Current Building Energy Codes: Using the Process to Advance Energy Efficient Systems

March 2, 2012
NREL / Build America Stakeholders Meeting
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Purpose

- The purpose of this presentation is to provide information on ICC model codes that impact the design and construction of buildings, and tactics to allow Building America advances to be incorporated into the model code and/or recognized by building code officials
- The expected outcome is an ability to expand the reach of Build America innovations, by using available resources to mainstream new energy efficiency systems into building practices nationwide

IgCC Overview

Scope

- Will apply to traditional commercial and high-performance buildings.
- Consistent and coordinated with the ICC family of Codes & Standards.
- Applicable to the construction of buildings, structures, and systems, including alterations and additions.
- Does not apply to one/two family res, or multi-family less than 3 stories. Residential references ICC-700, Silver.
- Will provide a new regulatory framework with customization features to allow jurisdictional options beyond IGCC baseline.
- Designed with leading recognized rating systems and standards in mind.

Concepts

- Will use the “model” code approach that provides communities the ability to modify.
- Minimum & advanced levels of performance (green & high-performance buildings).
- Work as an overlay to the IBC and other ICC Codes.
- Written in mandatory language that provides a new regulatory framework.

Concepts

- Provides both performance & prescriptive options.
- Code should account for local conditions.
- Reflects the 2030 Commitment.
- Designed with local, state & federal law in mind.

Concepts

- ANSI/ASHRAE/USGBC/IES Standard 189.1 also is offered as a compliance option.
  - The Standard is included with the IGCC.
  - Adoption of the Standard occurs via the local jurisdiction adoption process.
- Providing the IGCC, including the189.1 option, allows the widest set of options to a jurisdiction, all under the umbrella of the IGCC.

Chapter Topics

- Energy use conservation/efficiency (*IECC baseline*).
- Water use conservation/efficiency.
- Indoor environmental quality.
- Materials and resource conservation.
- Jurisdictional Requirements -- *customization options beyond base; includes ANSI/ASHRAE/USGBC/IES Standard 189.1.*
- Project Electives – designer choice.
- Site development & land use.
- Existing buildings & sites.
- Commissioning , Operation & Maintenance.
- Administration, Definitions, Referenced Standards.

Can the Codes Help Advance EE Technology and Adoption?

- In a word: YES
- Consider offering code proposals in parallel with pilot and test-bed efforts
  - Code process takes time to reach adoption stage
  - Process allows for modifications along the way
  - Take advantage of work with local officials to boost code change support at hearings
  - Once in codes, training, support publications and technical support grow around the code provisions

Build America as a test bed:

HAVE YOU DEVELOPED NEW SYSTEMS/METHODS?

- Because there is a lag time in getting code changes approved, start thinking about code changes at the same time as building prototypes.
- There will be time to modify proposals later, if field results show the need.

HAVE YOU HAD TO OBTAIN CODE MODIFICATIONS, OR APPROVAL OF ALTERNATIVE MATERIALS OR DESIGNS?

- Can you identify code provisions that conflict with the new system/design?
- Can you ID the specific conflict?
- Can you draft a change to the code wording to retain the code purpose, but allow the new method?
- IF SO, then…

Decision Matrix for Code Proposals:

EXISTING LANGUAGE:

- Can permit new approach, with wording change, or explanation>>>
- Does not allow for approach; is a completely new system>>>>>>>>>>
- Does not anticipate or address the system

