

Codes Steering Group and Technical Resource Group Reports

ARMA Board of Directors

November 14, 2019 San Diego, CA

Aaron R. Phillips, TAMKO Building Products LLC Greg Keeler, Owens Corning Michael Fischer, Vice President of Codes and Regulatory Compliance Chadwick Collins, Director of Technical Services Jim Hilyard, ARMA Consultant



Organization of Presentation

FOUNDATION

Mission and Structure

STAKEHOLDER RELATIONS

CODE DEVELOPMENT PROCESSES

ADVOCACY ISSUES

Reflectivity Sustainability and Resilience Wind Resistance Aggregate Surfacing Restrictions Secondary Water Penetration Protection Roof Replacement and Roof Recover



FOUNDATION



Codes Steering Group Mission

Be a responsible and proactive advocate in the advancement and development of ARMA positions in the standards and regulatory arena.



Codes Steering Group Structure

Codes Steering Group

Chair: Aaron R. Phillips, TAMKO Building Products LLC

Staff Liaison: Mike Fischer, ARMA Vice President of Codes & Regulatory Compliance

ARMA Cool Roof Task Force

Chair: Marty Ward GAF

Staff Liaison: Chadwick Collins ARMA Director of Technical Services ARMA Ventilation Task Force

Chair: Paul Scelsi Air Vent

Staff Liaison: Chadwick Collins ARMA Director of Technical Services ARMA Technical Resource Group

Chair: Greg Keeler Owens Corning

Staff Liaison: Chadwick Collins ARMA Director of Technical Services



STAKEHOLDER RELATIONS



Asphalt Shingle Impact Ratings Released

Ratings of impact resistant shingles released June 17th; updated list released October 1st.

New products to be tested within six months.

All rated products to be re-evaluated every two years.

No specific plan for code advocacy at present—relying on "self-regulation."



Messaging Around Asphalt Shingle Impact Ratings

SHINGLE PERFORMANCE RATINGS

Consumers deserve to have confidence that shingles labeled as impact resistant live up to expectations.

IBHS and its members recognized the growing problem of hail damage in large regions of the United States and have devoted years to field and lab research to develop a new test standard for impact resistance.

To conduct testing, IBHS bought the major competing widely purchased impact-resistant shingles from standard distribution channels accessible to consumers, brought them to our lab, and tested them under scientifically replicated real-world conditions. The results offer unprecedented insights into the performance of shingles labeled as impact resistant.

https://ibhs.org/hail/shingle-performance-ratings/ (accessed 20191029)



Messaging Around Asphalt Shingle Impact Ratings

SHINGLE PERFORMANCE RATINGS

Consumers deserve to have confidence that shingles labeled as impact resistant live up to expectations.

IBHS and its members recognized the growing problem of hail damage in large regions of the United States and have devoted years to field and lab research to develop a new test standard for impact resistance.

To conduct testing, IBHS bought the major competing widely purchased impact-resistant shingles from standard distribution channels accessible to consumers, brought them to our lab, and tested them under scientifically replicated real-world conditions. The results offer <u>unprecedented insights into</u> the performance of shingles labeled as impact resistant.

https://ibhs.org/hail/shingle-performance-ratings/ (accessed 20191029)



Current Activities

Conducting impact resistance tests of non-impact-rated shingles.

"How much better protection can we really expect" from impact-rated products? This information will be directed to their members (i.e. not publicly released).

Evaluating products exposed for five years at their South Carolina site for impact resistance (UL 2218 and IBHS method) and wind resistance (mechanical uplift).

Developing capability to do a fire resistance test similar to ASTM E108, but with possibly different flow characteristics (using a single cell of nine fans). Fire tests to be conducted next year on aged material.

Collecting samples from Wisconsin exposure site for future five-year aged tests.

In discussions with NRCA about access to the intellectual property associated with the Pro-Certification program.



International Code Council (ICC)

ICC Collaborates with IBHS on Residential Resiliency

ICC has formed the Multi-Hazard Resiliency for Residential Construction Committee to develop "a portfolio of Consensus Standards relevant to a wide range of hazards affecting modern residential construction."

