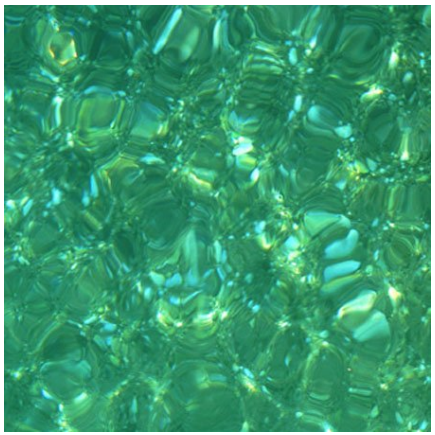


ICC Green Code

Public Version 1.0

IgCC

SAFE & SUSTAINABLE BY THE BOOK

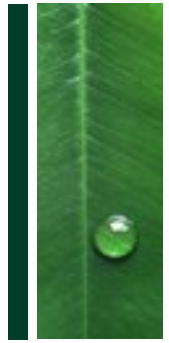
INTERNATIONAL CODE COUNCIL · AIA

INTERNATIONAL CODE COUNCIL®

Review

Setting the Stage

- Spring 2009: ICC Board approval
- Completed negotiations with "Cooperating Sponsors" (AIA & ASTM)
- Organized cross functional & joint development team
- June 16, 2009 Board appointed the Sustainable Building Technology Committee to draft the IgCC
- June 29, 2009 Joint public announcement with AIA and ASTM



