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2014 PROPOSED CHANGES TO THE INTERNATIONAL GREEN CONSTRUCTION CODE - GENERAL

GG54-14: See correction to the proponent line:

GG54-14
202

Proponent: Doug Johnson, representing California Invasive Plant Council (dwjohnson@cal-ipc.org); Read Porter, Environmental Law Institute (porter@eli.org), Wendy Brown, Washington Invasive Species Council, Brian Arnold, Southeast Exotic Pest Plant Council, Katherine Howe, Midwest Invasive Plant Network, Nancy Lowenstein, Alabama Invasive Plant Council

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GG55-14: See correction to the proponent line. See highlighted correction in definition:

GG55-14
202

Proponent: Doug Johnson, representing California Invasive Plant Council (dwjohnson@cal-ipc.org); Read Porter, Environmental Law Institute (porter@eli.org), Wendy Brown, Washington Invasive Species Council, Brian Arnold, Southeast Exotic Pest Plant Council, Katherine Howe, Midwest Invasive Plant Network, Nancy Lowenstein, Alabama Invasive Plant Council

Revise as follows:

SECTION 202
DEFINITIONS

INVASIVE PLANT SPECIES. Species that are not native to the ecosystem under consideration and that cause, or are likely to cause, economic or environmental harm or harm to human, animal or plant health, defined by using the best scientific knowledge of that region. Consideration for inclusion as an invasive species shall include, but shall not be limited to, those non-native species identified on:

1. *Approved* city, county or regional lists.
2. State noxious weeds laws,
3. Federal noxious weeds laws.

Reason: The definition for invasive plant species specifically refers to non-native species, but the reference to state and federal noxious weed laws has the potential to cause confusion since noxious weed laws sometimes include native plant species (which can be agricultural pests in cultivated settings). The term “non-native” is added to clarify that native plants included in noxious weed laws are not considered invasive plants for the purposes of this definition.

Cost Impact: Will not increase the cost of construction.

GG55-14 : 202-INVASIVE PLANT SPECIES #2-JOHNSON1058

GG56-14: See correction to the proponent line:

GG56-14
202

Proponent: Doug Johnson, representing California Invasive Plant Council (dwjohnson@cal-ipc.org); Read Porter, Environmental Law Institute (porter@eli.org), Wendy Brown, Washington Invasive Species Council, Brian Arnold, Southeast Exotic Pest Plant Council, Katherine Howe, Midwest Invasive Plant Network, Nancy Lowenstein, Alabama Invasive Plant Council

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GG57-14: See correction to the proponent line:

GG57-14
202, Chapter 12

Proponent: Doug Johnson, representing California Invasive Plant Council (dwjohnson@cal-ipc.org); Read Porter, Environmental Law Institute (porter@eli.org), Wendy Brown, Washington Invasive Species Council, Brian Arnold, Southeast Exotic Pest Plant Council, Katherine Howe, Midwest Invasive Plant Network, Nancy Lowenstein, Alabama Invasive Plant Council

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GG564-14: See correction to definition:

GG64-14
202

Proponent: Susan Gitlin, representing US Environmental Protection Agency (gitlin.susan@epa.gov)

Revise as follows:

SECTION 202
DEFINITIONS

SITE DISTURBANCE. Site preparation or construction which negatively affects the ~~native~~ soils or~~,~~ ~~native~~ vegetation~~, or native animal life~~ of the site.

(Portions of code change not shown remain unchanged)

GG93-14: See highlighted changes made to Section 303.1:

GG93-14
303.1, 303.2 (New), Table 303.2 (New)

Proponent: **Proponent:** Jonathan Humble, AIA, NCARB, LEED AP-BD&C American Iron and Steel Institute, representing the American Iron and Steel Institute (jhumble@steel.org)

Revise as follows:

303.1 Whole building life cycle assessment. Where a whole building life cycle assessment is performed in accordance with Section 303.1, compliance with Section 505 shall not be required. The requirements for the execution of a whole building life cycle assessment shall be performed in accordance with the following:

1. The assessment shall demonstrate that the building project achieves not less than a 20-percent improvement in environmental performance for global warming potential and at least two of the following impact measures, as compared to a reference design as specified in Section 303.2. ~~of similar usable floor area, function and configuration that meets the minimum energy requirements of this code and the structural requirements of the International Building Code. For relocatable buildings, the reference design shall be comprised of the number of reference buildings equal to the estimated number of uses of the relocatable building.~~
   1.1 Primary energy use.
   1.2 Acidification potential.
   1.3 Eutrophication potential.
   1.4 Ozone depletion potential.
   1.5 Smog potential.
2. The reference and project buildings shall utilize the same life cycle assessment tool.
3. The life cycle assessment tool shall be *approved* by the *code official*.
4. Building operational energy shall be included. For relocatable buildings, an average building operational energy shall be estimated to reflect potential changes in location, siting, and configuration by adding or subtracting modules, or function.
5. Building process loads shall be permitted to be included.
6. Maintenance and replacement schedules and actions for components shall be included in the assessment. For relocatable buildings, average transportation energy, material and waste generation associated with reuse of relocatable buildings shall be included in the assessment.
7. The full life cycle, from resource extraction to demolition and disposal, including but not limited to, onsite construction, maintenance and replacement, relocation and reconfiguration, and material and product embodied acquisition, process and transportation energy, shall be assessed.

   Exception: Electrical and mechanical equipment and controls, plumbing products, fire detection and alarm systems, elevators and conveying systems shall not be included in the assessment.

8. The complete building envelope, structural elements, inclusive of footings and foundations, and interior walls, floors and ceilings, including interior and exterior finishes, shall be assessed to the extent that data are available for the materials being analyzed in the selected life cycle assessment tool.
9. The life cycle assessment shall conform to the requirements of ISO 14044.

(Portions of code change not shown remain unchanged)

Updated 4/11/2014

GG104-14: See highlighted changes made to table:

GG104-14
202, 302.1, 402.3 (NEW)

Proponent: John McShane, U.S. Environmental Protection Agency, representing USEPA and Alan Luloff, Association of State Flood Plain Managers

TABLE 302.1
REQUIREMENTS DETERMINED BY THE JURISDICTION

CHAPTER 4. SITE DEVELOPMENT AND LAND USE			
402.2.1	Flood hazard area preservation, general	☐Yes	☐No
402.2.2	Flood hazard area preservation, specific	☐Yes	☐No
402.3	Protection of high-risk buildings and structures	☐Yes	☐No
~~402.3~~ 402.4	Surface water protection	☐Yes	☐No
~~402.5~~ 402.6	Conservation area	☐Yes	☐No
~~402.7~~ 402.8	Agricultural land	☐Yes	☐No
~~402.8~~ 402.9	Greenfield sites	☐Yes	☐No
407.4.1	High-occupancy vehicle parking	☐Yes	☐No
407.4.2	Low-emission, hybrid and electric vehicle parking	☐Yes	☐No
409.1	Light pollution control	☐Yes	☐No

(Portions of table not shown remain unchanged)
(Portions of code change not shown remain unchanged)

Updated 4/11/2014

GG105-14: See highlighted changes made to table:

GG105-14
302.1, 402.2., 402.2.3 (NEW), 402.2.3

Proponent: John McShane, U.S. Environmental Protection Agency, representing USEPA and Alan Luloff, Association of State Flood Plain Managers

Revise as follows:

TABLE 302.1
REQUIREMENTS DETERMINED BY THE JURISDICTION

Section	Section Title or Description and Directives	Jurisdictional Requirements	
CHAPTER 4. SITE DEVELOPMENT AND LAND USE			
402.2.1	Flood hazard area preservation, general	☐Yes	☐No
402.2.2	Flood hazard area preservation, specific	☐Yes	☐No
402.2.3	Flood hazard area preservation, limitation on fill	☐Yes	☐No

Section	Section Title or Description and Directives	Jurisdictional Requirements	
CHAPTER 4. SITE DEVELOPMENT AND LAND USE			
402.3	Surface water protection	☐Yes	☐No
402.5	Conservation area	☐Yes	☐No
402.7	Agricultural land	☐Yes	☐No
402.8	Greenfield sites	☐Yes	☐No
407.4.1	High-occupancy vehicle parking	☐Yes	☐No
407.4.2	Low-emission, hybrid and electric vehicle parking	☐Yes	☐No
409.1	Light pollution control	☐Yes	☐No

(Portions of table not shown remain unchanged)
(Portions of code change not shown remain unchanged)

GG106-14: See correction to the proponent line. A figure has been added to the Reason statement:

GG106-14
202, 402.2.3

Proponent: John McShane, US Environmental Protection Agency; Alan Luloff, Association of State Flood Plain Managers

Reason: The costs of recovering from floods are the highest of all natural disasters and even with substantial federal, state and local government risk management efforts damage costs are on a steady upward trend. One of the reasons that the costs associated with flood recovery are increasing is encroachments into the floodplain (Galloway, 2013). Current minimum standards of the National Flood Insurance Program and the International Code Series -- and the current *International green Construction Code* -- allow encroachments into riverine floodplains that can cause up to a foot of increased flooding (see figure 1 below). These encroachments on-average pinch in conveyance areas to half their normal width, increase flood velocities by one-third and cause the extent of the flood hazard area to increase by 10 percent (Lulloff, 2013).

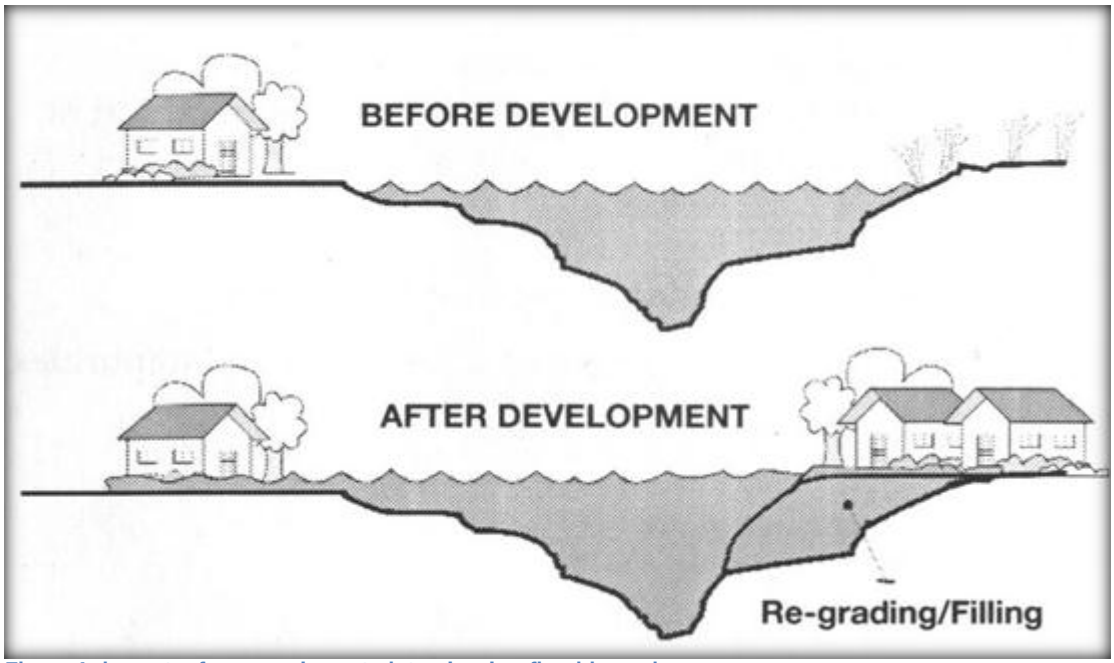

Figure 1- impact of encroachments into riverine flood hazard areas

It is important to note that this section, as written, only applies in riverine flood hazard areas, not in areas subject to coastal flooding where encroachments such as fill do not affect the base flood elevation in the same way they affect riverine floodplains.

The engineering analysis methods required by these revisions are routinely used by civil engineers and the engineering models used are available in the public domain. FEMA provides guidance on the use of these engineering models on their web site. The engineer conducting the analysis basically runs the analysis without the proposed encroachment (pre-development condition), and then uses the model to show the effect of the encroachment. The engineering model output shows the resulting differences in both flood elevations and flow velocities.

Construction that encroaches into the floodplain negatively impacts floodplain ecosystems and infringes upon the property rights of others by increasing flooding for existing development. A basic property legal principle that dates back to ancient Justinian (Roman) law is: "Sic utere tuo ut alienum non laedas", or "so use your own property that you do not injure others". Allowing new development that increases flood elevations and velocities on existing development injures others and therefore violates their property rights.(Kusler and Thomas, 2007; Thomas and Medlock, 2008) In addition,construction that encroaches into the floodplain is a public safety concern. Not only does it risk the health and safety of homeowners and their neighbors it puts at risk emergency response personnel that are called upon to rescue people trapped by flood water. More deaths are caused by flooding than any other natural disaster even though there is better knowledge about where flooding will occur than where tornados will strike, where forest fires will flare up and where the earth will quake.

Allowing new development to encroach into floodplains and increase flood elevations also impacts that long-term viability of the community. Allowing increased flooding increases costs for maintaining infrastructure (roads, bridges, sewer and water, pumping stations) and often results in blighted areas and commercial operations being closed for periods of time.

This revision is consistent with the National Flood Insurance Program which explicitly supports community standards that are higher than the federal minimum. One of the mechanisms FEMA uses to provide financial incentives to communities that adopt higher standards is the Community Rating System (CRS). Communities that adopt this component of the IgCC could be eligible for up to 110 points under the CRS program. Seven States and significant number of communities have restrictions on encroachments that go beyond the federal minimum.

These code revisions will help ensure that this "green" building code serves to prevent building construction that increases flooding on existing development or negatively impacts floodplain ecosystems. It should be noted that while these revisions minimize adverse impacts there are areas of the SFHA in which there is little or no velocity and therefore these revisions will not preclude any and all development in the SFHA.

The proposal in Section 402.2.3 closes an often exploited aspect of hydrologic and hydraulic analyses that allows an engineer to manipulate the roughness coefficient to obtain favorable results. For example, if an analysis shows that a proposed development with encroachment will increase flooding by a 0.3 of a foot trees could be removed to decrease friction to offset the increase. However, in doing so the flood water is sped up - in other words the velocity is increased (which in itself is a hazard because of increased scour, erosion, and hydrodynamic loads). Requiring no increase in flood velocity in addition to no increase in flood elevation closes this loop hole.