First task is update of ICC-600 – *Standard for Residential Construction in High-Wind Regions,*" to be complete by December 1, 2020.

Will consider at least high winds (hurricanes/typhoons, tornados, and thunderstorms), seismic, tsunami, and wildfires.

ICC 605: Standard for Residential Construction in Regions with Wildfire Hazard ICC 610: Standard for Residential Construction in Regions with Seismic Hazard ICC 615: Standard for Residential Construction in Regions with Tsunami Hazard

Standards will be co-branded by ICC and IBHS and are hazard mitigation standards to specify enhanced prescriptive methodologies.



Federal Emergency Management Agency

FEMA Preparing Report on Hurricane Michael

As ARMA representatives to the Mitigation Assessment Team, ARMA staff reviewed the draft report on Hurricane Michael. The final report is expected to be released before the end of 2019.



https://earthobservatory.nasa.gov/images/9 2868/florida-slammed-by-hurricane-michael (accessed 23 Sep 2019)



Miami-Dade County

Continued Success on Test and Application Standards

Round two of the ARMA initiative to update Test Application Standards (TAS) and Roof Application Standards (RAS) led to submission of eight code change proposals in the current Florida Code Development cycle. All were Approved as Submitted and are expected to be included in the 2020 Florida codes.

Documents with substantial changes:

- Self-adhered and mechanically-fastened underlayments (TAS 103, TAS 104);
- Asphalt shingle wind resistance (TAS 107);
- Test requirements for physical properties of roofing products (TAS 110);
- Test procedures for roofing assemblies in the HVHZ (TAS 114);

ARMA plans to consider continuation of this project with Miami-Dade for the 2023 Florida building codes.



CODE DEVELOPMENT PROCESSES



ICC Model Building Codes

Code Development Schedule for Group B

Code Change Submittal Deadline1/7/2019Proposed Changes Available for Review3/4/2019Committee Action Hearings (CAH)4/28 – 5/8/2019CAH Results Published6/11/2019Public Comment Submittal Deadline7/24/2019Public Comment Hearings (PCH)10/23-30/2019Online Governmental Consensus Voting~ 11/14-28/2019

Expect adoptions beginning in 2021.



Florida Code Development

Staff posts potential I-code changes for adoption Tracking charts published (info available to public) TACs review I-code changes and offer position Commission considers TAC recommendations Public proposal submission on FBC and I-codes Proposed amendments posted First 45-day comment period ends Proposed code changes posted TACs consider proposed modifications Second 45-day comment period ends TACs consider public comments on proposed mods Commission considers TAC recommendations

Rule Development Workshops

Final Rule Hearing 2020 FBC (7th Edition) effective date

1/2/2018 5/1/2018 6/7-22/2018 10/8-9/2018 11/2 to 12/15/18 1/2/2019 2/18/2019 3/1/2019 3/14-26/2019 5/26/2019 7/9-12/2019 8/13-14/2019 2/4/2020, 4/7/2020

Asphalt. The Roofing Solution."

6/8/2020

12/31/2020



California Building Standards Code

Governing authority for California building codes rests with the Building Standards Commission (BSC).

The California Energy Commission (CEC) adopts building energy efficiency standards under BSC oversight in a parallel cycle using an equivalent rulemaking process.

Process operates on a three-year cycle. CEC schedule is usually different than overall BSC schedule.

Distinct from ICC and Florida processes in that **proposals can only be introduced by state agencies**. Industry proponents of changes must persuade an agency to support their proposal concepts.



California Building Standards Code

Process steps include:

- Pre-Rulemaking Activity
- Workshops
- Code Advisory Committees (CACs)
- Draft Standards
- Public Hearings
- Public Comment Process

Code Advisory Committees:

- Accessibility
- Building, Fire and Other
- Green Building
- Health Facilities
- Plumbing, Electrical, Mechanical and Energy
- Structural Design / Lateral Forces



California Building Standards Code

Current status:

- 2016 Standards and Intervening Standards are in effect
- 2019 Standards become effective January 2020
- 2019 Intervening Cycling underway
- 2022 Standards pre-rulemaking activities underway.