Scope

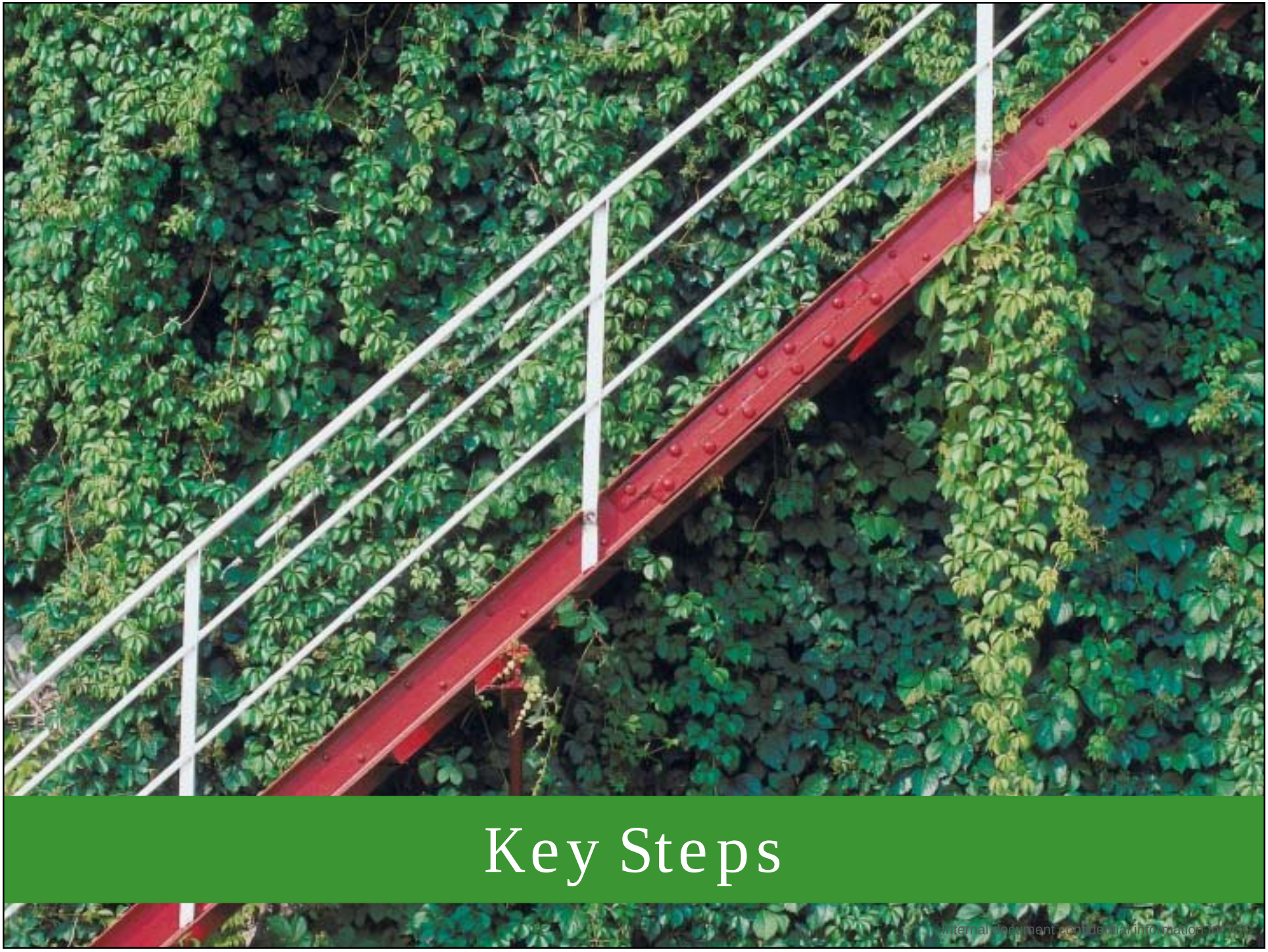
Commercial & High Performance Buildings

Integrated with I-Codes

Option to Customize to Jurisdiction Goals

Tied to Building Performance

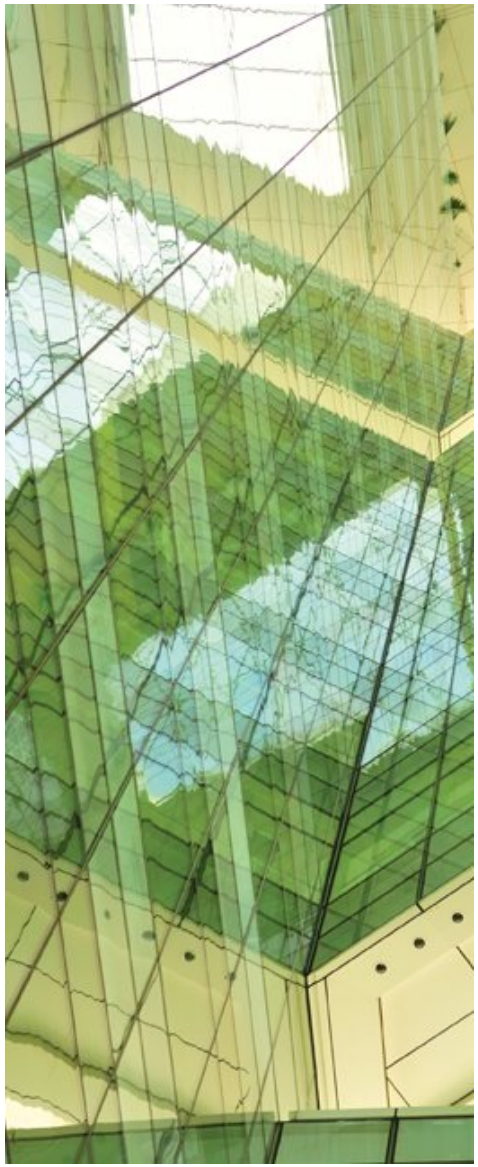
- Will apply to traditional commercial and high performance buildings
- Consistent and coordinated with the ICC family of Codes & Standards
- Applicable to the construction of buildings, structures, and systems, including alterations and additions
- Residential portions of buildings, except institutional, shall be covered by ICC-700 (NGBS) – with options available for Highrise
- 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
- Will provide criteria to measure compliance & drive green building into everyday practice



Key Steps

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 ICC Family of Codes
- Written in mandatory language that provides a new regulatory framework



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Concepts

- Will provide performance and prescriptive solutions
- Code can account for local conditions
- Reflect the goals of the 2030 Challenge
- Designed with local, state & federal law in mind

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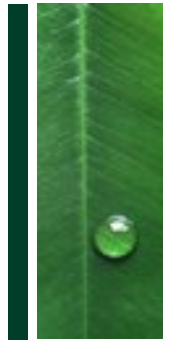
Stages of development



