

BUILDING CODES:

ORIGINS AND IMPLEMENTATION

A White Paper Report Update

Peder K. Davisson, J.D., Davisson & Associates, PA,
and
Vicki C. Krueger, J.D., Legal Research Center, Inc.

February 2016



The opinions expressed in this report are those of the authors and do not necessarily represent the opinions or policy of the National Association of REALTORS®, its members or affiliate organizations.

© 2015 National Association of REALTORS®

Table of Contents

	Page
Figures and Tables.....	iii
About the Authors	iv
Preface.....	vi
I. AN INTRODUCTION TO BUILDING CODES.....	1
II. STANDARDIZED CODES.....	5
A. The International Code Council.....	6
i. The ICC's vision and purpose	9
ii. The fourteen standardized codes.....	9
iii. The ICC code development process	12
B. Standardized codes at the national level.....	16
i. Accessibility guidelines	16
ii. Emergency management	19
C. State and local adoptions of standardized codes	20
i. International Building Code	21
ii. International Green Construction Code	23
iii. International Residential Code	25
iv. International Mechanical Code.....	27
v. International Energy Conservation Code	29
vi. International Fire Code.....	31
vii. International Fuel Gas Code	32
viii. International Plumbing Code	33
D. Local variations	35
i. Substantive differences	35
ii. Procedural differences	36
III. CURRENT MODEL BUILDING CODE ISSUES	50
A. Mandatory fire sprinkler provision	51
B. Green building.....	63

IV. IMPACT OF STANDARDIZED CODES	67
V. CONCLUSION.....	71
Bibliography	73
Appendixes	79

Figures and Tables

	Page
Figure 1. The ICC Code Development Process, Simplified.....	14
Figure 2. IBC Adoption Map	22
Figure 3. IGCC Adoption Map	24
Figure 4. IRC Adoption Map	26
Figure 5. IMC Adoption Map	28
Figure 6. IECC Adoption Map	30
Figure 7. IFC Adoption Map	32
Figure 8. IFGC Adoption Map	33
Figure 9. IPC Adoption Map	34
 Table 1. Code Adoption Process by State.....	 43
Table 2. Status of Sprinkler Requirements in the States	56

About the Authors

Peder K. Davisson is an attorney practicing in the areas of real estate, corporate law, and finance with the law firm of Davisson & Associates, PA in Minneapolis, Minnesota. He has represented individuals and entities in a variety of real estate projects and transactions involving planned unit developments, multifamily housing and condominium development, planning and zoning issues, commercial properties, residential transactions, and dispute resolution. Mr. Davisson's real estate practice extends nationwide and to projects in the UK. He has been a principal in his current firm, as well as predecessor firms Peder K. Davisson and Associates and Mahoney, Hagberg and Davisson, a Professional Association, since 2001. Prior to that time Mr. Davisson worked in the securities industry as a registered representative, fund manager and trader with the firms of John G. Kinnard & Company, Valhalla Capital Management, Inc., and Electronic Trader's Group, LLC.

Mr. Davisson is counsel to several publicly traded companies as well as numerous start-ups. He has served on the Fourth District Ethics Committee addressing attorney ethics violations and has also taught courses in business law and conflict resolution. Attorney Davisson received his B.S. in Finance from the University of Minnesota, Carlson School of Management and his J.D. from the University of Minnesota Law School.

Vicki C. Krueger, [Legal Research Center](#) Senior Research Manager, received her B.A. from the University of Minnesota School of Journalism and Mass Communication. She pursued her writing and editing interests for ten years before attending the University of Minnesota Law School, where she was an editor of the

Journal of Law & Inequality and a cum laude graduate. In private practice with Fredrikson & Byron and Rosenthal, Rondoni, McMillan & Joyner, Ms. Krueger worked primarily in the areas of commercial litigation and family law, before joining LRC in 1989. Since that time, she has engaged in countless legal research projects, including studies of legal research practices and economics. Ms. Krueger specializes in multijurisdictional research and analysis, including legislative and regulatory tracking in hot topical areas of law. Ms. Krueger has written and published on many legal subjects. Her publications include:

- *State-by-State Guide to Employee Leave and Disability*
- *Recovering Online Legal Research Costs*
- *Private Transfer Fees—Potential for Trouble, Problems for the Future?*
- *Government Responses to Climate Change—A Look at State and Local Actions Affecting the Real Estate Industry*
- *Maintaining Properties in Foreclosure—How Communities Across America are Responding to the Vacant Property Crisis in Their Own Backyards*
- *Water Rights—A White Paper Report*
- *Building Codes: Origins and Implementation*
- *Hydraulic Fracturing: Framing the “Fracking” Frenzy*
- *State and Local Taxation—A White Paper Report*
- *Land Banks—Investing in Communities, Banking on Revitalization*
- *Sales Tax on Services—A White Paper Report*

Preface

Virtually everyone with a connection to the real estate and building industries encounters various building-related codes that can affect them in one way or another. A contractor must meet code requirements to obtain a certificate of occupancy, for instance. Or a REALTOR® may be unable to sell a house because an inspection reveals structural problems—problems that could have been avoided, perhaps, if the applicable code were followed. Building codes can relate to commercial or residential structures, and they cover building standards in general, as well as more specific aspects of building construction and maintenance such as plumbing, mechanical, and fire prevention/protection. Although many codes apply only to new construction, some apply to renovated or existing structures as well. Some codes relate to adjuncts to the principal structure, such as pools and spas. To borrow from a popular catch phrase, when it comes to building-related questions, you might just say, “There’s a code for that.”

This White Paper discusses the history of building codes, the process for their adoption and amendment, and selected “hot topics” of current import and interest. The following discussion will walk the reader through the procedures by which model codes are promulgated, how they are tweaked to meet the unique geographic, climactic, and administrative concerns of a particular locality, and the different ways in which codes are adopted at the local level. Because building code-related issues are sure to arise in a REALTOR®’s practice, this White Paper provides the essential background and basic understanding, as well as links to more detailed authorities, that will enable an informed and professional response.



I. AN INTRODUCTION TO BUILDING CODES

Much of the construction that occurs in the United States is regulated by state or local building codes. Many of these state and local codes are based on “model codes”—that is, state and city officials do not have to invest the effort to create their own unique and original codes, but rather may turn to basic, comprehensive guides promulgated by non-governmental code organizations, such as the International Code Council (ICC).¹ Model building codes set out the suggested minimum requirements for protecting the public health, safety, and welfare through proper building techniques. Generally, the building codes apply primarily to new construction, but their application may also extend to buildings undergoing reconstruction, rehabilitation, or alteration, or when the occupancy of an existing structure changes (e.g., from a one- to a two-family dwelling). Some of the ICC’s other codes (e.g., the International Existing Building Code and the International Property Maintenance Code) are directed specifically toward existing structures.²

The model building codes cover four general areas: general building codes, plumbing codes, mechanical codes, and electrical codes. There are, however, other specific model or standardized codes (such as the Green Construction Code and the Swimming Pool and Spa Code) that address more particularized building concerns. Adherence to the codes is achieved through periodic inspections during construction—an average of ten per structure. This inspection process ensures that structures are

¹ See International Code Council, <http://www.iccsafe.org/Pages/default.aspx>. The International Code Council’s website includes much additional information on the model codes’ history, development, implementation, local adoptions, enforcement, and amendment. See International Code Council, *Codes, Standards & Guidelines*, <http://www.iccsafe.org/CS/Pages/default.aspx>.