AB660 is a wildcard that can affect both the 2019 intervening and 2022 development processes.



California Intervening Code Cycle

1/2019 - 12/20/2019

State agency workshops*

Start of Intervening Cycle – Proposal Submission 12/2019 Code Advisory Committee Meetings* 2/2020 - 3/2020 3/2020 - 5/2020 Public Review; 45-day Submittals* 7/2020 - 8/2020 Commission Meeting for Adoption* 8/2020 - 12/2020 **Publication Period** 1/2021 Publication Date (Title 24, All Parts) 1/2021 - 7/2021 Statutorily-required 180-day Period 7/1/2021 Effective Date of 2019 California Building Standards Code Supplements

*Public Participation Opportunity



California 2022 Triennial Code Cycle

Utility-sponsored Stakeholder Workshops	7/2019 – 3/2020
Commission-sponsored Workshops	3/2020 – 8/2020
Express Terms Developed	7/2020 – 9/2020
45-day Review/Comment Period Starts	1/2021
Adoption of 2022 Standards	4/2021
Final Statement of Reasons Drafted/Approved	5/2021 – 11/2021
Adoption of CalGreen (Energy Provisions)	10/2021
CBSC Approval Hearing	12/2021
Statutorily-required 180-day Period Begins	6/1/2022
Effective Date	1/1/2023



ADVOCACY ISSUES





RELEVANCE FOR ARMA

Energy efficient building designs and efforts to mitigate urban heat islands often focus on roof reflectivity.

ACTIVE ADVOCACY AND MONITORING

State Legislation (California) Stakeholder Programs (CRRC and EPA Energy Star[®])

INVOLVED ARMA RESOURCES

Cool Roof Task Force Codes Steering Group





THE LIFE CYCLE OF LEGISLATION From Idea into Law THE CALIFORNIA LEGISLATURE **ASSEMBLY RULES COMMITTEE** Although the procedure can became complicated, this shart phone the experise stress for processor of a lot. and converting actions are used to simplify charting the source of againtion. metting hearings by more than one compatient, in which case a wher the bill to another economism. For example, bills with to must to re-referred to its proper fixed countrillow in and ore and is he second reading its and had action GOVERNOR A fell may be consided as values there as it moves through the denses. The SM must be repetited each three as councilment is adopted by other Homes. All tell willows are privided in the CARLY FLLS, JOURNALS and INFECTION. If a bill is exercised in the mesosite House, it is reterined to the Heat or accounting in constitution. If Hence al Cright does not account a informat Counting Agent must five in adgried by each House before the Taxe in card to the Downer. ONES LAW WITHOUT SHOW 12.000 O were beinger to b https://calafco.org/sites/default/files/resourc

es/Leg Procedure.pdf; accessed 2019-09-24

From:



Reflectivity

<u>California Bill AB660 – Legislative History</u>

- 2/15/2019 Introduced
- 3/21/2019 Amended in Assembly
- 4/8/2019 Amended in Assembly
- 4/22/2019 Passed out of Assembly Natural Resources Committee (9-1-1)
- 5/1/2019 Passed out of Assembly Appropriations Committee (13-4-1)
- 5/9/2019 Passed Assembly (61-13-6)
- 6/24/2019 Amended in Senate
- 7/2/2019 Passed out of Senate Energy, Utilities and Commerce Comm. (7-3-3)
- 7/11/2019 Amended in Senate
- 8/12/2019 Amended in Senate
- 8/19/2019 In Appropriations Committee; hearing postponed
- 8/26/2019 In Appropriations Committee; hearing cancelled





<u>California Bill AB660 – Higher Reflectivity via Heat Island</u>

(a) During one or more of the next four triennial code adoption cycles after January 1, 2020, the commission shall consider amendments to the roof replacement building standards for alterations to existing low-rise, steep-sloped roof residential buildings, to be included in Part 6 (commencing with Section 100) of Title 24 of the California Code of Regulations, with the goal of increasing the value of minimum aged solar reflectance up to 0.40 in the 2031 standard and the goal of expanding the range of climate zones in which minimum aged solar reflectance values are prescribed for those alterations.