- SBTC held five public meetings from July 2009 through January 2010 in Chicago, Denver, Philadelphia, Ft. Myers and Austin
  - Drafts published online after each SBTC meeting, along with minutes
- Public Version 1.0 issued 15 March 2010, available as resource tool for short deadline jurisdictions seeking 2010 legislation
  - Free download version on ICC web site; limited print versions free for jurisdictions and low cost to other interested parties
- Public Comment period closed 14 May 2010. Approximately 1600 public comments received
- IgCC Public Comment Hearing Committee appointed 15 May.
- Public Hearings to review comments in August 14-22, 2010 – Chicago O'Hare, IL
- Public Version 2.0 issued November 2010 and submitted for code development and final action hearings in 2011

Chapter Topics

- Administration, Definitions, Referenced Standards
- Requirements determined by the jurisdiction –and *project electives* selected by the owner or designer
- Site development & land use
- Materials resource efficiency
- Energy conservation/efficiency (2006 *IECC + 30% baseline*)
- Water conservation/efficiency
- Indoor environmental quality
- Building operation and maintenance and owner education
- Existing buildings & sites

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Administration and Definitions

- Chapter 1 Administration parallels the format of administration chapters of the ICC family of codes.
- IGCC Chapter 1 is an abbreviated chapter. The permitting, plan review, inspection and C of O process relies on the processes in the other ICC codes.
- Scope of chapter is all buildings except:
- For other than high-rise buildings, Group R (Residential) where IgCC will defer to ICC 700 National Green Building Standard

Definitions

- Chapter 2 Definitions is just what one would expect, a chapter devoted to definitions.
- Goal is to focus on definitions applicable to the IGCC, and not to reproduce definitions which are currently in the ICC family of codes.
- Examples are: Commissioning, conservation area, daylight zone, deconstruction, greenhouse gas, life-cycle assessment, post- and pre-consumer recycled content, renewable energy.

Jurisdictional Requirements and Project Electives

- Chapter 3 is unique in the ICC family of codes.
- Allows the adopting jurisdiction to determine the appropriate level of stringency applicable in the jurisdiction.
- Three ‘requirement’ categories:
- 1.) Minimum requirements.
- 2.) Additional minimum requirements selected by the jurisdiction – Table 302.
- 3.) Project electives – Table 303.

Jurisdictional Requirements and Project Electives

- This Chapter allows the local jurisdiction to determine the minimum compliance requirements from a menu of items.
- Similar to the International Residential Code (Table 301.2) concerning climatic and geographic design criteria where the jurisdiction completes the criteria table to reflect conditions in their region.
- SAMPLE:
- Development in a floodplain comply with IBC 1612 and provide minimum 1 foot freeboard. (Sec. 402.2.1.1)
- Prohibit all development in a floodplain. (Sec. 402.2.1.2)

Jurisdictional Requirements and Project Electives

- Jurisdiction mandates only the number of project electives to be chosen.
- The design professional and/or building owner selects from the list of project electives those that will be included in the design and construction.
- Those project electives selected are mandatory for that project.
- Example: Minimum of 50% of hardscape features must comply with heat island mitigations requirements. (Sec. 404.2)
- Project elective option – Provide heat island mitigation measures on 75% (or 100%) of hardscape features. (Sec. 407.4)

Site Development and Land Use

- Chapter 4
- Recognizes that more stringent land use, zoning and site development regulations may already exist.
- Preservation of natural resources. (Sec. 402.2)
- Site Planning and Development standards. (Sec 402.3)
- Transportation impact mitigation. (Sec. 403)
- Heat island mitigation. (Sec. 404)
- Light pollution mitigation. (Sec. 405)

Site Development and Land Use

- Preservation of Natural Resources:
- Protection by area: e.g. floodplains, conservation areas, park lands, agricultural lands, greenfields. (Sec. 402.2)
- Site design and development requirements: Water management, Storm water management, Landscape irrigation systems, Vegetation, Topsoil protection, Soil re-use and restoration. (Sec 402.3)
- Pre-design site inventory and assessment (Sec. 402.3.1)
- Waste management plan (Sec. 402.3.6)

Site Development and Land Use

Transportation –

Bicycles: Provisions for long- and short-term bike parking, bike paths, showers and changing rooms. (Sections 403.1, 403.2 and 403.3)

Vehicles, Provisions to provide preferred parking for: High Occupancy Vehicles (carpools) as well as Low emission, hybrid, and electric vehicles. (Sec. 403.4)