² These codes, like all of those promulgated by the ICC, are available for purchase on the ICC’s website (see, e.g., <http://shop.iccsafe.org/>; <http://shop.iccsafe.org/codes.html>).

erected (or modified, or even maintained) according to standards that were developed through a public, consensus-based process geared toward protecting the general well-being of a community.³

The International Code Council may be at the forefront of model code development, but other national and local organizations work toward the establishment of uniform building standards as well. The National Association of Home Builders (NAHB),⁴ for instance, works with its members and legislators to develop and support cost-effective and affordable building codes, standards, regulations, and state and federal legislation in the construction arena. The NAHB's efforts promote uniformity in structural design, materials, energy conservation, fire safety, electrical, plumbing, heating, cooling, ventilation, indoor air quality, radon, accessibility, safety, acoustics, disaster mitigation, green building, and other areas of concern. Much of the NAHB's work is consistent with and supportive of that of the ICC.⁵

Although perhaps less widely adopted, other standardized codes exist beyond those promulgated by the ICC. While the ICC publishes the International Energy Conservation Code (IECC), for instance, the American Society of Heating, Refrigerating & Air-Conditioning Engineers (ASHRAE) also publishes Standard 90.1, which is comparable in nature.⁶ Both the IECC and ASHRAE 90.1 are developed, revised, and

³ See International Code Council, *Introduction to Model Codes*, http://www.iccsafe.org/gr/Documents/AdoptionToolkit/04-Why_Chose_the_I-Codes.pdf.

⁴ National Association of Home Builders (NAHB), <http://www.nahb.org/>.

⁵ See NAHB, *Construction, Codes & Standards*, <http://www.nahb.org/en/research/nahb-priorities/construction-codes-and-standards.aspx>.

⁶ See, e.g., U.S. Dep't of Energy, *Comparison of Standard 90.1-2010 and the 2012 IECC with Respect to Commercial Buildings*, https://www.iccsafe.org/gr/Documents/IECC-Toolkit/2012IECC_ASHRAE%2090%201-10ComparisonTable.pdf; see generally ASHRAE

adopted in open public forums, through a voluntary consensus process. These consensus and hearing processes are critical to widespread support for the standards' adoption.

Because the International Code Council is a—if not *the*—principal player in the model building code arena, much of the following discussion relates to the ICC.



II. STANDARDIZED CODES

A. The International Code Council

As early American populations increased and cities grew, the possible consequences of catastrophes such as fires and structural collapse took on heightened significance. The insurance industry, already an organized force in the nineteenth and early twentieth centuries, as well as other special interest groups, became concerned about the potentially catastrophic losses of life and property that could occur from improper construction techniques, faulty materials, or shoddy workmanship. In the early 1900s, these special interest groups joined together to write up a model law that could be adopted by local legislative bodies to guard against such devastating losses.⁷

Nothing New Under the Sun

Building safety concerns are far from a recent phenomenon. In fact, evidence of building concerns has been discovered in the laws of even ancient civilizations—some commentators say they date back to as early as 2000 (or more) B.C. See David Listokin & David Hattis, *Building Codes and Housing* (U.S. Dep't of Housing & Urban Dev. Apr. 2004); Benjamin Trombley, *The International Building Code (ICC)* (Strategic Standards Aug. 2, 2006). Nowadays, we often think of ancient peoples having, at the least, a much harder row to hoe than we do. The early development of structural rules indicates how important these standards are to basic society.

In the United States, the regulation of building construction dates back to the earliest North American settlements. The modern building codes follow in these historical footsteps.

This early model code, promulgated by the National Board of Fire Underwriters (which later became the American Insurance Association), was offered up to local governing bodies for their voluntary enactment. Local governments could limit the code's application, or even completely decline to enact all or any part of it. Even though its implementation was entirely voluntary, this early code was widely popular in that it provided a single, accessible source of comprehensive, technical, and then-

⁷ See International Code Council, *About ICC*, <http://www.iccsafe.org/ABOUTICC/Pages/default.aspx>; see also International Code Council, *About the International Code Council*, [http://www.iccsafe.org/gr/Documents/AdoptionToolkit/02-About the ICC.pdf](http://www.iccsafe.org/gr/Documents/AdoptionToolkit/02-About%20the%20ICC.pdf).

contemporary building requirements without the need for and expense of investigating, researching, and drafting individual codes at the local level.⁸