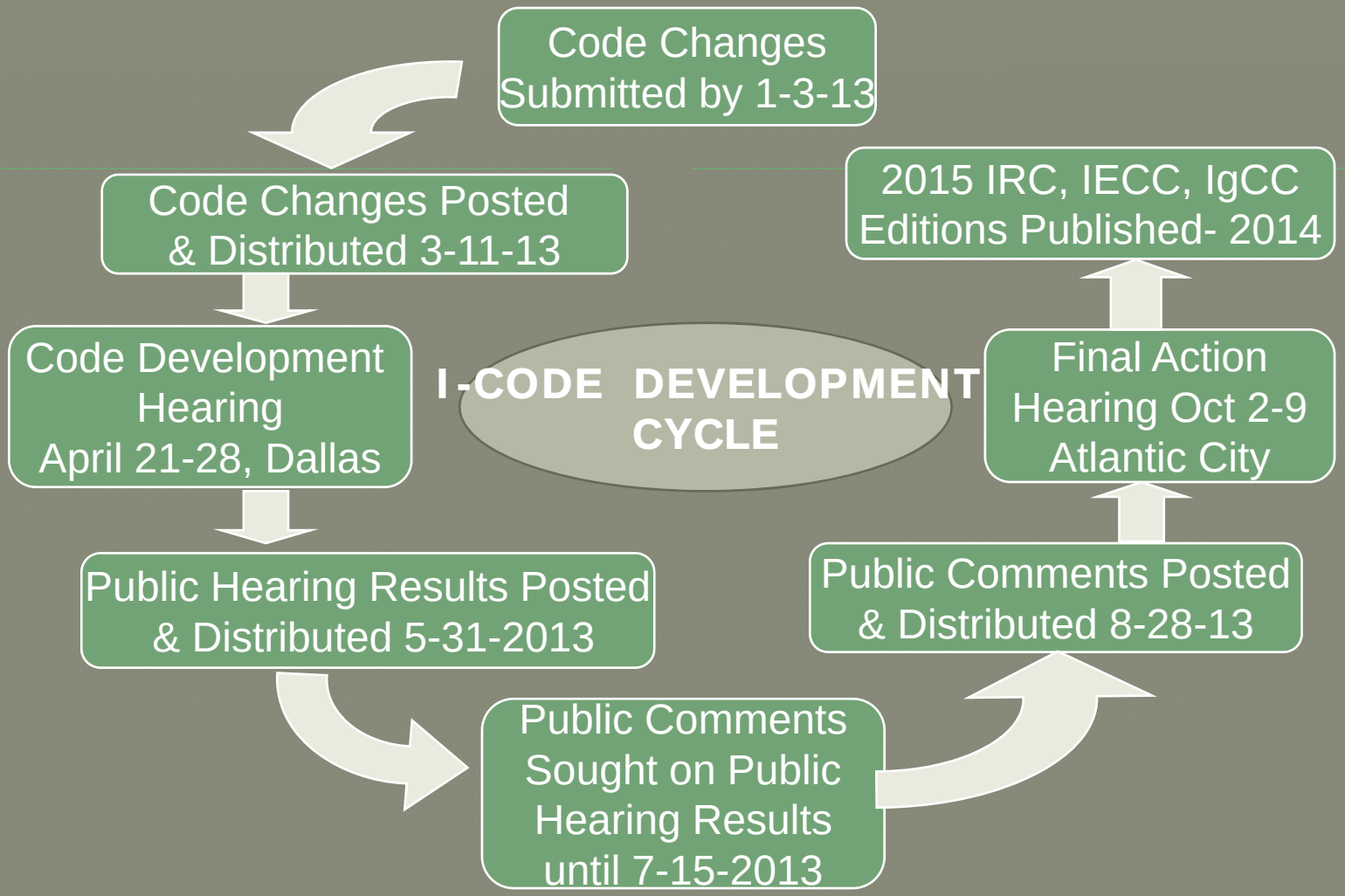
CODE CHANGE:

- Propose change to existing language.
- Consider proposing a new section or appendix section, describing the system
- Consider proposing new section, with appropriate reference standards, etc.

Timeline for Code Changes

- Current code is 2012 edition.
- Deadline for 2015 proposals for IRC, IECC, IGCC all January 3, 2013
- Hearing cycle is one year, all during 2013
- Important to line up support from local code officials familiar with the new approach, for any code change proposals. So, keep track of officials you work with.

Group B I-Code Cycle 2013



Code Proposal Strategy

- Look for simplest change, least disruption to current requirements
- Propose in Appendix if complex or controversial
- Analyze who will be supportive, who will oppose
- Generate practical, real-world cost data, and pull together believable data on results
- Always look at potential impact on safety/fire issues