(Portions of code change not shown remain unchanged)

Updated 4/11/2014

GG143-14: See correction to the proponent line and highlighted changes in table:

GG143-14
407.3

Proponent: Ed Fendley, US Environmental Protection Agency (Fendley.ed@epa.gov)

TABLE 407.3
BICYCLE PARKING[a]

OCCUPANCY	SPECIFIC USE	SHORT-TERM SPACES	LONG-TERM SPACES[b]
A-1	Movie theaters	1 per 50 seats; not less than 4 spaces	2 spaces
	Concert halls, theaters other than for movies	1 per 500 seats	
A-2	Restaurants	1 per 50 seats; not less than 2 spaces	
A-3	Places of worship	1 per 500 seats	

OCCUPANCY	SPECIFIC USE	SHORT-TERM SPACES	LONG-TERM SPACES[b]
A-3	Assembly spaces other than places of worship	1 per 25,000 square feet; not less than 2 spaces	1 per 50,000 square feet; not less than 2 spaces
A-4 – A-5	All	1 per 500 seats	2 spaces
B	All	1 per 50,000 square feet; not less than 2 spaces	1 per 25,000 square feet; not less than 2 spaces
E	Schools	~~None~~ Not less than 2 spaces	1 per 250 square feet of classroom area
E, I-4	Day care	~~None~~ Not less than 2 spaces	2 spaces
F, H	All	~~None~~ Not less than 2 spaces	1 per 25,000 square feet; not less than 2 spaces
I-1	All	~~None~~ Not less than 2 spaces	2 spaces
I-2	All	1 per 25,000 square feet; not less than 2 spaces	1 per 50,000 square feet; not less than 2 spaces
M	All	1 per 25,000 square feet; not less than 2 spaces	1 per 50,000 square feet; not less than 2 spaces
R-1	Hotels, motels, boarding houses	~~None~~ Not less than 2 spaces	1 per 25,000 square feet; not less than 2 spaces
R-2, R-3, R-4	All	~~None~~ Not less than 2 spaces	None
S	Transit park and ride lots	None	1 per 20 vehicle parking spaces
	Commercial parking facilities	1 per 20 vehicle parking spaces	None
	All other	None	2 spaces
Other	Outdoor recreation, parks	1 per 20 vehicle parking spaces; not less than 2 spaces	None

(Portions of table not shown remain unchanged)
(Portions of code change not shown remain unchanged)

GG149-14: See correction to the proponent line:

GG149-14
407.3.2

Proponent: Ed Fendley, US Environmental Protection Agency (Fendley.ed@epa.gov)

(Portions of code change not shown remain unchanged)

GG166-14: See highlighted changes made to Table 408.3.1:

GG166-14
408.3.1, Table 408.3.1

Proponent: Amy Dickie, representing Global Cool Cities Alliance (amy@globalcoolcities.org)

TABLE 408.3.1
REFLECTANCE AND EMITTANCE

ROOF SLOPE	MINIMUM AGED SOLAR REFLECTANCE	MINIMUM AGED THERMAL EMITTANCE	MINIMUM AGED SRI
2:12 or less	~~0.55~~ 0.65	0.75	~~60~~ 78
Greater than 2:12	0.30	0.75	25

(Portions of code change not shown remain unchanged)

GG195-14: Text change to new Section 505.2.6:

GG195-14
505.2, 505.2.1, 505.2.2, 505.2.3, 505.2.4, 505.2.5, 505.2.6 (New)

Proponent: Paul Coats, American Wood Council, representing American Wood Council (pcoats@awc.org)

Revise as follows:

505.2.6 Certified Wood Products. Wood and wood products used to comply with this section, other than salvaged or reused wood products, shall be labeled in accordance with the SFI Standard, FSC STD-40-004 V2-1 EN, PEFC Council Technical Document or equivalent *fiber procurement system*. As an alternative to an on-product label, a Certificate of Compliance indicating compliance with the *fiber procurement system* shall be permitted. Manufacturer's *fiber procurement systems shall* be audited by an accredited third-party.

(Portions of code change not shown remain unchanged)

GG212-14: Replace code change proposal with the following:

GG212-14

202 (New), 505.1, 505.3 (New), 505.3.1 (New), 505.3.2 (New)

Proponent: Bill Griese, Tile Council of North America (bgriese@tileusa.com); Alison Kinn-Bennett, US Environmental Protection Agency (kinn.alison@epa.gov); Don Horn, US GSA's Office of Federal High-Performance Green Buildings (donald.horn@gsa.gov); Jessica Slomka, NSF International (jslomka@nsf.org); Jane Rohde, JSR Associates, Inc (jane@jsrassociates.net), Wes Sullens, Stopwaste.org (wsullens@stopwaste.org), Bill Freeman, Resilient Floor Covering Institute (RFCI) (williamfreeman@roadrunner.com), Jeff Carrier, Carpet & Rug Institute (jcarrier@carpet-rug.org

Add new definition as follows:

SECTION 202
DEFINITIONS

PROGRAM OPERATOR. Body or bodies that conduct a Type III environmental declaration program. A program operator can be a company or a group of companies, industrial sector or trade association, public authorities or agencies, or an independent scientific body or other organization.

TYPE III ENVIRONMENTAL PRODUCT DECLARATION. A product declaration that provides quantified environmental data using predetermined parameters and, where relevant, additional environmental information. For either brand-specific or industry-wide environmental product declaration.

Revise as follows:

505.1 Material selection and properties. Building materials shall conform to Section 505.2 or Section 505.3.

Exceptions:

1. Electrical, mechanical, plumbing, security and fire detection, and alarm equipment and controls, automatic fire sprinkler systems, elevators and conveying systems shall not be required to comply with Section 505.2.
2. Where a whole building life cycle assessment is performed in accordance with Section 303.1, compliance with Section 505.2 shall not be required.

Add new text as follows:

505.3 Multi-attribute material declaration and certification. Not less than 55 percent of the total building materials used in the project, based on mass, volume or cost, shall comply with Section 505.3.1 or 505.3.2. Where a material complies with both 505.3.1 and 505.3.2 the material value shall be multiplied by two.

505.3.1 Environmental Product Declaration. A building material with a*Type III environmental product declaration* that is verified by a *program operator*. The environmental product shall comply with the provisions of ISO 14025 and ISO 21930 externally.

505.3.2 Multi-attribute Standard. A material specific assessment that is verified by an *approved agency* shall be submitted for each product in accordance with the following items, as applicable. The assessment shall be verified as meeting the minimum performance level specified in each standard, which focuses on the life-cycle stages from development to end of life. These stages shall include material selection, energy and water use during development, performance, human and environmental impact, and end of life.

1. NSF/ANSI 140 for carpet
2. NSF/ANSI 332 for resilient floor coverings
3. NSF/ANSI 336 for commercial furnishings fabric
4. NSF/ANSI 342 for wall coverings
5. NSF/ANSI 347 for single ply roofing membranes
6. NSC 373 for natural dimension stone
7. TCNA ANSI/A138.1 or ceramic tiles, glass tiles, and tile installation materials
8. UL 100 for gypsum boards and panels
9. UL 102 for door leafs

Add new standard(s) as follows:

ISO:
ISO 14025 – 2006 Environmental labels and declarations – Type III environmental declarations – Principles and procedures

ISO 21930 – 2007 Sustainability in building construction – Environmental declaration of building products

NSF:
NSF/ANSI 140-2013 Sustainability Assessment for Carpet
NSF/ANSI 332-2012 Sustainability Assessment for Resilient Floor Coverings
NSF/ANSI 336-2011 Sustainability Assessment for Commercial Furnishings Fabric
NSF/ANSI 342-2012 Sustainability Assessment for Wall coverings
NSF/ANSI 347-2012 Sustainability Assessment for Single Ply Roofing Membranes

UL:
UL 100-2012 Sustainability for Gypsum Boards and Panels
UL 102-2012 Sustainability for Door Leafs

Natural Stone Council,
P.O. Box 539, Hollis, New Hampshire 03049
NSC 373-2013 Sustainability Assessment for Natural Dimension Stone

Tile Council of North America,
100 Clemson Research Boulevard, Anderson, SC 29625
TCNA ANSI/A138.1-2012 Standard Specification for Sustainable Ceramic Tiles, Glass Tiles, and Tile Installation Materials

Reason:
Stopwaste.org (Alameda County, California):

The current section 505.2 is comprised of single attribute sustainability concepts (such as recycled content, regional, or bio-based). These single attribute environmental characteristics have benefits that are widely known and have been core components of worldwide codes, standards and green building programs to date. Specifically, the single attribute of "recycled-content" in materials is among the most valued and widely recognized environmental criteria for consumers and the construction industry. Therefore, single attribute indicators still have a large role to play in green building codes, standards, and programs, and are vital to include in future versions of IgCC.