In 1915, local code enforcement officials began gathering at regular regional and national meetings to discuss their building code concerns. The attendees formed three organizations of code enforcement officials: the Building Officials Conference of America (now known as Building Officials and Code Administrators (BOCA) International, Inc.); the International Conference of Building Officials (IBC); and the Southern Building Code Congress International, Inc. (SBCCI). In 1994, these three groups, which together have more than 190 years of collective code development experience, formed the International Code Council (ICC), which exists to this day as a promulgator of model codes.⁹

Even now, as with the early code, local legislative and regulatory bodies may choose whether to adopt a model code in whole or in part. Despite the voluntary nature of model code implementation, federal government studies indicate that the overwhelming majority of U.S. cities, counties, and states that have adopted construction codes of any nature chose building and fire codes created by the three groups that make up the ICC.¹⁰

The ICC does not, however, stand alone. Many other organizations support the development and adoption of the ICC codes, including:

- American Gas Association (AGA)

⁸ See *id.*

⁹ See *id.*

¹⁰ See *id.*

- American Institute of Architects (AIA)
- American Institute of Building Design (AIBD)
- American Planning Association (APA)
- American Seniors Housing Association (ASHA)
- Building Owners and Managers Association (BOMA)
- Insurance Building Code Coalition (IBCC)
- Institute for Business & Home Safety (IBHS)
- International City/County Management Association (ICMA)
- National Council of Architectural Registration Boards (NCARB)
- National Apartment Association (NAA)
- National Association of Home Builders (NAHB)
- National Association of Industrial and Office Properties (NAIOP)
- National Multi Housing Council (NMHC)
- Northern California Drywall Contractors Association (NCDCA)
- Northwest Wall & Ceiling Bureau (NWCB)
- Responsible Energy Codes Alliance (RECA)
- U.S. Department of Defense (DOD)
- U.S. Department of Energy (DOE)
- U.S. Federal Emergency Management Agency (FEMA)
- U.S. Department of Housing and Urban Development (HUD)
- Western Contractors Association (WCA)
- Western Wall & Ceiling Contractors Association (WWCCA)

- Window and Door Manufacturers Association (WDMA)¹¹

i. The ICC's vision and purpose

The ICC's self-professed vision is to protect the health, safety, and welfare of the public by creating better buildings and safer communities. It states its mission as "[p]roviding the highest quality codes, standards, products, and services for all concerned with the safety and performance of the built environment."¹² As a result of the ICC's work, code enforcement officials, architects, engineers, designers, and contractors can expect a certain amount of consistency throughout the United States.

The International Code Council promotes its services as providing "a complete building safety system—not just codes."¹³ The ICC offers training, certification, professional development services, online courses, a video series, print publications, and even an academic degree program, in conjunction with community colleges throughout the U.S and an online university.¹⁴

ii. The fourteen standardized codes

The ICC publishes fourteen different standardized codes.

- 2015 International Building Code®
- 2015 International Residential Code for One- and Two-Family Dwellings®
- 2015 International Mechanical Code®
- 2015 International Plumbing Code® (IPC®)

¹¹ International Code Council, *About the International Code Council*, http://www.iccsafe.org/gr/Documents/AdoptionToolkit/02-About_the_ICC.pdf.

¹² See *id.*

¹³ See *id.*

¹⁴ See *id.*

- 2015 International Fire Code[®]
- 2015 International Fuel Gas Code[®]
- 2015 International Energy Conservation Code[®]
- 2015 International Existing Building Code[®]
- 2015 International Wildland Urban Interface Code[®]
- 2015 ICC[®] Performance Code for Buildings and Facilities
- 2015 International Property Maintenance Code[®]
- 2015 International Zoning Code[®]
- 2015 International Private Sewage Disposal Code[®]
- 2015 International Swimming Pool and Spa Code[®] (ISPSC[®])¹⁵

