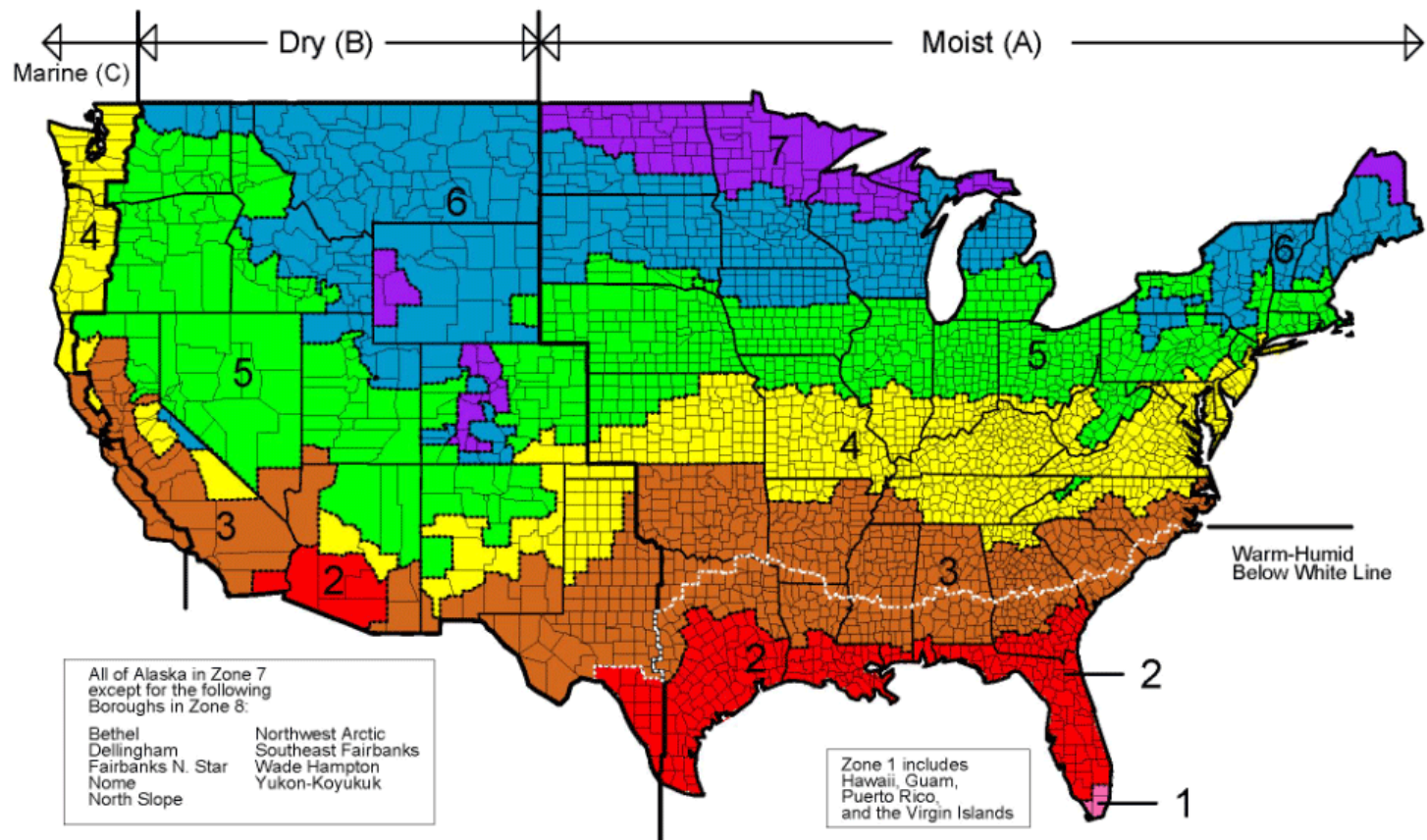
CARBON CALCULATOR

PEER NETWORKING



ASHRAE 90.1

- **Next steps:**
 - **New Draft Addendum to be proposed for low-sloped roofs in climate zones 1 and 2**
 - **Awaiting redraft of new addendum**
 - **30-Day Review Period**
 - **Considered on June 19, 2009 in Louisville, KY**





ASHRAE 189.1-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
 - Four, 4 hour conference calls scheduled this month
- **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**



ASHRAE 189.1-Commercial Green Building Standard

- **New Draft Standard Highlights:**
 - **On-site renewable energy 1% of the service conditions**
 - **50% of non-hazardous construction and demolition waste materials shall be recycled or re-used**
 - **9.4.1.1 Recycled Content. The sum of post-consumer recycled content plus one-half of the pre-consumer recycled content shall constitute a minimum of 10%, based on cost, determined by weight.**
 - **9.4.1.2 A minimum of 15% of building materials or products used, based on cost, shall be regionally extracted/harvested/recovered or manufactured.**
 - **9.4.1.3 A minimum of 5% of building materials used, based on cost, shall be biobased products.**



ASHRAE 189.1-Commercial Green Building Standard

- **Recommendations:**

- **Continue to monitor and participate in ASHRAE 189.1 development process using Merle McBride, OC, is on the committee.**
- **Sustainability Committee should research of cost of completing LCA/LCI/EPD data collection program and collect data to evaluate.**

- **Tuesday, June 23, 2009, Louisville, KY**

The Basics of a Proposed Standard on High-Performance Green Building Standards.

This course describes high-performing buildings that provide an energy-efficient, safe and comfortable environment for occupants. ASHRAE's proposed Standard 189.1, *Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Building*, is aimed to provide energy savings from 10 – 41 percent over *Standard 90.1-2007*. This course will also discuss how to achieve water savings of 26 - 35 percent for multifamily and office buildings.



New Business:

PROGRAM: California Title 24 Education Programs (Steep/Low Slope) to educate the contractor and design community about the allowable trade-offs that are included in CEC's Title 24 2008 revisions.

- Referred previously to communications committee at August 2008 Meeting
- Continuing Education Units with American Institute of Architects

PROPOSED VENUE: IRE 2010 Education Sessions in New Orleans, Western States 2010, California AIA Chapters

TASK FORCE: Carol Perkins, Lynn Picone, Sid Dinwiddie, Ted Ferman, Reed Hitchcock, and Jim Baker



Questions?





Thank you!