The process of utilizing recycled content feedstock in new building materials nearly always results in reduced environmental impacts when compared to the use of virgin feedstock, though this is only part of the story. Using recycled-content as the primary indicator of sustainability - especially for interior products - is no longer adequate given the full life cycle of product production, manufacturing, and use.

During the manufacturing process, the impacts of materials harvesting and extraction can be reduced by making use of local, bio-based or recycled content products. However, other the components added during the manufacturing process may result is less preferable environmental outcomes, may compromise occupant health, or can dwarf the lifecycle savings of using some other feedstock. For example, using recycled tire flooring may be environmentally preferable because it is recycled, but when these products are used indoors, there may be exposure to odors and VOCs that make another non-recycled product preferable for the occupant type. Therefore, the need for more systematic evaluation of products that takes into account the multi-dimensional attributes of products is needed for the commercial building industry.

Multi-attribute sustainable product standards and environmental product declarations (EPDs) are a way to start accomplishing this. These two tools added as options of compliance will allow the most current thinking about material

selection, multi-attribute assessments, and life-cycle transparency to be introduced to the code. The addition of EPDs and multi-attribute product standards will still allow the existing methodology to be utilized, but will also capture the momentum in the commercial green building market around product life-cycle impacts and supply chain transparency. In addition, adding these additional compliance options will allow for non-structural materials to play a greater role in green building recognition. We feel that these newer tools as options for compliance along with the traditional single attribute approach is a good transitional methodology towards the long-term goal of true multi-attribute product transparency and performance.

Resilient Floor Covering Institute (RFCI):

RFCI represents all of the major manufacturers of resilient floor covering that produce linoleum, vinyl, rubber and cork flooring. The IgCC has taken a major step forward in addressing the environmental impacts of buildings by introducing the International Green Construction Code. Since the code was introduced manufacturers of building materials, including resilient flooring, have made great strides in reducing the environmental impact of their products by analyzing the entire life cycle of these products.

Today there are standards available and being used to determine the environmental impacts of individual building materials. The changes being proposed as Section 505.3 *Multi-attribute material declaration and certification* which includes Environmental Product Declarations and Multi-attribute Standards reflect the type of standards being adopted by many environmental rating systems including the National Green Building Standard IgCC 700. These standards are either developed using a consensus-based process or developed in accordance with established ISO Standards. The inclusion of Section 505.3 in the IgCC requirements will enhance the standard in a very meaningful way by determining the environmental impacts of materials used in a building.

Because of the manner in which the programs proposed for Section 505.3 are certified it will not be difficult for the user of the IgCC standard including code officials to quickly determine if a building material meets the requirements of the proposed section.

RFCI strongly encourages the IgCC to adopt the proposed Section 505.3 as a positive step forward in making the International Green Construction Code a more meaningful standard in reducing the environmental impacts of the materials used in a building.

U.S. General Services Administration's Office of Federal High-Performance Green Buildings:

GSA's Office of Federal High-Performance Green Buildings supports the introduction of Environmental Product Declarations and multi-attribute environmental standards into the International Green Construction Code (IgCC). Material selection is an important part of creating high-performance green buildings that is not always given the attention that it deserves. The single attribute material requirements currently in the code have played an important role in transforming the construction materials market to include recycled content and biobased content, both of which are supported by federal procurement initiatives. Among its sustainability strategies, Executive Order 13514, *Federal Leadership in Environmental, Energy, and Economic Performance,* seeks to foster markets for sustainable technologies and environmentally preferable materials, products, and services. The Order also encourages federal purchasing considerations to include products manufactured using processes that minimize greenhouse gas emissions. Multi-attribute standards are a logical tool to help move toward this goal. Environmental Product Declarations will encourage manufacturers to examine the impacts of their processes and can lead to informed decision-making for improvement. Adding these measures as a means of compliance for material selection in the IgCC is a positive step toward creating high-performance green buildings.

NSF International:

The current language in section 505.2 of the International Green Construction Code, version 2012, is comprised of the traditional single attribute approach (such as recycled content, regional, or bio-based) of addressing environmental requirements for material selections in codes and sustainable rating systems. Focusing on a single environmental attribute of a product inadvertently excludes important impacts and does not present a holistic perspective of the product's environmental footprint. In addition, a single attribute approach does not always recognize the highest environmental performance. It is an important next step to advance the standard by providing opportunities to recognize high performance building materials, including both structural and non-structural materials. Multi-attribute sustainable product standards and environmental product declarations (EPDs) are a way to accomplish this advancement. The addition of these two compliance paths provides a more innovate way of thinking about material selection. The multi-attribute sustainable product standards guarantee that a product meets a certain environmental performance across several areas of its life-cycle. Additionally, EPDs are allowing manufacturers to transparently disclose the impact that products and their manufacturing have on the environment, which promotes more informed decision- making. The addition of these transparency tools, along with the traditional single attribute approach, is a good transitional methodology towards the long-term goal of true multi-attribute product transparency and performance.

JSR Associates, Inc.:

We support the inclusion of these new material selection pathways.

US Environmental Protection Agency (USEPA):

USEPA supports the proposal as it encourages multi-attribute, lifecycle-based approaches (via standards) and transparency (via EPDs). As the IgCC evolves, we would like to see 1) greater emphasis on multi-attribute environmental performance (rather than the other options) and 2) a focus on typically environmentally problematic product categories (rather than leaving it so open ended); however, we appreciate that this proposal is an important step in the right direction for environmental and human health protection.

Tile Council of North America (TCNA):

For over a decade, many manufacturers were promoting single environmental attributes (recycled content, regional materials, etc.) represented by different labels across different industries, all of which were important but resulted in an unorganized, confusing, and often misleading marketplace. As a result, many industries started to recognize the need to establish a lifecycle based multi-attribute approach to the assessment and specification of sustainable products, turning to broadly recognized lifecycle based international standards in the ISO 14000 series.

It is encouraging to report that a plethora of multi-attribute product sustainability assessment standards are available today for use by architects, specifiers, and consumers. These standards were developed in accordance with the lifecycle based, multi-attribute framework specified by ISO 14024 and treat products similarly to the way that sustainable building rating systems treat buildings. While there are some differences in point systems, naming, and individual criteria, the standards have very similar impact assessment areas. Product criteria are defined by all of these standards within the key areas of sustainability: material usage, energy used to make the product, the manufacturing and operational programs that the manufacturer has in place, water usage, the impact on human health and the environment, end of life management, and product performance. Furthermore, more manufacturers today have released or are engaged in efforts to release EPDs. This allows manufacturers to transparently disclose the environmental impact of their products in a standardized reporting framework

When the IgCC was originally developed, the Chapter 5 working group strived to develop and embed similar multi-attribute and lifecycle based criteria within the Code. At the time, many of these industry specifications and EPD initiatives were still in development and not yet available for simple reference. However, since that time, progress has been made which has led to today's proposed revision that encompasses approximately 10 product industries and can be applicable to over 1,000 domestic manufacturers and many more worldwide. Similar to regular industry specifications for strength and performance referenced throughout the IBC, these industry specifications for sustainability would allow for IgCC product selection based on consensus criteria. Additionally, many of these standards and EPD criteria are already in use in our built environment. ICC 700-2012 references some of these standards, as does the most recent version of ASHRAE 189.1. Also, the US GSA and the California DGS utilize some of these standards in the purchasing requirements for products.

