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April 26, 2024

Office of Response and Recovery
Federal Emergency Management Agency
U.S. Department of Homeland Security
500 C Street SW
Washington, DC 20472

Via e-mail to fema-recovery-pa-policy@fema.dhs.gov

Re: Public Assistance Consensus-Based Codes, Specifications, and Standards Policy Update

The International Code Council (ICC) is a nonprofit organization, driven by the engagement of its more than 60,000 members, that is dedicated to helping communities and the building industry provide safe, resilient, and sustainable construction through the development and use of model codes (I-Codes) and standards used in design, construction, and compliance processes. Most U.S. states and communities, federal agencies, and many global markets choose the I-Codes to set the standards for regulating construction and major renovations, plumbing and sanitation, fire prevention, and energy conservation in the built environment.

The Code Council appreciates the participation of the Federal Emergency Management Agency's (FEMA) Building Science Branch during the consensus-based codes and standards development processes to update the I-Codes as well as the April 16, 2024 response to ICC from FEMA Deputy Associate Administrator Keith Turi (hereafter referred to as "PA's April 2024 Letter") concerning the Agency's proposed update to version 3 of FEMA Policy FP-104-009-11 "Consensus-Based Codes, Specifications, and Standards for Public Assistance" (CBCSS).[1] The Code Council welcomes the opportunity to submit the following comments in response to the proposed update to the CBCSS, which roughly align with the CBCSS proposal's ordering.

PRINCIPLES

ICC appreciates that the Agency is committed to the same principles of the most recent version of the CBCSS policy – to "Increase the Resiliency of Communities after a Disaster," to "Protect Lives and Property," and to "Support the Efficient Use of Federal Dollars" – along with the additional principle of ensuring an "Equitable Outcome." The additional principle of equitable outcomes is of utmost importance, given the growing body of research proving that the "impact of natural disasters is greater on disadvantaged and vulnerable populations", which are often concentrated in these underserved communities.[2] These principles are consistent with the last several editions of the FEMA Strategic Plan,[3]

[1] FEMA, Public Assistance Consensus-Based Codes, Specifications, and Standards Policy Update Public Comment Period (March 2023).
[2] Mazdiyasni & AghaKouchak, Natural Disasters Are Prejudiced Against Disadvantaged and Vulnerable Populations: The Lack of Publicly Available Health-Related Data Hinders Research at the Cusp of the Global Climate Crisis, GeoHealth (January 2020).
[3] FEMA, Strategic Plan 2022-2026, Strategic Plan 2018-2022, Strategic Plan 2014-2018.

its Building Codes Save report,[4] its Building Code Strategy,[5] and the ongoing National Initiative to Advance Building Codes.[6]

A. APPLICABILITY

The Code Council commends the Agency for revising and simplifying the earlier applicability provisions. Particularly, ICC applauds the clarity provided by provisions 2 and 3 – essentially ensuring that all buildings-related permanent work shall be subject to at least the latest published editions of hazard resistant codes and standards, and to above-code conditions in communities that have adopted such provisions. We further support the inclusion of the example provided within provision 3. The Code Council also appreciates that, in above-code situations for various hazard resilience situations, the IBC is the standard by which above code provisions are measured, and we encourage this measurement to remain in the final published version of the PA CBCSS policy. Using the IBC as the basis reflects the continuous improvement that results from the 3-year cadence of I-Code updates. This rhythm ensures that new and revised provisions in the code reflect the latest findings from post-disaster assessments, advances in the building sciences and structural engineering, and they are incorporated into the base model codes. These base codes improve community and national resilience cycle after cycle, resulting in minimum codes that mitigate against future natural hazards (e.g. freeboard requirements to address flood, structural bracing to address seismic, various horizontal and vertical loading considerations to address wind and snow, materials considerations to address flammability, etc.).

