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National Institute of Standards and Technology: Request for Information

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The International Code Council (ICC) is a membership association dedicated to building safety, fire prevention, and energy efficiency. The International Codes, or I-Codes, published by ICC, provide minimum safeguards for people at home, at school and in the workplace. Building codes benefit public safety and support the industry's need for one set of codes without regional limitations. The International Code Council also publishes the International Energy Conservation Code (IECC), which is referenced in the Energy Independence and Security Act (EISA) of 2007, and is a national requirement in section 410 of the American Recovery and Reinvestment Act of 2009. Fifty states and the District of Columbia have adopted the I-Codes at the state or jurisdictional level. Federal agencies including the Architect of the Capitol, General Services Administration, National Park Service, Department of State, U.S. Forest Service and the Veterans Administration also enforce the I-Codes for the facilities that they own or manage. The Department of Defense references the International Building Code for constructing military facilities, including those that house U.S. troops, domestically and abroad. Puerto Rico and the U.S. Virgin Islands enforce one or more of the I-Codes.

The International Code Council (ICC) was established in 1994 as a non-profit organization dedicated to developing a single set of comprehensive and coordinated national model construction codes. The founders of the ICC are Building Officials and Code Administrators International, Inc. (BOCA), International Conference of Building Officials (ICBO), and Southern Building Code Congress International, Inc. (SBCCI). Since the early part of the last century, these non-profit organizations developed three separate sets of model codes used throughout the United States. Although regional code development has been effective and responsive to our country's needs, the time came

for a single set of codes. The nation's three model code groups responded by creating the International Code Council and by developing codes without regional limitations; the International Codes.

The National Institute of Standards and Technology, on behalf of the National Science and Technology Council's Sub-Committee on Standards, in its Request for Information (ROI) published on December 8, 2010, invited interested parties to provide their perspectives on the effectiveness of Federal Agencies' participation in the development and implementation of standards and conformity assessment activities and programs. The ROI explained that information obtained from the request will help the Sub-Committee on Standards develop case studies that Federal agencies can consider in their future engagement in standards development and conformity assessment.

In turn, the ROI explained, the case studies would provide agencies information on lessons learned from Federal agency engagement in standards development for technologies that are complex, multi-disciplinary, exhibit system-type characteristics, and involve multiple government agencies, and addressed specific national priorities.

A number of questions were posed in the ROI, regarding the manner, effectiveness and methods for Federal Agency involvement in the development and implementation of standards, and identifying more effective methods of agency engagement in the development of private sector standards.

> **"What methods of engagement are used by Federal agencies to participate in private sector-led standards development? How transparent is each method? How effective is each method? How could the methods be improved? What other methods should the Federal agencies explore? What impact have Federal agencies had on standards activities? How well do Federal agencies coordinate their roles in standards activities in the sector of interest? When Federal agencies have been involved in standards setting efforts in a technology sector, how has the progress of standards setting efforts in this technology sector changed after Federal agencies became involved? Are Federal agencies generally receptive to input from other participants in standards-setting activities? Does receptiveness tend to depend on whether the Federal agency is a regulator or a customer? In those sectors where Federal agencies plays a significant role in standards activities, how valuable and timely is the work product associated with this effort?"**

In order to assist in this effort, ICC would like to describe two separate yet equally interesting approaches to Federal Agency participation in the development of building codes, aimed in one case at safety in commercial buildings and in the other at energy efficiency in new residential construction.

Example One:

World Trade Center NIST NCSTAR 1 (report and recommendations regarding the collapse of the World Trade Center (WTC) buildings 1 &2)

Following the release of the NIST final report on the WTC 1&2 collapse (NCSTAR-1) and the concurrent public concern with the safety of other high-rise buildings that might be targets for terrorist attacks, the Board of Directors of ICC created an ad hoc committee made up of various building experts and code officials to examine the recommendations made in the NIST report, and recommend changes to the ICC International Building Code(IBC) and the International Fire Code(IFC), based on the NIST report. This group also met with and received extensive input from the National Institute of Building Science, as well as with some of the investigators and authors of the NIST WTC report.