The time to begin including multi-attribute specifications and EPD criteria into the IgCC is now. These tools serve as a valuable strategy in achieving sustainable product optimization, are well-known throughout product industries, and are already incorporated or in the process of being incorporated into several other green building standards and rating systems. The proposed approach salvages original single-attribute criteria, which can still be utilized if needed, and incorporates a more up-to-date way of thinking about sustainable material selection which is consistent with the original intent of Chapter 5.

Carpet & Rug Institute (CRI):

Recognition and reliance upon multi-attribute standards is the most reliable and efficient means for a building operator, general contractor, or designer to recognize products with a full range of environmentally preferable characteristics. Rather than selecting components and finishes in a "piece meal" manner based upon single subjective attributes, multi-attribute standards provide the desired assurance of rigor, breadth, and depth. Further, the simplified identification process makes the selection and specification of these products much simpler and more likely to be employed.

While non-structural components such as interior finishes may be a small section of the total building impacts (in both volume and cost), their impacts should not be ignored and the efforts of manufacturers to produce the most preferable product possible should be recognized. Recognition of multi-attribute standards places the burden upon the manufacturer to concentrate upon total impacts of the product rather than picking and choosing a couple of "highlight" features.

For these reasons, we support the addition of 505.3 Multi-Attribute material declaration and certification as a pathway for achievement of this requirement.

Cost Impact: Will increase the cost of construction. This code change proposal *may* increase the cost of construction because of the cost involved in generating the EPD or complying with the multi-attribute standard for the building product manufacturer. However, EPDs and multi-attribute assessment frequently identify cost reduction measures that pay for the cost of the assessment and verification, and may not increase the cost of product production.

Analysis: A review of the standard proposed for inclusion in the code, ISO 14025:2006, 21930:2007, NSC 373-2013, 140-2013, 332-2012, 336-2011, 342-2012, 347-2012, TCNA A138.1-2012, UL 100-2012 and UL 102-2012 with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28), will be posted on the ICC website on or before April 1, 2014.

GG212-14 : 505.3 (New)-GITLIN185

GG249-14: See highlighted changes made to the table:

GG249-14
807.3.2

Proponent: John Williams, CBO, Chair, representing ICC Adhoc Health Care Committee (AHC@iccsafe.org)

Revise as follows:

TABLE 807.3.2
MAXIMUM PERMISSIBLE INDOOR BACKGROUND SOUND IN ROOMS

OCCUPANCY TYPE	ROOM	NOISE CRITERIA (NC) LIMITS
Assembly A-1	Symphony, concert, recital halls Motion picture theaters	30 40
Assembly A-3	Places of religious worship, lecture halls not part of educational facilities Art gallery, exhibit hall, funeral parlor, libraries, and museums Courtroom Educational occupancies above 12th grade	35 40 35 (See Educational)
Assembly A-4	Gymnasiums, natatoriums and arenas with seating areas	45
Business B	Office—enclosed greater than 300 square feet Office—enclosed less than or equal 300 square feet	35 40
	Office—open plan Corridors and lobbies Conference rooms Educational occupancies above 12th grade	45 45 35 (See Educational)
Educational E	Core learning lecture and classrooms that are less than or equal to 20,000 cubic feet in volume Core learning lecture and classrooms that are greater than 20,000 cubic feet in volume Open plan classrooms Administrative offices and rooms Music teaching studios Music practice rooms	ANSI/ASA S12.60-2010/Part 1 or ANSI/ASA S12.60-2009/Part 2
Institutional I-2	<u>All areas</u> ~~Wards Private and semi-private patient rooms~~ ~~Operating rooms Corridors and public areas~~	2010 FGI-ASHE Guidelines for Design and Construction of Healthcare Facilities
	~~Rooms or suites~~ ~~Bathroom, kitchen, utility room~~	~~25 to 35~~ ~~40~~
Residential R-1 and R-2	Meeting rooms Corridors and lobbies Service areas	35 45 45

For SI: 1 square foot = 0.093 m2, 1 cubic foot = 28.31 L.

Reason: Group I-2, Condition 2 (hospitals) is heavily regulated by the FGI Guidelines for Design and Construction of Healthcare Facilities that include stringent acoustical requirements. Adding additional layers of Codes to hospitals creates unnecessary potential for confusion between designers and Building Officials and expensive conflict resolution where Codes disagree. The FGI Guidelines are specifically created to meet the unique needs of hospitals and are the best source for healthcare acoustical minimum standards.

This proposal is submitted by the ICC Ad Hoc Committee for Healthcare (AHC). The AHC was established by the ICC Board of Directors to evaluate and assess contemporary code issues relating to hospitals and ambulatory healthcare facilities. The AHC is composed of building code officials, fire code officials, hospital facility engineers, and state healthcare enforcement representatives. The goals of the committee are to ensure that the ICC family of codes

appropriately addresses the fire and life safety concerns of a highly specialized and rapidly evolving healthcare delivery system. This process is part of a joint effort between ICC and the American Society for Healthcare Engineering (ASHE), a subsidiary of the American Hospital Association, to eliminate duplication and conflicts in healthcare regulation. Since its inception in April, 2011, the AHC has held 11 open meetings and over 162 workgroup calls which included members of the AHC as well as any interested party to discuss and debate the proposed changes. All meeting materials and reports are posted on the AHC website at: http://www.iccsafe.org/cs/AHC/Pages/default.aspx

Cost Impact: Will not increase the cost of construction

GG249-14 : TABLE807.3.2-PAARLBERG661

GG321-14: See correction to the proponent line:

GG321-14

Appendix A

Proponent: Hope Medina, representing self (hmedina@coloradocode.net); Craig Conner, representing self (craig.conner@mac.com); Gary Klein, Affiliated International Management, LLC, representing self (gary@aim4sustainability.com)

2014 PROPOSED CHANGES TO THE INTERNATIONAL GREEN CONSTRUCTION CODE – ENERGY/WATER

GEW2-14: See highlighted change to Section 1003.2.2 Item 3:

GEW2-14

302.1, 302.1.1, 1003.2.2, Chapter 6, 1007.3, 1007.3.1, 1007.3.2, 1007.3.3, 1007.3.3.1, 1007.3.3.2, 1007.3.3.3, A106

Proponent: Mark Nowak, Steel Framing Alliance, representing Steel Framing Alliance (mark@mnowak.net)

Revise as follows:

1003.2.2 Heating, ventilating and air-conditioning. Heating, ventilating and air-conditioning systems and equipment shall be in accordance with the following:

1. Time clock and automatic time switch controls that can turn systems off and on according to building occupancy requirements shall be provided and connected to the following HVAC equipment: chillers and other space-cooling equipment, chilled water pumps, boilers and other space-heating devices, hot water pumps, heat exchanger circulation pumps, supply fans, return fans, and exhaust fans. Where occupant override is provided, it shall be designed with a timer to automatically revert to time clock and automatic time switch controls in not longer than 12 hours.