Each of these codes provides comprehensive coverage of the subject area. Because they are all developed through the same process, and in the same forum, the fourteen ICC codes (or “I-Codes”) are all coordinated and compatible with each other; the individual codes cross-reference each other as appropriate. Because there is inevitably some overlap among these codes, the ICC’s unified efforts help facilitate the resolution of common issues in a single and central public forum.¹⁶

The ICC codes address certain primary concerns, including site development, structural requirements, finishes and weather protection, health and safety, building

¹⁵ See International Code Council, *2015 Complete 14 Collection*, <http://shop.iccsafe.org/codes/2015-international-codes-and-references/2015-complete-14-collection.html>.

¹⁶ See *id.*, *ICC Code Development Process*, <http://www.iccsafe.org/cs/codes/Documents/misc/CodeDevelopmentProcess.pdf>.

utility, energy conservation, and protection from other hazards.¹⁷ More specifically, the building codes (IBC, IRC) provisions cover use and occupancy requirements, assembly details, materials requirements, interior light and ventilation, egress/exit requirements, fire-resistance and fire-protection requirements, structural loads, foundations and footings, special uses (such as garages, atriums, mezzanines, high-rise buildings, and interior spaces), and other building systems (like elevators, escalators, fireplaces, chimneys, electrical wiring, mechanical, plumbing, and energy conservation).¹⁸

Some of the details covered in the main codes (IBC, IRC) are also included in more specific codes, like the mechanical, plumbing, and fire codes. The mechanical code (IMC) provisions cover air distribution and duct systems; heating and cooling equipment; hydraulic piping, gas piping, and fuel oil piping; kitchen exhaust equipment; fossil fuel equipment (fireplaces, wood stoves, incinerators, chimneys, ventilation, air quality); and air conditioning and refrigeration. The plumbing code (IPC) governs water supply, drainage, sewage, and materials issues. The fire code (FPC) covers details concerning the fire-related operation, maintenance, and use of buildings; fuel oil tanks and piping; compressed gas or Liquid Propane Gas (LPG); and the use and storage of hazardous materials. Details regarding the amount of insulation required, glass and

¹⁷ See *id.*, *Introduction to Model Codes*, http://www.iccsafe.org/gr/Documents/AdoptionToolkit/04-Why_Chose_the_I-Codes.pdf.

¹⁸ See, e.g., David A. Todd, *Understanding the Building Codes* (Buildipedia Oct. 29, 2010), <http://buildipedia.com/aec-pros/from-the-job-site/understanding-the-building-codes>.

glazing, air infiltration, and energy efficiency in equipment design are covered in the energy code (IECC).¹⁹

iii. The ICC code development process

The ICC codes follow a three-year publication cycle. That is, every three years the ICC codes go through a complete revision process. The current versions were published in 2015.²⁰ The cycle that is currently underway encompasses the years 2015 through 2017.²¹ This will be the first full cycle to implement the ICC's new online system, called "cdpACCESS". The cdpACCESS system incorporates the following features:

- Online collaboration
- Online code change and public comment development and submittal
- Online submission of floor modifications while at the Committee Action Hearing
- Online Assembly Floor Motion Vote following the Committee Action Hearing
- Online Governmental Consensus Vote following the Public Comment Hearing²²

During the revision process, any interested party may suggest a revision by submitting a code change proposal²³ and substantiation. Proposed code changes have

¹⁹ See *id.*; International Code Council, *Introduction to Building Codes*, <http://www.iccsafe.org/codes-tech-support/topics/plumbing-mechanical-and-fuel-gas/introduction-to-building-codes/>.

²⁰ The 2015 codes are available for purchase on the ICC's website, <http://shop.iccsafe.org/codes.html>. For more on the ICC code development process, see International Code Council, *ICC Code Development Process*, <http://www.iccsafe.org/cs/codes/Documents/misc/CodeDevelopmentProcess.pdf>; International Code Council, *Code Development*, <http://www.iccsafe.org/code-development-2/>.