(b) Prior to considering amendments to roof replacement building standards pursuant to subdivision (a), the commission shall assess whether there is an adequate supply of labor resources and available compliant products in the climate zones for which the commission may consider these amendments.

(c) Any requirement prescribed pursuant to subdivision (a) shall be cost-effective, as determined pursuant to Section 25402, and shall not be imposed on existing low-rise, steep-sloped roof residential buildings where the cost of compliance would exceed the actual energy cost savings achieved through compliance.





California Bill AB660 Summary

Requires CEC action during one or more of the next four triennial code adoption cycles, **up through the 2031 codes**.

CEC must consider amendments for:

- Alterations to existing low-rise, steep-slope residential buildings
- Goal of increasing minimum aged solar reflectance up to 0.40
- Goal of expanding the range of climate zones with minimum SR

CEC must assess whether **supply of labor and availability of compliant products** support the proposed standards.

Any requirement shall be **cost-effective**.





<u>California Bill AB660 – Next Steps</u>

Pulled from Senate Appropriations committee and turned into a two-year bill.

It maintains its place in the legislative process and can be considered at any time after the Senate comes back into session in January. Must pass Appropriations Committee, Senate, and receive Governor's signature.

Appears Senator Levine is highly committed to making this law. May conduct policy forum for legislators and staff in mid-December.

Coalition action options include:

- (1) Site visits (Nov/Dec) for target legislators.
- (2) Conduct policy forum to educate legislators and staff.
- (3) Third-party white paper countering LBNL representations.
- (4) Expand coalition.

Key decision: Retention of Chris Bollinger for 2020.





Development of 2022 California Energy Code in Process

Utility-sponsored stakeholder workshop on Nonresidential Building Envelope held October 24th.

Considering the following for nonresidential buildings, high-rise residential buildings, and hotels and motels:

- Update aged solar reflectance (SR), thermal emittance (TE), and solar reflectance index (SRI) for both steep- and low-slope roofs.
- May vary SR, TE, and SRI by climate zone.
- Apply to new construction, alterations, and additions.
- Treat multi-family separately from nonresidential.
- Re-evaluate insulation tradeoff with aged solar reflectance for lowslope roofs.

Quantity of products in the Cool Roof Rating Council Rated Products Directory accepted as evidence of product availability.





<u>Cool Roof Rating Council (CRRC) Adopts Retesting Policy</u>

On September 19, 2019, the CRRC Board considered and approved guidelines for product retesting in response to adoption of a new test method or substantive changes to an existing test method.

ARMA substantially influenced direction of this initiative over the eight-year timespan required to resolve the original question about retesting.

<u>CRRC Modifies Random Testing Policy</u>

Permissible thermal emittance range for products with emittance above 0.30 increased from ± 0.05 to ± 0.10 .

Increased rated products selected per year for random testing from 5% to 7%.

Products rated for 15 years that have not previously been in the Random Testing program will automatically be selected.





EPA ENERGY STAR® Announces Sunset of Roof Program

- 5/28/2019 EPA notice to Roof Brand Owners and Other Interested Parties
- 6/1/2021 Certification of new products ceases.
- 6/1/2021 No new promotional materials after this date. Existing printed material may be used.
- 6/1/2022 Use of ENERGY STAR[®] name and mark must end.

Supposedly, EPA will publicly post a list of products which had Energy Star certification as of June 1, 2022. To be on the list, maintain certifications through that date.



RELEVANCE FOR ARMA

Interest in sustainable and resilient construction is increasing in response to concerns about climate change and environmental stewardship, leading to proposals from various stakeholders that affect elements of the building envelope, including roof systems.

ACTIVE ADVOCACY AND MONITORING

National Regulation (Canada) State Legislation (Florida) City Regulation (New York City and Denver)

INVOLVED ARMA RESOURCES

Codes Steering Group



"Investing in Canada" Plan Finances Resiliency

Infrastructure Canada, the federal department responsible for infrastructure, has allocated \$42.5 million to the National Research Council Canada (NRC) to investigate resilience and other issues as part of the larger "Investing in Canada" plan (\$180B over 12 years starting in 2016).