Heat Island –

Surface Hardscapes: Minimum 50% of hardscape surfaces (not building roofs) mitigated by shading or selection of appropriate materials. (Sec. 404.2)

Roofs, Minimum 75% of roof surfaces mitigated by reflective roofing materials, vegetated roofs (green roof) or placement of PV, hot air or hot water collectors. (Sec. 404.3)

Site Development and Land Use

Light Pollution:

Minimize site lighting figures and intensity to limit light spilling off site. (Sec. 405)

Project Electives (Sec. 407):

15 site development electives available in each of the categories of the chapter:

- Preservation of Natural Resources
- Transportation Mitigation
- Heat Island Mitigation
- Light Pollution.

Materials Resource Conservation and Efficiency

- Chapter 5
- Materials and their properties.
  - 55% of materials selected meet standards for used materials, recycled content, recyclability, being bio-based or indigenous. (Sec. 503.2)
  - 75% of materials harvested, processed and manufactured in compliance with environmental stewardship standards. (Sec. 503.3)
- Waste management plan - Both construction and post construction. (Sec. 502)

Materials Resource Conservation and Efficiency

- Service Life: New section to green arena concerning service life of a building or structure. Building service life plan to be included in construction documents. Not less than 60 years. (Sec. 505)
- Storage and handling or materials: Although the section is written generically, intent is to address (or emphasize) the proper storage and handling or materials. (Sec. 506)
- Project Electives (Sec. 507):
  - 9 materials related electives available.
    - Some relate to material section and waste management
    - Additional topics including overall building volume and moisture control.

Energy Conservation, Efficiency and Atmospheric Quality

- Chapter 6
- Energy performance (Envelope, HVAC, lighting, service water heating, etc.)
- Atmospheric impacts.
- Consumption monitoring.
- Renewable energy.
- Commissioning.
- Maintenance.

Energy Conservation, Efficiency and Atmospheric Quality

- Energy in terms of Total Annual Net Energy Use (e.g. TANEU). "TANEU" is based on scale of 1-100, IECC-2006 edition = 100, IECC-2009 edition = 85, IECC-2012 edition is assumed to = 70. (Sec. 602)

- Represents building envelope, HVAC, lighting (Both artificial and natural day light), service water heating.

- Design of energy provisions is based on performance approach. Performance approach requires use of simulation or modeling tools.

Energy Conservation, Efficiency and Atmospheric Quality

- Prescriptive approach is included.

- Performance designs will require peak power assessment and reduction plan.

- Buildings to be provided with capabilities to determine energy use.

Project Electives (Sec. 613):

All for selecting lower and lower TANEU.

Water Resource Conservation and Efficiency

- Chapter 7
- Plumbing systems and conservation measures.
- Landscaping and irrigation – addressed in Chapter 4.
- Specific water savings measures.
- Use of grey water, rain collection and storage.

Water Resource Conservation and Efficiency

- Plumbing fixture water conservation: 1992 EPACT (EPACT was Primary source). Covers fittings and fixtures regarding rate of flow (Consumption).
- Municipal reclaimed water may be required if within set distance of service.
- HVAC systems and water: Potable water shall not be used to reduce the temperature of waste water such as steam condensate and boiler blow-down water. Condensate drainage recovery shall be collected and used for non-potable systems (water fountain, water features). Signage will be required.

Indoor Environmental Quality

- Chapter 8
- IEQ = Indoor Environmental Quality
- Construction phase emissions and pollution control, HVAC flush out
- Material emissions
- IAQ measures
- Sound transmission
- Views to exterior and daylighting

Indoor Environmental Quality

- Construction phase emissions and pollution control: Air-handling systems access, for cleaning, repairing and changing of filters. Durability and clean ability of air-handling surfaces. (Sec. 802 and 803)

- Material emissions: Similar to LEED, GBI and ASHRAE 189.1, includes listing of materials and products and related requirements for emission limits. Construction documents to provide specifications, verification to take place during construction. (Sec. 806)

- IAQ measures; Fireplaces and appliances, tobacco smoke, Radon mitigation, Isolation of pollutant sources, such as copy rooms, printing rooms. (Sec. 803.3, 803.4, 804)

- Sound transmission: Covers exterior borne and interior borne noise. (Sec. 807)

Indoor Environmental Quality

Daylighting:

Requires roof and wall fenestration in specified occupancies to provide minimum natural light (Sec. 808)

Project Electives – Sec. 809:

5 project electives available related to VOC emissions and views to the exterior.