   Exception: A time clock or automatic time switch controls shall not be required for spaces where any of the following conditions exist:

   1. A time clock is not required by Section C403.2.4.3 of the *International Energy Conservation Code*.
   2. There is 24-hour occupancy materials with special atmospheric requirements dependent on 24-hour space conditioning.
   3. A majority of the areas of the building served by the system are under setback thermostat control.
   4. Manufacturer's specifications stipulate that the system must not be shut off.

2. Functional outside air economizers shall be provided on all cooling systems or more than 4 ½ tons cooling capacity, 54,000 Btu/h, or more than 1800 cfm (9.144 m^3/s x m^2) air flow, provided manufactures' guidelines are available for adding the economizer to the existing system.

   Exception: An outside air economizer shall not be required for buildings or special uses where 100 percent outside air for ventilation is required or where any of the following conditions exist:

   1. Section C403.3.1 of the *International Energy Conservation Code* would not require an economizer.
   2. The existing system has a water-based economizer.
   3. The existing system does not have an outside air intake.
   4. Special economizer operations such as, but not limited to, carefully controlled humidity would require more energy use than is conserved.

5. There is insufficient space to install necessary equipment.
6. Installation of an economizer would require major modifications to the building's life safety system.
7. The existing system is a multi-zone system where the same intake air is used at the same time for either heating or cooling in different parts of the building.

3. HVAC piping and ducts, including those located above suspended ceilings, shall comply with ~~Sections 606.3 and 606.4.~~ *International Energy Conservation Code.*

Exception: Additional insulation shall not be required for piping where any of the following conditions exist:

1. Additional insulation shall not be required for piping where any of the following conditions exist:
   1.1. It is located within HVAC equipment;
   1.2. It is located within conditioned space that conveys fluids between 60□F (15.6□C) and 105□F (40.6□C);
   1.3. Piping that is already insulated and the insulation is in good condition; or
2. Where HVAC ducts and piping are installed in a building cavity or interstitial framing space of insufficient width to accommodate the duct or pipe and the insulation required by Section 606.3 and Table 606.4, the insulation thickness shall be permitted to have the maximum thickness that the wall can accommodate, but shall not be less than $^{1}/_{2}$-inch (12.7 mm) thick.

4. Where central heat is intended to be replaced with individual electric space heaters, the application for the electrical permit shall include documentation demonstrating that the new electric heaters will not consume more energy than the existing nonelectric heaters.
5. Boiler systems shall have been cleaned and tuned within one year prior to the alteration. Boilers shall be equipped with an outdoor air lock-out thermostat or a temperature reset control.
6. Chillers shall be equipped with an outdoor air lockout thermostat and chilled water reset control.
7. A maximum 5-year phase out plan shall be provided for buildings with existing systems that use CFC-based refrigerants.
8. Where mechanical and electrical systems and equipment are joined with microprocessors that communicate with each other or to a computer, a properly integrated building automation system shall be installed to optimize energy, operations, and indoor comfort. The building automation system shall:

   8.1. Allow the owner to set up schedules of operation for the equipment and provide equipment optimal start with adaptive learning;
   8.2. Provide trim and respond capabilities based on zone demand;
   8.3. Offer the ability to monitor energy usage, including the ability to meter electric, gas, water, steam, hot water, chilled water, and fuel oil services;
   8.4. Offer economizing based on enthalpy calculation and/or CO_2 set point control;
   8.5. Offer load shedding when power companies are at peak demand and need; and
   8.6. Offer the ability to send alarms to alert building owner, manager, or operator when problems occur due to system failures.

(Portions of code change not shown remain unchanged)

GEW3-14: See highlighted change to Sections 302.1 and 302.1.1:

GEW3-14

Chapter 6, 202, 302.1, 302.1.1, 903.1, 1003.2.2, 1003.2.3, 1007.3, 1007.3.1, 1007.3.2, 1007.3.3, 1007.3.3.1, 1007.3.3.2, 1007.3.3.3, Chapter 12, Table A106, A106.1, A106.5.1, A106.5.2, A106.6

Proponent: Steven Rosenstock, Electric Edison Institute, representing Edison Electric Institute (srosenstock@eei.org)

Revise as follows:

302.1 Requirements determined by the jurisdiction. The jurisdiction shall indicate the following information in Table 302.1 for inclusion in its code adopting ordinance:

1. The jurisdiction shall indicate whether requirements for residential buildings, as indicated in Exception 1 to Section 101.3, are applicable by selecting "Yes" or "No" in Table 302.1. Where "Yes" is selected, the provisions of ICC 700 shall apply and the remainder of this code shall not apply.
2. Where the jurisdiction requires enhanced energy performance for buildings designed on a performance basis, the jurisdiction shall indicate ~~a zEPI of 46 or less~~ the required improvement compared to ASHRAE 189.1 in Table 302.1 for each occupancy required to have enhanced energy performance.
3. Where "Yes" or "No" boxes are provided, the jurisdiction shall check the box to indicate "Yes" where that section is to be enforced as a mandatory requirement in the jurisdiction, or "No" where that section is not to be enforced as a mandatory requirement in the jurisdiction.

302.1.1 ~~zEPI of 46 or less.~~ Improvement compared to ASHRAE 189.1 Where ~~a zEPI of 46 or less~~ an improvement compared to ASHRAE 189.1 is indicated by the jurisdiction in Table 302.1, buildings shall comply on a performance-basis in accordance with Section 601.3.1.

Exception: Buildings less than 25,000 square feet (2323 m^2) in *total building floor area* pursuing compliance on a prescriptive basis shall be deemed to ~~have a zEPI of 51~~ comply with ASHRAE 189.1 and shall not be required to comply with the ~~zEPI~~ improvement compared to ASHRAE 189.1 of Jurisdictional Choice indicated by the jurisdiction in Table 302.1.

(Portions of code change not shown remain unchanged

GEW31-14: See highlighted changes made to Tables 602.1.2.1, 602.1.2.2 and 602.2.1:

GEW31-14

602.1.2.1, Table 602.1.2.1, 602.1.2.2, Table 602.1.2.2, 602.2.1, Table 602.2.1, 602.2.2, Table 602.2.2

Proponent: Neil Leslie, Gas Technology Institute, representing self (neil.leslie@gastechnology.org)

TABLE 602.1.2.1
ELECTRICITY GENERATION ENERGY CONVERSION FACTORS BY EPA eGRID SUB-REGION[a]

eGRID ~~2007~~ 2010 SUB-REGION ACRONYM	eGRID ~~2007~~ 2010 SUB-REGION NAME	ENERGY CONVERSION FACTOR
AKGD	ASCC Alaska Grid	~~2.97~~ 3.15
AKMS	ASCC Miscellaneous	~~1.76~~ 1.90
ERCT	ERCOT All	~~2.93~~ 3.08
FRCC	FRCC All	~~2.97~~ 3.26
HIMS	HICC Miscellaneous	~~3.82~~ 3.67
HIOA	HICC Oahu	3.14
MORE	MRO East	~~3.40~~ 3.50
MROW	MRO West	~~3.41~~ 3.64
NYLI	NPCC Long Island	~~3.20~~ 3.47
NEWE	NPCC New England	~~3.01~~ 3.03
NYCW	NPCC NYC/Westchester	~~3.32~~ 3.21
NYUP	NPCC Upstate NY	~~2.51~~ 2.66
RFCE	RFC East	~~3.15~~ 3.28
RFCM	RFC Michigan	~~3.05~~ 3.35
RFCW	RFC West	~~3.14~~ 3.29
SRMW	SERC Midwest	~~3.24~~ 3.40
SRMV	SERC Mississippi Valley	~~3.00~~ 3.20
SRSO	SERC South	~~3.08~~ 3.20
SRTV	SERC Tennessee Valley	~~3.11~~ 3.30
SRVC	SERC Virginia/Carolina	~~3.13~~ 3.24
SPNO	SPP North	~~3.53~~ 3.57
SPSO	SPP South	~~3.05~~ 3.26
CAMX	WECC California	~~2.61~~ 2.89
NWPP	WECC Northwest	~~2.26~~ 2.32

eGRID ~~2007~~ 2010 SUB-REGION ACRONYM	eGRID ~~2007~~ 2010 SUB-REGION NAME	ENERGY CONVERSION FACTOR
RMPA	WECC Rockies	~~3.18~~ 3.82
AZNM	WECC Southwest	~~2.95~~ 3.10
None	Not Included	3.15