B: IMPLEMENTATION

ICC notes that provisions 6 and 8 may lead to some confusion as applicants seek clarity further into the policy in Appendix A. The latest editions of the I-Codes make reference to numerous standards, the requirements of which in a given circumstance are described by the code. As drafted, provision 6 raises questions as to the extent to which referenced codes or standards can apply. We encourage FEMA to strike provision 6 given this confusion, or to otherwise make clear that—unless it conflicts with other codes Appendix A references—all standards required by the codes listed in Appendix A are required as the code referencing them prescribes.

ICC supports provision 8 but believes clarification is necessary to ensure it does not unintentionally limit compliance options in use for the overwhelming majority of the country. To illustrate, FEMA has proposed including within Appendix A the Uniform Plumbing Code (UPC) and Uniform Mechanical Code (UMC), both of which include provisions concerning fuel gas. Yet, at the same time, the updated CBCSS policy removes a reference within the current Interim Policy to the International Fuel Gas Code (IFGC). As detailed further below, the IFGC is used in 42 states – covering 82% of the U.S. population and has been vetted and recognized by FEMA's NFIP and Community Rating System programs. Consequently, provision 8 could (1) require the application of a fuel gas code that FEMA has neither vetted nor approved for the CBCSS policy, and (2) impose the use of a fuel gas code that conflicts with the fuel gas code that has been chosen and adopted jurisdictions that serve more than four out of five Americans.

Appendix A: Consensus-Based Codes, Specifications and Standards

[4] FEMA, Building Codes Save: A Nationwide Study (November 2020).
[5] FEMA, *Building Codes Strategy* (March 2022).
[6] The White House, *FACT SHEET: Biden-Harris Administration Launches Initiative to Modernize Building Codes, Improve Climate Resilience, and Reduce Energy Costs* (June 2022).

ICC is pleased to see that the Agency continues to recognize the provisions of the IBC, International Existing Building Code (IEBC), International Energy Conservation Code (IECC), or IRC as eligible alternatives to floodproofing and elevation requirements – as described in 44 CFR § 9.11(d) – for structures being repaired or reconstructed in flood hazard areas. Such recognition is appropriate considering the multiple analyses and corresponding publications by FEMA detailing how the I-Codes meet and exceed minimum flood mitigation requirements.[7] Additionally, the Code Council would encourage sustainment of:

- the requirement that in areas where tornado shelter design wind speeds are 250 miles per hour or greater, storm shelters or safe rooms for elementary and secondary schools housing 50 or more students, emergency operations centers, 911 call stations, fire stations, rescue stations, ambulance stations, and police stations are designed to ICC 500 standards, and
- the requirement for compliance with relevant hazard specific provisions in the IBC, IEBC, IRC, and IWUIC for wind, seismic, flood, temperature, ice and snow, and wildfire in at-risk communities.

The former provision is aligned with past Mitigation Assessment Teams recommendations to the Agency coming out of multiple devastating tornadic events that have resulted in significant loss of life and/or property. FEMA has published four editions of its P-361, "Safe Rooms for Tornadoes and Hurricanes; Guidance for Community and Residential Safe Rooms", which have each contributed significantly to the ICC/NSSA Standard for the Design and Construction of Storm Shelters (ICC 500).[8] ICC 500 is the most widely utilized consensus code for both residential and community storm shelters.

As noted above in "A. APPLICABILITY", the latter provision reflects the continuous improvement aspect of I-Code development, which results in minimum codes that incorporate resilience provisions that take into consideration evolving future natural hazards.

Appendix A (chart)

As noted in previous meetings and communications, the Code Council wishes to express concern over FEMA diluting its longstanding support of I-Code adoption and implementation as integral contributions to community resilience — including in the Hazard Mitigation Assistance Program and Policy Guide; Consensus-Based Codes, Specifications and Standards for Public Assistance, FEMA Recovery Interim Policy FP-104-009-11 v2 ("Interim Policy"); *Inflation Reduction Act* implementation; and Community Rating System Coordinator's Manual — to also allow for a series of alternative codes promoted by the International Association of Plumbing and Mechanical Officials (IAPMO) for reasons unrelated to community resilience.