The ad hoc Terrorism Resistant Buildings (TRB) committee used the NIST report to create a series of code change proposals, that were then submitted during the regular code change cycle of the ICC, beginning in 2006, and continuing for through the next two code cycles. Changes were made in both the 2006 model codes and the 2009 model codes, as a result of the work of the TRB committee. Among the significant changes recommended by the NIST report and now incorporated into the IBC, which is followed in all 50 states and by most federal agencies, are the following changes for all high rise buildings (occupied floors more than 75feet above the lowest level of Fire Department access):

1) Luminous egress path marking required; 2) exit stairway enclosures required to be separated by no less than 30 feet; 3) enhanced inspection requirements for Sprayed-on Fire-Resistant Material (SFRM).

In addition, the following requirements were added to the IBC, for high rise buildings more than 420 feet in building height:

1)Increased bond strength for SFRM; 2) a second, additional exit stairway, with a minimum separation between stairwells; 3) a requirement to increase structural integrity of exit enclosures and elevator hoist enclosures; 4) redundant sprinkler system risers with alternate floor requirements.

The development and adoption of these changes into the model International Building Code can be seen to be a great success, and there are some lessons to be learned from the process that might inform the Subcommittee, and inform other government agencies.

Development Recommendations:

First, there was a lag between the time of the report and the formulation and submission of proposed code changes into the ICC code development process. This was in part due to the reluctance of NIST investigators and research personnel to draft and directly submit proposed code changes. This occured even though these NIST staff personnel were most familiar with the identified issues and could most accurately describe the change needed to the model building code. While NIST personnel did meet with the TRB Ad Hoc Committee and did appear at code hearings testifying in support of the

proposals, earlier involvement and collaboration would have been helpful and might well have resulted in earlier adoption of the new requirements and more rapid integration of the requirements into new buildings. There is no reason that government personnel should not draft and submit proposed code changes directly into the process, just as participants in code development committees might propose amendments during development of a standard; such activity should be encouraged and supported by agency leadership. Second, agency personnel should be encourage to participate in ad hoc and technical committees formed to develop code change proposals

Implementation Recommendations:

Because building codes are historically adopted by local or state governments, there is often a significant lag time between the incorporation of changes into the codes, and the actual adoption of such codes by local government authorities. The Federal Government could have a dramatic impact on more rapid adoption of the code changes if it would specify in its procurement contracts for new Federal office space that the building must comply with the latest version of the International Building Code.

Example Two:

Department of Energy Amendments to the International Energy Conservation Code (IECC)

Since the passage of the Energy Production and Conservation Act of 2005, the Department of Energy has been authorized by law to work with the International Code Council to make residential structures more energy efficient through participating in the International Energy Conservation Code (IECC) code development process. In both the 2006 and 2009 code cycles, the Department of Energy offered amendments which its staff believed would increase the energy efficiency of the code. Limited success was achieved in these two cycles for a variety of reasons, among those being a variety of similar proposals from an assortment of interests, which, although similar to the Department's proposals, nevertheless competed with the Department's proposals for support at the code hearings.

Prior to the start of the 2012 code change cycle, the Department of Energy convened a stakeholders meeting and worked with these stakeholders over a period of several months in order to reach a consensus on the language and structure of several proposals to increase the energy efficiency of several sections of the IECC model code. Both this preliminary work and the effort to coordinate the efforts of interests with similar goals have led the Department to significant success in achieving its goals during the 2009/2010 cycle, which will result in the 2012 IECC being at least 30% more energy efficient than the baseline 2006 IECC. At the same time as these efforts were going on to increase the efficiency of the model code, the Department of Energy was engaged in efforts to encourage the states to adopt and reach compliance with the 2009 IECC, as a

consequence of language in the American Recovery and Reinvestment Act of 2009 that required state governors to pledge to meet the requirements of the 2009 IECC for residential construction by 2017. While many states proceeded to adopt the 2009 IECC and the Department provided some guidance to states on methods to demonstrate compliance with the 2009 IECC, the Department sent some mixed messages and in some cases missed significant opportunities to encourage adoptions of the 2009 IECC to reap the energy efficiency benefits in states that upgrade to that version of the IECC.