~~a. Sources: EPA eGrid 2007 version 1.1, 2005 data; EPA eGrid regional gross grid loss factors; EIA Table 8.4a (Sum tables 8.4b and 8.4c) and Table 8.2c (Breakout of Table 8.2b), 2005 data.~~

TABLE 602.1.2.2
U.S. AVERAGE BUILDING FUELS ENERGY CONVERSION FACTORS BY FUEL TYPE [a]

FUEL TYPE	ENERGY CONVERSION FACTOR
Natural Gas	1.09
Fuel Oil	~~1.13~~ 1.19
LPG	~~1.12~~ 1.15

~~a. Source: Gas Technology Institute Source Energy and Emissions Analysis Tool.~~

TABLE 602.2.1
ELECTRICITY EMISSION RATE BY EPA eGRID SUB-REGION [a]

eGRID ~~2007~~ 2010 SUB-REGION ACRONYM	eGRID ~~2007~~ 2010 SUB-REGION NAME	~~2005~~ CO_2e RATE ~~(lbs/MWh)~~ (kg/kWh)
AKGD	ASCC Alaska Grid	~~1270~~ 0.685
AKMS	ASCC Miscellaneous	~~515~~ 0.265
ERCT	ERCOT All	~~1417~~ 0.698
FRCC	FRCC All	~~1416~~ 0.617
HIMS	HICC Miscellaneous	~~1595~~ 0.722
HIOA	HICC Oahu	~~18591~~ 0.825
MORE	MRO East	~~1971~~ 0.909
MROW	MRO West	~~1957~~ 0.964
NYLI	NPCC Long Island	~~1651~~ 0.698
NEWE	NPCC New England	~~999~~ 0.428
NYCW	NPCC NYC/Westchester	~~874~~ 0.391
NYUP	NPCC Upstate NY	~~774~~ 0.369
RFCE	RFC East	~~1224~~ 0.543
RFCM	RFC Michigan	~~1680~~ 0.874
RFCW	RFC West	~~1652~~ 0.820
SRMW	SERC Midwest	~~1966~~ 0.960
SRMV	SERC Mississippi Valley	~~1094~~ 0.572
SRSO	SERC South	~~1601~~ 0.780
SRTV	SERC Tennessee Valley	~~1623~~ 0.818

eGRID ~~2007~~ 2010 SUB-REGION ACRONYM	eGRID ~~2007~~ 2010 SUB-REGION NAME	~~2005~~ CO_2e RATE ~~(lbs/MWh)~~ (kg/kWh)
SRVC	SERC Virginia/Carolina	~~1220~~ 0.581
SPNO	SPP North	~~2106~~ 0.972
SPSO	SPP South	~~1780~~ 0.873
CAMX	WECC California	~~768~~ 0.370
NWPP	WECC Northwest	~~958~~ 0.453
RMPA	WECC Rockies	~~1999~~ 1.149
AZNM	WECC Southwest	~~1391~~ 0.671
None	Not Included	0.692

~~a. Sources: EPA eGRID 2007 Version 1.1, 2005 data; EPA eGrid regional gross grid loss factor.~~

(Portions of code change not shown remain unchanged)

GEW59-14: See highlighted section for corrections:

GEW59-14
604.3

Proponent: John Williams, CBO, Chair, representing ICC Adhoc Health Care Committee (AHC@iccsafe.org); Brenda Thompson, Chair, representing the Sustainability, Energy, High Performance Code Action Committee (SEHPCAC@iccsafe.org)

Revise as follows:

604.3 Heating, ventilating and air-conditioning (HVAC) systems. The Auto-DR strategy for HVAC systems shall be capable of reducing the building peak cooling or heating HVAC demand by not less than 10 percent when signaled from the electric utility, regional independent system operator (ISO) or regional transmission operator (RTO), through any combination of the strategies and systemic adjustments, including, but not limited to the following:

1. Space temperature setpoint reset.
2. Increasing chilled water supply temperatures or decreasing hot water supply temperatures.
3. Increasing or decreasing supply air temperatures for variable air volume (VAV) systems.
4. Limiting capacity of HVAC equipment that has variable or multiple-stage capacity control.
5. Cycling of HVAC equipment or turning off noncritical equipment.
6. Disabling HVAC in unoccupied areas.
7. Limiting the capacity of chilled water, hot water, and refrigerant control valves.
8. Limiting the capacity of supply and exhaust fans, without reducing the outdoor air supply below the minimum required by Chapter 4 of the *International Mechanical Code*, or the minimum required by ASHRAE 62.1.
9. Limiting the capacity of chilled water or hot water supply pumps.
10. Anticipatory control strategies to precool or preheat in anticipation of a peak event.

Exception: The Auto-DR strategy is not required to include the following buildings and systems:

1. ~~Hospitals and~~ Group I-2 Condition 2
2. Critical emergency response facilities.
3. ~~2~~3. Life safety ventilation for hazardous materials storage.
4. ~~3~~4. Building smoke exhaust systems.

45. Manufacturing process systems.

(Portions of code change not shown remain unchanged)

Updated 4/11/2014

GEW103-14 See highlighted new Section 607.6.1. Existing Section 607.6.1 would be renumbered:

GEW103-14

607.6, 607.6.1(New), 607.6.2 (New), Table 607.6.2 (New)

Proponent: Brenda Thompson, Chair, representing Sustainability, Energy, High Performance Code Action Committee

607.6.1 Piping insulated with tube or sheet insulation. Service water heating system piping conveying heated water shall be insulated with tube or sheet insulation having a thermal conductivity of not greater than 0.29 Btu per inch/h×ft^2×F[0.42 W/(m×K)]. The wall thickness of the insulation shall be not less than the diameter of the pipe that is being insulated except that a wall thickness greater than 2 inches (50.8 mm) shall not be required.

(Portions of code change not shown remain unchanged)

GEW142-14: Sections below are shown struck-out:

GEW142-14

611

THIS CODE CHANGE PROPOSAL IS ON THE AGENDA OF THE IgCC GENERAL CODE DEVELOPMENT COMMITTEE. SEE THE HEARING ORDER FOR THE IgCC GENERAL CODE DEVELOMPENT COMMITTEE.