The Code Council wishes to reiterate earlier concerns that FEMA should prioritize the use of codes that incorporate the latest hazard resistant design and are consensus-based, nationally utilized, coordinated, and cost effective to maximize resilience and minimize implementation challenges.

> **Latest hazard-resistant design.** *Stafford* Sec. 406(e), as amended in 2019 by the *Disaster Recovery Reform Act* Sec. 1235(b), and the current Interim Policy on CBCSS all require FEMA to fund Public

[7] *See e.g.*, FEMA, Building Code Documents (listing numerous supportive analyses including "Building Code Requirements That Exceed or Are More Specific Than the National Flood Insurance Program (2021)," "Significant Building Code Requirements That Exceed or Are More Specific Than the National Flood Insurance Program (2021)").

[8] FEMA, P-361 "Safe Rooms for Tornadoes and Hurricanes; Guidance for Community and Residential Safe Rooms" (April 2021).

Assistance repair, reconstruction, or replacement in conformity with "the latest published editions of relevant consensus-based codes, specifications, and standards that incorporate the latest hazard-resistant design…" (emphasis added). In contrast to the International Plumbing Code (IPC), the IAPMO developed Uniform Plumbing Code (UPC):

- Fails to clearly protect plumbing systems from flood hazards;[9]
- Does not protect piping located under foundations from the effects of expansive soil swelling and shrinking and adequately prevent building foundations from failing;[10]
- Prohibits air admittance valve technology (AAVs), which subjects UPC systems to longer repair times and increases risks of water intrusion and structural damage;
- Facilitates installation of showerheads that each waste an addition 4 gallons of water per day;[11] and
- Requires installation of an unused waterline behind non-water urinals that can lead to biofilm and pathogen growth.[12]

In contrast to the International Mechanical Code (IMC), the IAPMO-developed Uniform Mechanical Code (UMC):

- Does not assure adequate air quality by including ventilation requirements for unoccupied spaces, a term which itself is undefined in the UMC;[13]
- Does not adequately address fire resistance and thermal envelope considerations by only addressing fire-blocking at the floor level;[14]
- Does not adequately address wind hazards;[15] and
- Does not protect solar thermal systems in colder climates from freezing.[16]

In sum, the UMC and the UPC do not incorporate the latest hazard resistant designs.[17]

In explaining its decision to include the UMC and UPC in its draft CBCSS policy, PA's April 2024 Letter noted that the UPC and UMC "contain important hazard-resistant provisions" and that they are "consistent" with NFIP requirements. Neither of these statements capture the applicable statutory requirement from *Stafford* Sec. 406(e) that these codes "incorporate the latest hazard resistant design." As noted above, neither the UPC nor UMC meet this requirement.

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[9] In contrast to the IPC which addresses location and installation of water, sanitary, and storm piping, seals, covers, fixtures, water heaters, and vents/vent systems to mitigate against flood hazards, the UPC states vaguely and insufficiently that "plumbing systems shall be located above the elevation in accordance with the building code for utilities."

[10] See International Plumbing Code, Sec. 305.8.

[11] Based on the UPC requiring a maximum showerhead flowrate that is .5 gallons per minute more than the IPC, the average time spent in a shower per EPA, and a four-person household.

[12] Ibekwe & Murinda, Linking Microbial Community Composition in Treated Wastewater with Water Quality in Distribution Systems and Subsequent Health Effects, Microorganisms (December 2019).

[13] The IMC requires that uninhabited spaces, such as crawl spaces and attics, be provided with natural ventilation openings as required by the IBC or be provided with a mechanical exhaust and supply air system.