NRC's Climate-Resilient Buildings and Core Public Infrastructure Initiative (CRBCPI) aims to integrate climate resilience into design guides, building codes, and material standards.

"Designs can no longer be based on the assumption that the past climate represents the future conditions wherein the new and existing buildings are expected to perform."

IIBEC Interface, "Codification Efforts on the Climate-Resilient Design of Commercial Roofs and Wall Assemblies," Lefebvre et al, September 2019, p. 18



NRC Prepares Standards for Resilient Construction

The National Research Council of Canada (NRC) released standard CSA S478-19 – *Standard for the Durability of Buildings* earlier this year.

A draft standard CSA A123.26 – *Performance Requirements for Climate Resilience of Low Slope Membrane Roofing Systems* is being developed through the Canadian Standards Association process.

"The intent is to include the two standards ... into the National Building Code of Canada to provide essential tools to the industry on how to adapt to the changing climate and how to ensure resilience and durability."

IIBEC Interface, "Codification Efforts on the Climate-Resilient Design of Commercial Roofs and Wall Assemblies," Lefebvre et al, September 2019, p. 18

Canada will be divided into three zones (minimum, moderate, severe) for each critical weather element (wind, rain, thermal), with varying requirements for projected climatic loads.



NRC Initiating Residential Roofing Research Project

Initial informational meeting held February 19, 2019. Next meeting, originally planned for May, is now scheduled for December 5th.

Project title: Evaluation of the Asphalt Shingles for Canadian Climate Adaptation





Florida State Bill 1648 Proposes Resilient Construction

Bill introduced by Senator Ben Albritton proposes ...

"the entire envelope of a building be impact resistant and require the use of high wind-resistant and noncombustible construction materials for the construction of" multi-story residential, new residential near the coast, new residential in high velocity hurricane zone, and buildings designated as hurricane shelters.

The bill died in the Community Affairs committee and was withdrawn from consideration 5/3/19.



New York City Implements Sustainable Roofing Regulations

New York City has passed several amendments ("Local Laws") to their Building and Administrative codes directed at reducing greenhouse gas emissions that become effective soon.

Local Laws 92, 93, and 94:

- (1) Establish reflectivity requirements for steep-slope (>2:12) roofs
 - (SR \geq 0.25 and TE \geq 0.75 OR SRI \geq 39)
 - Exception for "glass, metal, clay or concrete tile or plastic/rubber intended to simulate clay or concrete tile, wood, or slate."
- (2) Replacement of an entire roof requires either a solar photovoltaic electricity generating system or a green roof system.



Denver Green/Cool Roof Ordinance Implemented

New Rules and Regulations Governing the Green Building Ordinance were adopted by Denver's Board of Public Health & Environment and went into effect June 21, 2019.







Wind Resistance

RELEVANCE FOR ARMA

Various stakeholders are investigating building envelope wind resistance, raising questions about existing requirements and test methods, and proposing changes.

ACTIVE ADVOCACY AND MONITORING

ICC Model Codes (IRC) State Building Codes (Florida) Standards Development (ASTM)

INVOLVED ARMA RESOURCES

Codes Steering Group Technical Resource Group





ASTM D7158-19 Completes Update to ASCE 7-16

2019 Edition of D7158 will be incorporated in the Florida building and residential codes, and is on track to be added to the 2021 IBC and IRC.

Ballots to Clarify Height Limitations and Terrain Multiplier

Items to address building height limitations and proper use of terrain multipliers have passed and will result in next edition of the standard by January.

Potential Future Ballot Action

(1) Align D7158 wind speeds with building codes;
(2) add prescriptive selection table for exposure categories and building heights outside scope;
(3) change "terrain multiplier" to "topographic factor";
(4) update explanatory Appendix;
(5) fix expression of symbols.





2020 Florida Building Code Likely to Include ASCE 7-16

Proposals to include ASCE 7-16 in the Florida building and residential codes has proceeded through the Technical Advisory Committee and Commission meetings.

A disputed issue is structural evaluations and enhancements during roof replacement projects, possibly necessitating structural retrofits of the roof diaphragm and roof assembly connections.