Proponent: Brenda Thompson, Chair, representing Sustainability, Energy, High Performance Code Action Committee (SEHPCAC@iccsafe.org)

~~**611.3.3.1 Occupant sensors.** It shall be verified that the functional testing in accordance with Section C405.2 of the *International Energy Conservation Code* has been performed.~~

~~**611.3.3.2 Automatic daylight controls.** Automatic *daylight controls* shall be commissioned in accordance with all of the following:~~

1. ~~It shall be verified that the placement and orientation of each sensor is consistent with the manufacturer's instructions. If not, the sensor shall be relocated or replaced.~~
2. ~~Control systems shall be initially calibrated to meet settings and design intent established in the construction documents.~~
3. ~~Prior to calibration of systems controlling dimmable luminaires, all lamps shall be seasoned in accordance with the recommendations of the lamp manufacturer.~~
4. ~~Where located inside buildings, calibration of open-loop *daylight controls*, which receive illumination from natural light only, shall not occur until fenestration shading devices such as blinds or shades have been installed and commissioned.~~
5. ~~Calibration of closed-loop *daylight controls*, that receive illumination from both natural and artificial light, shall not occur until furniture systems and interior finishes have been installed, and any fenestration shading devices such as blinds or shades have been installed and commissioned.~~
6. ~~Calibration procedures shall be in accordance with the manufacturer's instructions.~~

611.3.3.3 Time switch and programmable schedule controls. Lighting controls installed in accordance with Section 608 shall be programmed. Scheduling shall incorporate weekday, weekend and holiday operating times, including leap year and daylight savings time corrections. It shall be verified that system overrides work and are located in compliance with Section C405.2 of the *International Energy Conservation Code*.

611.3.3.4 Dimming systems with preset scenes. For programmable dimming systems, it shall be verified that automatic shutoff and manual overrides are working and that programming is complete. Prior to programming, the lamps shall be seasoned in accordance with NEMA LSD 23.

611.3.4 Post-commissioning documentation. The following documentation shall be provided to the building owner in accordance with Section 903.

1. Settings determined during commissioning activities outlined in Section 611.3.3.
2. A narrative describing the intent and functionality of all controls including any capability for users to override a schedule or master command.
3. Specification sheets for all lighting equipment and controls.
4. Operation manuals for each lighting control device. Required maintenance and maintenance schedules shall be clearly identified. Documentation and instructions necessary for building maintenance personnel to maintain and recalibrate lighting systems and controls.
5. An annual inspection schedule for lighting controls.
6. Troubleshooting information for fluorescent dimming systems and the remediation of switching issues such as false-ons and false-offs.

(Portions of code change not shown remain unchanged

GEW159-14: Replace code change proposal with the following:

GEW159-14

702.8, 702.8.1, 702.8.2, Table 7022.8.2, 702.8.2.1

Proponent: Gary Klein, representing self (gary@aim4sustainability.com)

Delete and substitute as follows:

702.8 Efficient hot and tempered water distribution. Hot and tempered water distribution shall comply with either the maximum pipe length or maximum pipe volume limits in this section. Hot and tempered water shall be delivered to the outlets of individual showers, combination tub-showers, sinks, lavatories, dishwashers, washing machines and hot water hose bibbs in accordance with Section 702.8.1 or Section 702.8.2. For purposes of this section, references to pipe shall include tubing. For purposes of this section, the source of hot or tempered water shall be considered to be a water heater, boiler, circulation loop piping or electrically heat-traced piping.

702.8 Efficient heated water supply piping. Heated water supply piping shall be in accordance with Section 702.8.1 or Section 702.8.2. The flow rate through 1/4 inch piping shall not exceed 0.5 gpm (1.9 Lpm). The flow rate through 5/16 inch piping shall not exceed 1 gpm (3.8 Lpm). The flow rate through 3/8 inch piping shall not exceed 1.5 gpm (5.7 Lpm).

Revise as follows:

702.8.1 Maximum allowable pipe length method. For fixtures other than public lavatory faucets,the maximum allowable ~~pipe~~ piping length from the nearest circulation loop pipe or an electrically heat-traced pipe ~~source of hot or tempered water~~ to the termination of the fixture supply pipe shall be in

accordance with the maximum pipe length columns in Table 702.8.2. Where the length contains more than one size of pipe, the largest size shall be used for determining the maximum allowable length of the pipe in Table 702.8.2.

702.8.2 Maximum allowable pipe volume method. The water volume in the piping shall be calculated in accordance with Section 702.8.2.1. For fixtures other than public lavatory faucets, the maximum volume of heated water in the piping from the nearest hot or tempered water in the piping to public lavatory faucets, metering or nonmetering, shall be 2 ounces (0.06 L). For fixtures other than public lavatory faucets, the maximum volume shall be 64 ounces (1.89 L) for hot or tempered water from a water heater or boiler; and 24 ounces (0.7 L) for hot or tempered water from a circulation loop pipe or an electrically heat-traced pipe shall be 24 ounces (0.7 L).

TABLE 702.8.2
PIPE VOLUME AND MAXIMUM PIPING LENGTH ~~OF PIPE OR TUBE~~

NOMINAL PIPE OR TUBE SIZE (inch)	LIQUID OUNCES PER FOOT OF LENGTH	MAXIMUM ~~PIPE OR TUBE~~ PIPING LENGTH (feet)		
		~~System without a circulation loop or heat-traced line (feet)~~	~~System with a circulation loop or heat-traced line (feet)~~	~~Lavatory faucets – public (metering and nonmetering) (feet)~~
1/4[a]	0.33	~~50~~	16	~~6~~
5/16[a]	0.5	~~50~~	16	~~4~~
3/8[a]	0.75	~~50~~	16	~~3~~
½	1.5	~~43~~	16	~~2~~
5/8	2	~~32~~	12	~~1~~
¾	3	~~21~~	8	~~0.5~~
7/8	4	~~16~~	6	~~0.5~~
1	5	~~13~~	5	~~0.5~~
1 ¼	8	~~8~~	3	~~0.5~~
1 ½	11	~~6~~	2	~~0.5~~
2 or larger	18	~~4~~	1	~~0.5~~

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 gallon per minute = 3.785 L/m, 1 ounce = 29.6 ml.

a. The flow rate for $^1/_4$ -inch size pipe or tube is limited to 0.5 gallons per minute; for 5/16-inch size, it is limited to 1 gpm; for 3/8-inch size, it is limited to 1.5 gpm.

702.8.2.1 Water volume determination. The volume shall be the sum of the internal volumes of pipe, fittings, valves, meters and manifolds between the circulation loop pipe or an electrically heat-traced pipe ~~source of hot water~~ and the termination of the fixture supply pipe. The volume shall be determined from the liquid ounces per foot column of Table 702.8.2. The volume contained within fixture shutoff valves, flexible water supply connectors to a fixture fitting, or within a fixture fitting shall not be included in the water volume determination. ~~Where hot or tempered water is supplied by a circulation loop pipe or an electrically heat-traced pipe, the~~ The volume shall include the portion of the fitting on the branch ~~source~~ pipe that supplies water to the fixture.

Reason: The reason for this proposal is to correlate the provisions with what was approved for inclusion in the 2015 IECC-CE. CE 274 and CE 275 were approved. The effect of this is to remove two columns from the table, and the associated text from the section.

What remains are the provisions that limit the volume to 24 ounces from a circulation loop pipe or a heat traced pipe to plumbing fixtures or appliances. This will result in reduced hot water delivery times, less wasted water and less wasted energy.

We have not done anything to change the volume requirements from water heaters (or boilers) that have been approved for use in the 2015 IECC.

Cost Impact: Will not increase the cost of construction. These provisions were already in the IgCC. The proposal correlates them with the 2015 IECC.

GEW159-14: 702.8-KLEIN959