[14] In contrast, the IMC which provides a complete list of requirements to ensure fire resistance and energy conservation concerning where stud wall cavities or the spaces between solid floor joists are used as air plenums.

[15] The UMC vaguely states that "floor furnaces shall be protected, where necessary, against severe wind," and that appliances on roofs "withstand climatic conditions." In contrast the IMC requires equipment and appliances be designed and installed to resistant the wind pressures determined in the latest IBC.

[16] The IMC requires solar thermal systems and components to be protected from damage by freezing of heat transfer liquids at low ambient temperatures.

[17] Like the UPC, the NPSC also permits excess water use and does not adequately protect foundations.

Consensus-based. As noted above, *Stafford* Sec. 406(e) requires the codes FEMA cites be "consensus based." Eleven of the seventeen members of IAPMO's Board of Directors are members of a private sector industry association that has a business interest in the codes that govern their work. In developing codes and standards, achieving "consensus" means that organizations charged with or overseeing those doing so cannot be dominated by a single interest. "Consensus" is a meaningless concept unless it represents consensus among diverse stakeholders and interests. To prevent dominance, the Code Council and other standards developing organizations ensure no single interest constitutes more than one-third of a given committee. Despite listing just 5 members of the above-mentioned private sector industry organization, roughly half the 2024 UPC development committee includes members of that organization, which IAPMO has listed under alternative categories. For the UMC, 4 members are listed when the actual extent of the representation is more than a third.

Consensus is not possible for the UPC, UMC, or National Standard Plumbing Code (NSPC) under IAPMO's current structure.

We recognize -- as noted in PA's April 2024 Letter -- that the UPC and UMC are ANSI accredited standards. The federal government, through the Office of Management and Budget Circular A-119, declined to adopt ANSI accreditation as determinative of a standard or standards development organization's implementation of a consensus-based process.[18] Furthermore, ANSI's Essential Requirements make clear that no interest group retain more than a third of the votes in development of standards that affect life safety.[19] As noted above, this threshold has been sidestepped in the UMC and UPC's development.

Nationally utilized. The existing Interim Policy appropriately defines "Consensus-based codes" as "National… voluntary codes," while its principles for implementation refer to applicable consensus-based codes as "the latest nationwide consensus-based codes…" (emphasis added). FEMA requires its approved codes to be adopted nationwide to ensure consistency and to raise the bar for building resilience uniformly, as greater consistency minimizes confusion and promotes market efficiency and cost savings. ICC supports the updated policy's sustaining both of these references and as well as its focus on codes with national applicability. The I-Codes are adopted in all 50 states and by the federal government. For example, the General Services Administration (GSA),[20] Department of Defense (DOD),[21] Veterans Administration (VA),[22] and the Architect of the Capitol all require the IPC and IMC for federal buildings. Approximately 75% and 87% of the U.S. population live in areas that have adopted the IPC and IMC, respectively. By contrast, the UMC is adopted in 3 states covering 13% percent of the U.S. population and the National Standard Plumbing Code is developed for and adopted by a single state. The NFPA 5000 is not used by any jurisdictions across the U.S. The UPC, UMC, NSPC, and NFPA 5000 are not "national" codes. ICC believes it was appropriate for FEMA to not include the NSPC in the CBCSS update and to remove the reference to the NFPA 5000.

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[18] Executive Office of the President/Office of Management and Budget (OMB), Circular A-119: Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities (January 2016).

[19] ANSI, *Essential Requirements* ("Historically the criteria for balance are that a) no single interest category constitutes more than one-third of the membership of a consensus body dealing with safety-related standards . . . interest categories shall not be created for the purpose of avoiding balance requirements") (January 2024).

[20] GSA, *Facilities Standards for the Public Buildings Service, P100* (October 2021 with 2022 addendum).

[21] DOD, *Unified Facilities Criteria: DoD Building Code, Policy 1-200*, Whole Building Design Guide (September 2022 with February 26, 2024 changes).