Contractors agreed to cease opposition to secondary water barriers in exchange for restrictions on structural enhancements so enhancements are only required on structures with wood decks and in cases where 30% of the <u>structural deck</u> is being replaced rather than 50% of the roofing material.



Wind Resistance

IBHS Proposal Expands Enhanced Underlayment Fastening

Enhanced underlayment fastening, previously triggered at an ultimate design wind speed of 140 mph, will now be triggered where wind design is required for the International Residential Code, which expands the geographic region to the 130 mph ultimate design wind speed, except for the northeastern states. **On consent agenda for approval.**

IBHS Proposal Rearranges IRC Wind Requirements

IBHS proposed rearrangement of the wind resistant provisions for all roof covers was **recommended for disapproval**.



Aggregate Surfacing Restrictions

RELEVANCE FOR ARMA

In the International Building Code (IBC), aggregate used as surfacing for roof covers and aggregate, gravel or stone used as ballast is <u>prohibited</u> on buildings in hurricane-prone regions and is height <u>limited</u> in areas outside the hurricane-prone regions.

ACTIVE ADVOCACY

ICC Model Codes (IBC)

INVOLVED ARMA RESOURCES

Codes Steering Group





Aggregate Surfacing Restrictions

Effort to Address Issue in Model Code Succeeds

Separated loose-laid ballast from embedded aggregate.

SPRI proposal for loose-laid ballast on single-ply roofs designed per ANSI/SPRI RP-4 received no comments and is expected to be an option in the 2021 IBC.

ARMA/ERA proposal prescribing parapet height based on exposure category, building height, and aggregate size received three public comments from NCSEA representative Ed Huston.

Prior to hearing, reached agreement for all comments to be withdrawn, placing the ARMA proposal on the consent agenda for approval and will be an option in the 2021 IBC.

Withdrawal contingent on formation a task group among ARMA, IBHS, SPRI, and ERA to work with NCSEA on language for the next code cycle.



Secondary Water Penetration Protection

RELEVANCE FOR ARMA:

Insurance interests advocate underlayment use to protect buildings from water infiltration in the event the primary roof cover is compromised.

ACTIVE ADVOCACY:

ICC Model Codes (IRC) State Building Codes (Florida)

INVOLVED ARMA RESOURCES

Codes Steering Group



Secondary Water Penetration Protection

ARMA IRC Proposal Modified by IBHS to Clarify Sealed Deck

An ARMA proposal to reduce redundancy was modified by IBHS to clarify sealed roof deck options. **Recommended for approval as modified.**

IBHS Proposes Sealed Roof Decks for Florida

IBHS introduced proposals in the current Florida code development cycle to rearrange the underlayment sections of both the Building and Residential codes and require sealed roof decks.

This effort mirrors changes previously addressed in the International Building Code and International Residential Code.

These remain alive and may experience additional modification during the 2020 rulemaking hearings.



Roof Replacement and Roof Recover

RELEVANCE FOR ARMA

Different regulatory provisions are permissible when the entire roof system is removed to the deck versus when the existing roof system remains in place. Clear understanding of these terms is critical to ensure appropriate provisions are followed.

ACTIVE ADVOCACY AND MONITORING

ICC Model Codes (IBC and IECC)

INVOLVED ARMA RESOURCES

Codes Steering Group



Roof Replacement and Roof Recover

Several ICC Code Proposals Focus on Reroofing

The Polyisocyanurate Manufacturers Association (PIMA) clarifies that "roof replacement" includes removal of all roof assembly materials, not just roof covers, down to the deck. The only public comment has been withdrawn, putting this on the consent agenda for inclusion in the 2021 IBC.

The Chicago Roofing Contractors Association (CRCA) proposes the new term "Roof Covering Replacement" to the International Building Code to address situations in which only the roof cover is removed to expose the insulation or sheathing prior to installation of a new roof cover. **Recommended disapproval.**

CRCA proposes addition of new term "Roof Membrane Peel and Replacement" to the International Energy Conservation Code for situations in which the roof covering is removed to expose the insulation or sheathing and a new roof cover is installed. **Recommended for disapproval.**



Questions or comments?





Acceptance of Codes Steering Group report as presented.