Commisioning, Operation, and Maintenance

- Chapter 9
- Pre-Occupancy inspections and testing.
- Owner or tenant post occupancy operations.
- Commissioning.
- Building maintenance.
- Education of building users.

Commissioning, Operation, and Maintenance

- Pre-occupancy inspection and testing: Statement of special inspections. (Sec. 903.1.1)
- Operations, Maintenance, and Owner Education: Owner to certify receipt of record construction documents, maintenance sheets, and operation and maintenance documents. (Sec. 904)
- Education manual: Requires on assemblage of manual and not education session. Building systems and features, Local information, and system descriptions and performance metrics for equipment and systems.

Existing Buildings – Chapter 10

- Additions
- Alterations
- Change of occupancy
- Historic structures
- Relocated structures
- This chapter is not written in concert with the IBC Chapter 34 or the International Existing Building Code. Designed to enhance those documents, and not necessarily repeat that information. Focus is on IgCC subjects.

Existing Site Development – Chapter 11

- The provisions of this chapter shall control the alteration, repair, maintenance and operation of existing building sites and the alteration to building site improvements when additions are made to, or changes of occupancy occur within, the existing buildings on the site.
- Additions.
- Alterations to existing building sites.
- Change of Occupancy.
- Historic Building Sites.
- Enhancement to Chapter 4 Site Development and Land Use.

Appendix A – Optional Ordinance

- Sample ordinance for adoption of IgCC
- Introduction of ordinance with modifications to administrative procedures.
- Governing Body.
- Incentives.
- Green building fund.
- Green building advisory council.
- Fees, rulemaking, exemptions, etc.

Appendix B – Greenhouse Gas Reductions in Existing Buildings

- Phases, which include minimum building size, application of enhancements over pre-established set time period, and application.
- Greenhouse Gas Reduction Methods.
- Focus on energy efficiency, renewable energy, and purchase of energy from renewable sources.
- Referenced Standard includes Greenhouse Gas Protocol developed by World Resources Institute.

Appendix C – Sustainability Measures

- Efficiency and Sustainability Measures.
- Application to buildings greater than 5,000 sq ft.
- Reduction in energy and IEQ is primary focus.
- Integrated approach to assessment, operation and management.
- Re-commissioning required to validate.
- Referenced Standards include ASHRAE 55, 62.1, 90.1, EPA Energy Star, Clean Air Act, and Montreal Protocol.

Appendix D – Enforcement Procedures

- Modeled on enforcement procedures in International Property Maintenance Code.
- Applicability.
- Duties and powers of the code official.
- Violations.
- Notices and orders.
- Right to appeal.
- Emergency measures.

Heat Island Mitigation

Two Elements:

Site hardscape

Roof coverings

404.2 Site Hardscape

404.2.1 Site hardscape materials

404.2.2 Shading structures

404.2.3 Shade by trees

404.2.4 Open grid pavers/graded aggregate

Required in Climate zones 1 through 6

50% of site hardscape must comply

Heat Island Mitigation

404.3 Roof Coverings

404.3.1 Solar reflectance /Thermal emittance

404.3.1.1 Tested per CRRC-1 Standard

Minimum 3-year aged

404.3.1.2 Solar reflectance index

Calculated per ASTM E1980

404.3.2 Vegetative roofs

Required in Climate zones 1 through 3;

Project elective in other zones

75% of roof surfaces must comply

Solar collectors and photovoltaics

Heat Island Mitigation

Minimum Values:

	Roof slope less than 2:12	Roof slope 2:12 or greater
Min. Aged Solar Reflectance	.055	0.30
Min. Aged Thermal Emittance	.075	0.75
Min. Aged SRI	60	25

CRRC-1 as referenced standard

ICC Referenced standard policy

- In mandatory, enforceable language
- Developed in an approved consensus process

Public Comments Submittals:

- Proposals to remove CRRC-1
- Proposals to substitute other standards

More information and updates check the ICC website

www.iccsafe.org/igcc