[22] VA, Design & Construction Procedures (PG-18-3) (November 2023).

In PA's April 2024 Letter to ICC, Public Assistance explained that it included UPC and UMC because they are "widely used throughout the nation." We disagree that a code (the UMC) that is only required by 3 states and in use by about one tenth of the U.S. population is "widely used throughout the nation." We further disagree that "widely used throughout the nation" equates to "nationwide" or "national," particularly where the alternative I-Codes are actually adopted and in use in nearly every U.S. state.

The policy purpose behind the Interim Policy's speaking specifically to "national" codes is: "to define the framework and requirements for consistent and appropriate implementation of consensus-based design, construction and maintenance codes, specifications and standards." (emphasis added). The Interim Policy seeks to raise the bar for building resiliency uniformly. Greater use of consistent, more resilient construction codes advances hazard resistance but also eases implementation for both FEMA and state, local, tribal, and territorial governments. Greater consistency promotes market efficiency and cost savings.

Hundreds of construction codes and standards have been developed in the United States. FEMA's Interim Policy winnowed these to two pages for buildings to promote consistency and ease implementation. Expanding the Appendix to include every code or standard requested of the Agency is inconsistent with the Policy's purpose, would complicate and hinder implementation, and encourage balkanization of construction requirements, which is not in the public interest. Moreover, such a step is unnecessary given the Interim Policy's recognition that state and local code adoptions vary, permitting applicants to identify "different locally adopted codes, specifications or standards that are the equivalent to or more stringent than the consensus-based codes, specifications and standards."

Coordinated. The I-Codes, which cover different building types and building systems, are intentionally correlated—through shared approaches and hundreds of cross references—to form an integrated and coherent system of building safety. To illustrate, the IPC and IMC contain 483 total cross references with the other eight I-Codes listed in the Interim Policy. These cross-references at the simplest level refer to terms used throughout the codes and increase in importance to include life safety considerations: combustible materials, roof drainage systems, plumbing fixture numbers, fire protection systems, and means of egress. The UPC, UMC, NSPC, and NFPA 5000 are not correlated with the core building codes (IBC, IRC, etc.) that are adopted in every state, required by the federal government for federal defense[23] and non-defense[24] facilities, and specified through the Interim Policy. This lack of correlation fosters inconsistencies in approaches that can create implementation challenges that could slow recovery and risk confusion and a lack of necessary coordination during construction.

To illustrate, the UPC includes a single vague statement that "fixtures and fittings for persons with disabilities shall be in accordance with ICC A117.1 and the applicable standards referenced in Chapter 4 [of the UPC]." In contrast, the IPC integrates the accessibility requirements included within ICC's A117.1 Accessible and Usable Buildings and Facilities standard—incorporating definitions, provisions for floor surfaces, changes in level, turning space, reach ranges, and operable parts, along with specific provisions for drinking fountains, toilets, sinks, tubs, showers, grab bars, and appliances.

[23] DOD, *Unified Facilities Criteria: DoD Building Code, Policy 1-200*, Whole Building Design Guide (September 2022 with February 26, 2024 changes).
[24] GSA, *Facilities Standards for the Public Buildings Service, P100* (October 2021 with 2022 addendum).

During a disaster, accessibility ensures that all community members can access essential services, resources, and support during and after the event. Failure to address accessibility needs can lead to increased vulnerability and slower recovery for marginalized or disabled populations, exacerbating existing disparities.

Cost-effective. The I-Codes are informed by the latest building science and best practices to enable a broad range of building methods and technologies. The I-Codes, including IBC, IRC, IPC, and IMC, save consumers thousands of dollars compared to the UPC, UMC, and NSPC as these IAPMO codes increase reconstruction costs through self-imposed limits on materials and methods (e.g., the above mentioned and unnecessary installation of unused water lines behind urinals or the arbitrary prohibition on AAV technology). Since it has not been in use or considered for use for nearly two decades, the most recent analyses of the NFPA 5000 are at least 15 years old. At that time, the American Institute of Architects codes consultant described the costs of compliance as "astronomical."