Development Recommendations:

The clear improvement in results as an outcome of the collaboration with stakeholders prior to and during the ICC code development process provides clear guidance to achieve success in engaging with the private sector standards developers. It appears that, in order to be successful at using the private sector process, government agencies need to: 1) be familiar with and fully utilize the procedures of the standard setting organization (SSO); 2) engage with other participants in the process, to facilitate cooperation and mutual support; and 3) maintain an open dialogue with other participants and the SSO.

Implementation Recommendations:

Typically, when both private sector and government agencies think of "conformity assessment," the methods of conformity assessment tend to be thought of in terms of first, second or third party assessments, and then further defined as to the method of conformity testing, whether by laboratory analysis, testing and "listing," or some other type of acceptance process. All of these perspectives seem focused on commercial transactions. It is important when discussing buildings, and the means by which standards for buildings are implemented and ultimately used that there is generally an intermediate step that is typically found in cases where the standard is used primarily as a government regulation, as is the case with building codes or employee protection regulations(such as those used by OSHA). In these cases, the model code or standard does not take effect, and will generally not be complied with, until the governmental authority having jurisdiction adopts the model code or standard into law, thereby giving it the force of law.

The implementation of building codes is infinitely more complex than the development of such codes, primarily because the various states and local jurisdictions use a variety of processes and procedures for adoption. In addition, these local processes are seldom transparent, and almost always influenced by political considerations at both the state and local levels. Nevertheless, from our perspective, and based on our experience in working with the various state and local jurisdictions on adoption efforts, we can make some suggestions for better implementation results that do not conflict with the principles of federalism and are consistent with the responsibilities of agencies to respect the rights and prerogatives of state and local governments. First, we suggest that if agencies can state a consistent and clear objective and make clear through grant preferences and other incentives that jurisdictions which move toward the agency

objectives will be recognized and/or rewarded for moving toward such objectives, many jurisdictions will do what the agency could not legally require them to do. This mechanism can be seen with the implementation of seat-belt laws, as well as previous efforts to implement a 55 mile per hour speed limit. As Federal grants are discretionary, the agency responsible for distribution of such grant funds can generally impose requirements such as the adoption of standards or codes, and/or the enforcement of such standards or codes, as a condition to receiving funding.

While this is undoubtedly true, and agencies have in recent times used this kind of incentive to move states to accept newer standards and codes, we see many instances where agencies miss the opportunity to reinforce policy efforts by requiring states to demonstrate adoption of codes or standards as a condition of receiving Federal grant funds. There is no reason not to reinforce policy imperatives at every opportunity, especially when the object is the implementation of standards or codes that include provisions and policies sought by the agency, including any time grant funds are made available.

In the case of the Department of Energy, the agency has missed the opportunity to reinforce its policy of moving states to adopt the latest building energy codes on several occasions in 2009 and 2010, when grants related to building energy did not require the adoption of the latest target codes as a condition or as a factor in grant scoring. This is true even though Federal law is clear on the authority of the agency to push for the use of the latest standards, and the 2009 Recovery Act itself made the receipt of federal funds for several program dependent on the receipt of a letter of intent from state governors, which letter was required to include a promise of best efforts to adopt such codes. Upon inquiry to the Department, we have been advised that it is the Office of General Counsel that has opposed adding such conditions to grant requirements.

Conclusion

In conclusion, we believe the Federal government should re-commit to the principles expressed in P.L. 104-113, The National Technology Transfer and Advancement Act, and in OMB A-119, that encourage government agencies to utilize standards and model codes developed by private sector standards organizations and to actively participate in the development of such standards.

The International Code Council (ICC) has been fortunate to have consistent and in-depth involvement in the processes it uses to develop its model codes and standards. ICC uses the governmental consensus process to develop its model codes and the ANSI process to develop its standards. In both of these processes, representatives from a range of Federal agencies who own and operate, manage, regulate and or have interests in the characteristics and performance of residential and commercial buildings have been involved as both committee members and as commentators and advocates for proposals that would benefit the agencies and the citizens the agencies serve.