



**International Code Council**  
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National Institute of Standards and Technology  
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*Via Email*

**Re: Comments of the International Code Council on Request for Information Regarding Measurement Science Needs for Water Use Efficiency and Water Quality in Premise Plumbing Systems, Docket Number EE-2009-BT-BC-0021**

The International Code Council (ICC), a member-focused association with more than 64,000 members in the United States and abroad, is dedicated to helping the building community and the construction industry provide safe, resilient, and sustainable construction through the development and use of model codes (I-Codes) and standards used in the design, build, 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, plumbing and sanitation, fire prevention, and energy conservation in the built environment. ICC appreciates the opportunity to submit the following comments on the Request for Information (RFI) published October 10, 2018 (2018 RFI) in the above-named matter before the National Institute for Standards and Technology (NIST).

Parts I and II below provide an overview of the I-Code development process and the International Plumbing Code® (IPC®). Part III provides ICC's comments on the 2018 RFI.

**I. I-Code Development**

The Code Council facilitates the process of developing model codes that benefit public safety and support the industry's need for one set of codes without regional limitations. Consistent with the principles embodied in OMB Circular A-119, which governs the federal government's use of private-sector standards, the governmental consensus process the Code Council uses to govern code changes promotes openness, transparency, due process, balance, and inclusion, and seeks consensus through a series of public forums that are free to attend and open to all.

Changes to the I-Codes are considered every three years. Anyone can submit an amendment, and all amendments are publicly posted. Public hearings are conducted on proposed amendments by code development committees, made up of members with expertise on the subject matter considered. Anyone can apply to be on a code development committee. Public comment is submitted on the outcome of these committee action hearings, which are also publicly available. Public comment hearings are then held on these comments. Following the public comment hearings, local and state governmental members, who are charged with protecting their communities' health and safety and who have no financial stake in the outcome, vote on the adoption of the proposed amendments. Governmental members can participate in this process without travel cost through the ICC's cloud-based voting app, [cdpACCESS™](#).



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The Code Council encourages a healthy debate about proposed changes and the process has built-in safeguards to prevent any one interest from dominating the proceedings. Given its rigor, this process results in codes that provide the highest level of building safety in the world and represent a consensus of interested parties.

## **II. The International Plumbing Code® (IPC®)**

The IPC® establishes minimum requirements for plumbing systems using prescriptive and performance-related provisions. It is founded on broad-based principles that make possible the use of new materials, methods of construction, products, and plumbing design; protect public health, safety and welfare; ensure construction costs are not increased unnecessarily; and make certain that preferential treatment is not given to any particular types or classes of materials, products, or methods of construction. The IPC® is in use or adopted in 37 states, the District of Columbia, New York City, Guam, and Puerto Rico.

## **III. ICC's Comments on the 2018 RFI**

ICC participated in the NIST Measurement Science 2-Day Workshop held August 1-2 2018, and agrees in large part with the focus on the following research areas:

1. Water usage patterns and end uses in commercial and residential buildings as it relates to system design and pipe sizing;
2. Impact of piping material design and installation on the long-term condition of the plumbing system (potable and waste); and
3. Impacts of water use/flow rate/water velocity/residence time on water quality, biofilm, and scale growth.

In depth research in these areas, as prioritized by the workshop team, will help to address the core issue highlighted in the 2018 RFI—premise plumbing systems are being designed and installed with water flow rates significantly lower than those corresponding to the design data in building codes and other guidance. While the research areas discussed in the workshop covered most of the industry needs on this topic, additional areas warrant attention. The workshop focused on piping materials, water chemistry, flow rates, and usage patterns, but did not look at the efficacy of water management and/or on-site treatment strategies for maintaining water quality.

Knowing that water treatment wears off over time, the industry may need to look at new and/or better ways to treat water, or possibly even look at treating water at the point of use. There are technologies that are purported to kill many forms of bacteria, including ultraviolet (UV) sterilization and reverse osmosis (RO) systems. ICC encourages more research and testing into the effectiveness of these types of systems. In sum, ICC supports further research to determine the impact of:

1. Inadequate premise plumbing maintenance and monitoring on water use efficiency and water quality;
2. UV sterilization, RO systems, and chemicals on pathogen growth; and
3. Building Information Management (BIM) systems on water quality and occupant water usage.



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Thank you for the opportunity to provide comment. If you have technical questions concerning ICC's responses, please contact Neil Burning, ICC's Vice President for Technical Resources at 888-422-7233, ext. 5702 or [nburning@iccsafe.org](mailto:nburning@iccsafe.org). For other questions, please do not hesitate to contact me.

Sincerely,

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