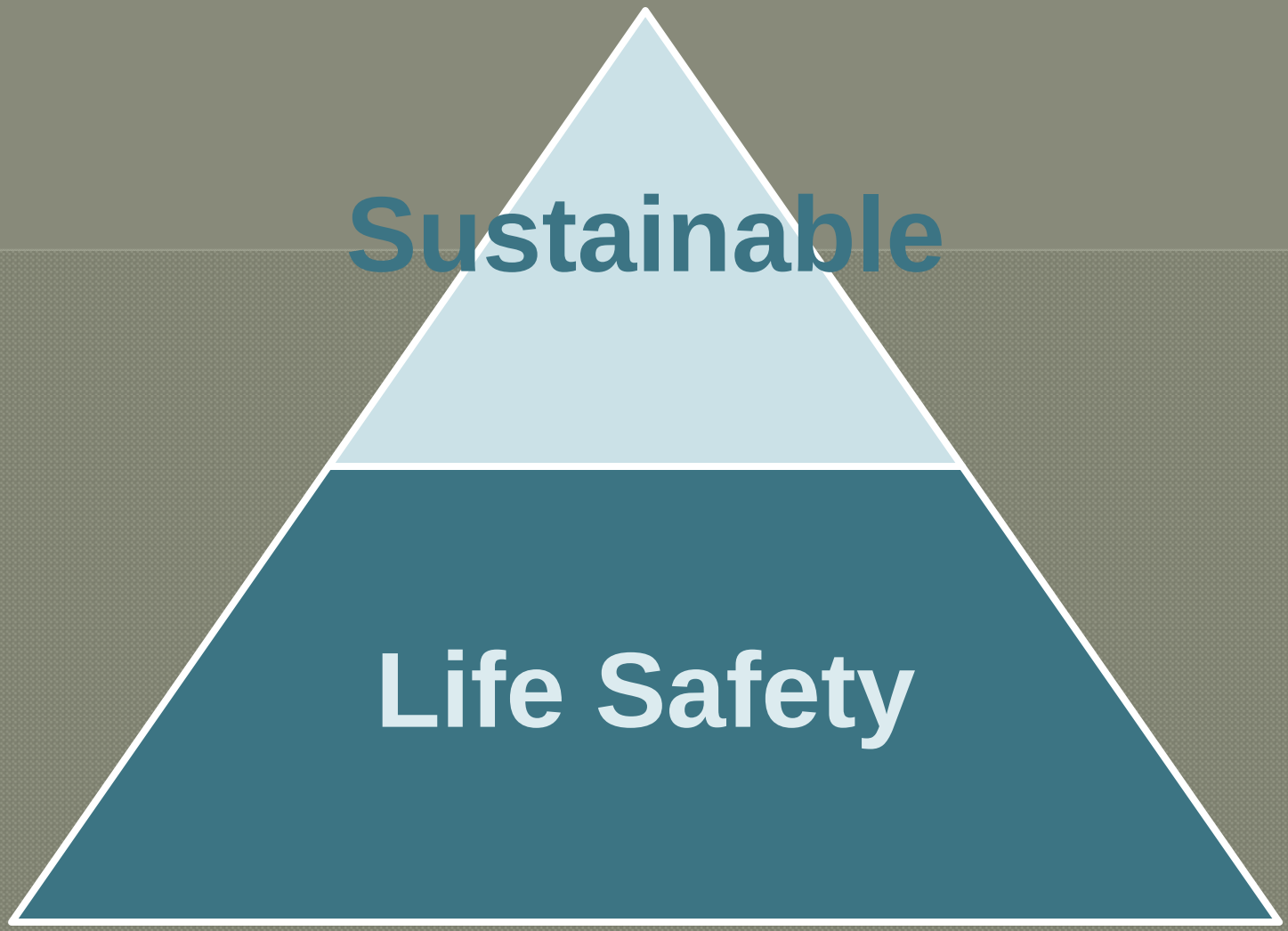
Getting Proposals Approved

- Facts and figures help, but people persuade.
- Best people are those who code officials respect: other code officials, others with real field experience. Get officials you work with to testify, or send comments.
- DOE has a group in the EERE office (BECP) who have lots of experience in advocating for code changes, and they are there to help- use them!

Another Approach: ICC-ES

The ICC Evaluation Service (ICC-ES) www.icc-es.org is a global leader in building product evaluation services, evaluating building products, components, methods and materials for compliance with North American codes, standards, and rating systems. A nonprofit subsidiary of ICC with over 80 years of experience