We appreciate FEMA's concerns over not wanting to favor one code developer over another. However, the competitive concerns of code developers are not a consideration in *DRRA* or the Interim Policy. Moreover, those concerns do not justify the inclusion of codes inconsistent with the above stated criteria, the Interim Policy, or *Stafford* Sec. 406(e).

The Agency endorsing alternative construction requirements that are unfamiliar to wide swaths of the country and which do not correlate with core I-Codes—including the IBC and IRC—will complicate project design, construction, and approvals, which will slow repair and reconstruction efforts, risk mistakes, and increase costs. These alternatives would also directly and unnecessarily increase reconstruction costs through self-imposed limits on materials and methods.

Should the Agency decide to sustain inclusion of the UPC and UMC, the Code Council would request explicit reinclusion of the International Fuel Gas Code (IFGC), a model code that regulates the design and installation of fuel gas distribution piping and systems, appliances, appliance venting systems, combustion air provisions, gaseous hydrogen systems and motor vehicle gaseous-fuel-dispensing stations. The Interim Policy referenced the IFGC. The definition of fuel gas includes natural, liquefied petroleum and manufactured gases and mixtures of these gases. While the Interim Policy has been silent regarding the IFGC, the inclusion of the UMC covers these systems and it would only be reasonable to include the IFGC as it is the only fuel gas code, that includes hydrogen gas provisions, and that is correlated with the other I-Codes recognized in Appendix A. As the nation diversifies how it fuels the energy used for transportation and throughout the built environment – with the DOE playing a leading role[25] – hydrogen gas is expected to play an ever growing role.[26] Ensuring that there is a level playing field for Public Assistance-funded projects that incorporate hydrogen as a fuel source or for energy storage through consensus-based safety codes with hydrogen provisions is aligned with the forward-looking posture of the federal government.

Further, like the other I-Codes referenced in the proposed CBCSS policy, the IFGC is nationally utilized: 42 states – covering 82% of the U.S. population – have adopted the IFGC. FEMA has further vetted and approved the IFGC through the Interim Policy, recognized it in its NFIP Checklist, and credited it through the Community Rating System. As with the I-Codes referenced, GSA requires the IFGC.

[25] DOE, U.S. National Clean Hydrogen Strategy and Roadmap (June 2023).

[26] Pub.L. 117-58, *Infrastructure Investment and Jobs Act* (invests $7 billion dollars in U.S. Clean Hydrogen Hubs, $1 billion dollars in the Clean Hydrogen Electrolysis Program, $500 million dollars in Clean Hydrogen Manufacturing, and $750 million dollars in reducing the cost of electrolyzers and other clean hydrogen technologies) (November 2021).

Finally, and should the Agency choose to retain the I-Code alternatives it has referenced in the proposed CBCSS update, the Code Council requests that FEMA clarify in the policy document that the Agency encourages "the use of codes that incorporate the latest hazard resistant design and are consensus-based, nationally utilized, coordinated, and cost effective to maximize resilience and minimize implementation challenges."

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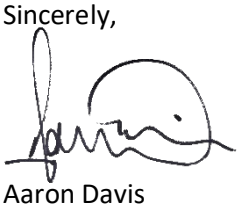
The Code Council welcomes the opportunity to share the above views to ensure the Agency is fully integrating building codes and standards which incorporate the latest hazard resistant design and are consensus-based, nationally utilized, coordinated, and cost effective to maximize resilience and minimize implementation challenges across its various streams of federal assistance for SLTTs. Our mutual goal is to reduce the risk to life safety and property that could result from any hazard event. Should you have any questions concerning the comments above, please do not hesitate to contact me at 202-730-3959 or adavis@iccsafe.org.

Sincerely,



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