Sustainability Builds Upon Life Safety



Sustainability Builds Upon Life Safety

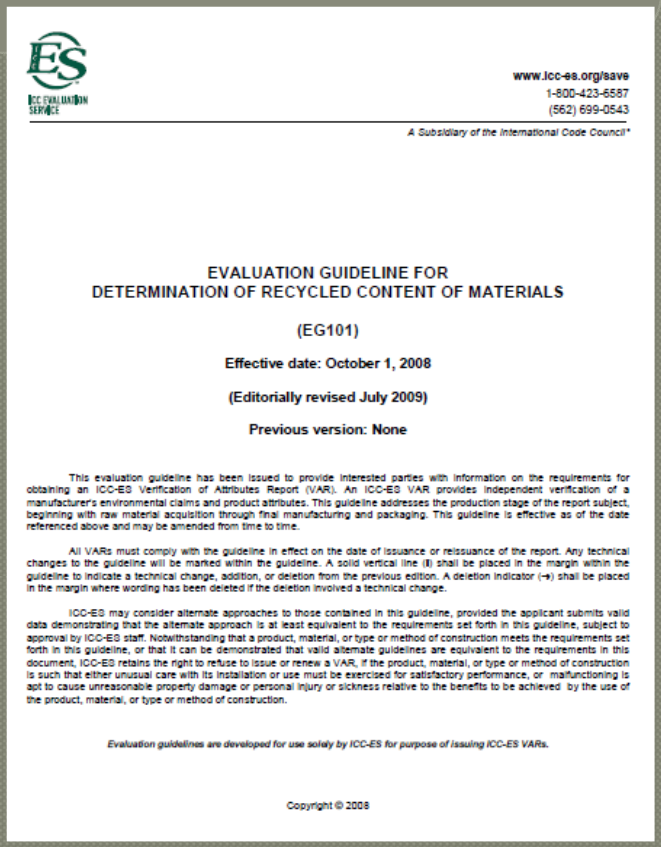
Challenges in Verifying Product Claims

- Developing new Environmental Criteria
- Educating those responsible for conformance verification
- Connecting the manufacturer's sustainability information to the codes (via the web)

ICC-ES Develops Criteria to Evaluate to Green Building Codes and Rating Systems

We study the “rules”

And “translate” into Environmental Criteria



ES
ICC EVALUATION SERVICE

www.icc-es.org/save
1-800-423-6587
(562) 699-0543

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EVALUATION GUIDELINE FOR DETERMINATION OF RECYCLED CONTENT OF MATERIALS

(EG101)

Effective date: October 1, 2008

(Editorially revised July 2009)

Previous version: None

This evaluation guideline has been issued to provide interested parties with information on the requirements for obtaining an ICC-ES Verification of Attributes Report (VAR). An ICC-ES VAR provides independent verification of a manufacturer's environmental claims and product attributes. This guideline addresses the production stage of the report subject, beginning with raw material acquisition through final manufacturing and packaging. This guideline is effective as of the date referenced above and may be amended from time to time.

All VARs must comply with the guideline in effect on the date of issuance or reissuance of the report. Any technical changes to the guideline will be marked within the guideline. A solid vertical line (**|**) shall be placed in the margin within the guideline to indicate a technical change, addition, or deletion from the previous edition. A deletion indicator (→) shall be placed in the margin where wording has been deleted if the deletion involved a technical change.

ICC-ES may consider alternate approaches to those contained in this guideline, provided the applicant submits valid data demonstrating that the alternate approach is at least equivalent to the requirements set forth in this guideline, subject to approval by ICC-ES staff. Notwithstanding that a product, material, or type or method of construction meets the requirements set forth in this guideline, or that it can be demonstrated that valid alternate guidelines are equivalent to the requirements in this document, ICC-ES retains the right to refuse to issue or renew a VAR, if the product, material, or type or method of construction is such that either unusual care with its installation or use must be exercised for satisfactory performance, or malfunctioning is apt to cause unreasonable property damage or personal injury or sickness relative to the benefits to be achieved by the use of the product, material, or type or method of construction.

Evaluation guidelines are developed for use solely by ICC-ES for purpose of issuing ICC-ES VARs.

Rating How Criteria are Used in the Verification Process

Criteria developed in accordance with the provisions of green building codes, standards, rating systems or ICC-ES Environmental Criteria

↓

Product testing (where required)

↓

Review of manufacturer's quality control documentation

↓

Inspection of manufacturing process

↓

Successful evaluation and verification results in report

Developing Criteria

- ICC-ES Environmental Program Can Develop Criteria for Energy Efficient Assemblies
  - Example: New testing methods that demonstrate compliance to 2012 IECC

Or

- Through Life Cycle Assessment (LCA) and Environmental Product Declarations (EPD)
  - Above and beyond code
  - Declare environmental impact in manufacturing and use phase of assemblies
  - Comprehensive assessment used for comparison to other assemblies

Educating Those Responsible for Conformance Verification

Example: California CALGreen:

Enforcement of the CALGreen Code

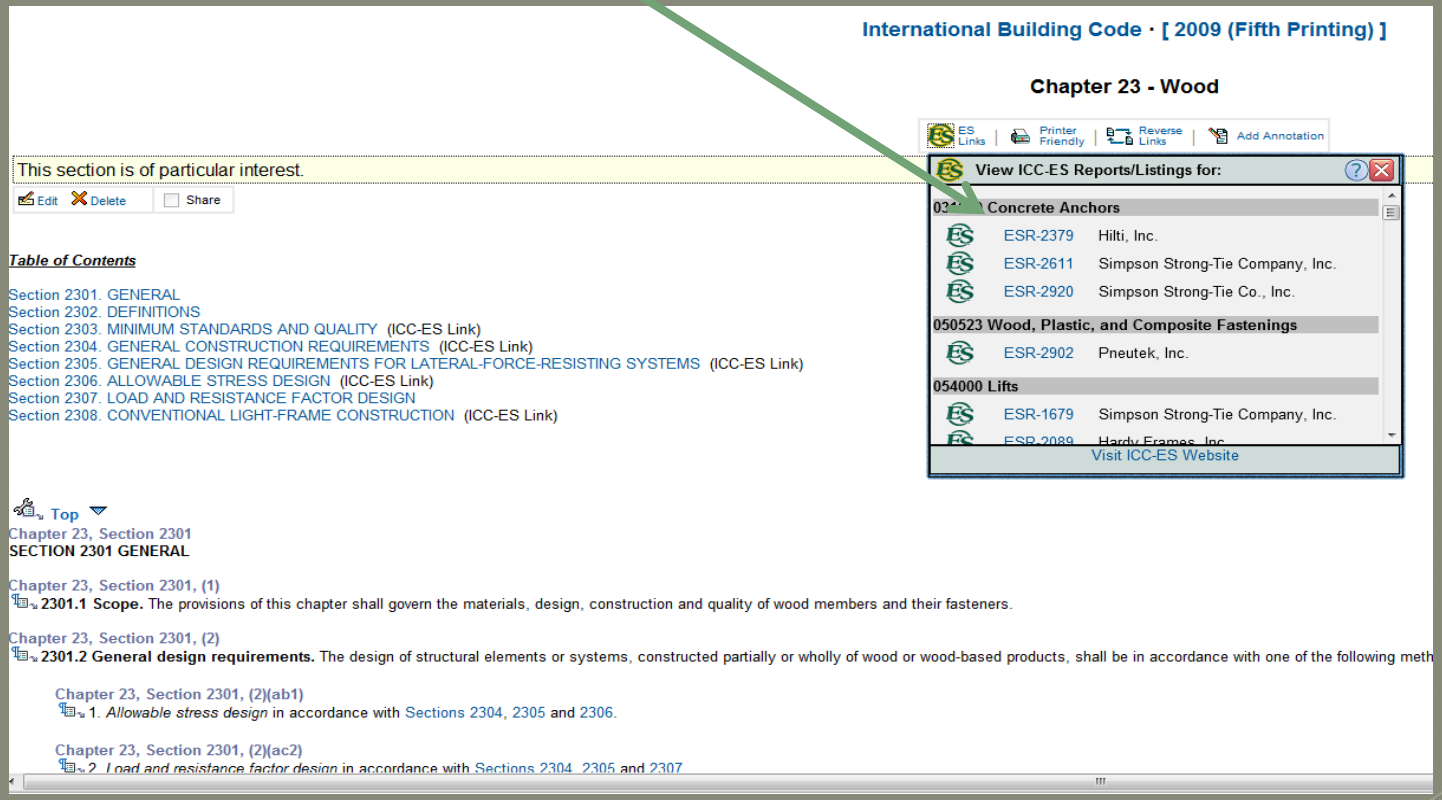
The responsibility for enforcing the CALGreen Code is the same as for the balance of Title 24. New buildings subject to plan review, permits and inspections by the local building department will be subject to the CALGreen Code requirements and enforcement on and after January 1, 2011. State owned buildings will continue to be subject to enforcement by the state.

Excerpt from CA Bldg. Stds. Commission Training Presentation

Historically, local building departments have required independent evaluation and documentation of claims.

Connecting Products to Codes - www.ecodes.biz

- Evaluation Reports Embedded into Electronic Copy of Codes



More Information

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