²¹ International Code Council, *Current Code Development Cycle*, <http://www.iccsafe.org/current-code-development-cycle/>.

²² See *id.*, *cdpACCESS*, <http://www.iccsafe.org/codes-tech-support/cs/cdpaccess/>.

been submitted by a wide variety of stakeholders, including industry concerns, building officials, coalitions of advocates, and private individuals. The ICC publishes these proposed changes and distributes them to the public for review before holding a public hearing on the changes. Proposed changes are typically submitted eighteen months prior to the publication of a new version of the code.²⁴

The code development hearings occur approximately six months after the code change proposals are submitted.²⁵ There are many opportunities to get involved during the code development process. At the first public hearing, testimony for and against each proposal is presented to a code development committee consisting of government officials, code officials, home builder representatives, industry groups, and other interested and affected parties. These individuals may or may not be members of the ICC. After hearing the testimony, the committee votes to approve, deny, or revise each change. The committee then publishes its results. The results of the hearings are released three months after the hearings. Interested and affected parties are allowed to submit public comments up to six months after the results are released. The final action hearings are then held approximately four months after public comments are received. Any interested party seeking to have a proposed change reconsidered may submit a challenge to the committee's recommended action. Proponents and opponents then present additional information at a second public hearing, followed by a vote of the full

²³ See *id.*, *Code Development Forms*, <http://www.iccsafe.org/cs/codes/Pages/publicforms.aspx>.

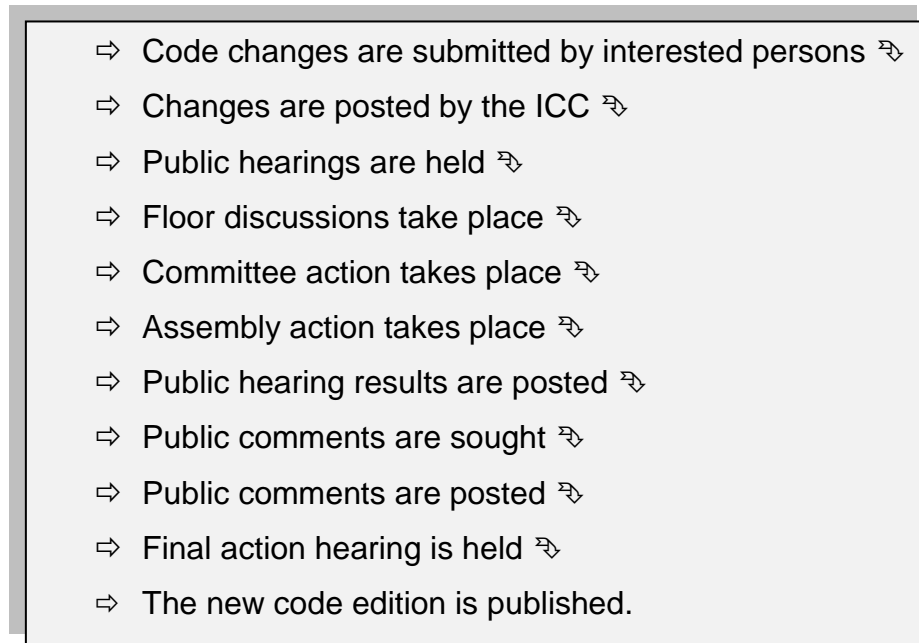
²⁴ See *id.*, *ICC Code Development Process*, <http://www.iccsafe.org/cs/codes/Documents/misc/CodeDevelopmentProcess.pdf>; https://www.iccsafe.org/gr/Documents/HSTTP/ICC_CodeDevelopmentProcess.pdf.

²⁵ See *id.*

ICC membership. The outcome of this vote may be appealed to the ICC Board of Directors. The final printed version of the code is typically released in the calendar year following the final action hearings.²⁶

Figure 1 below illustrates this code development process in a simplified form.

Figure 1. The ICC Code Development Process, Simplified²⁷



The goal of the ICC code-development procedure, says the ICC, is to utilize a process that is fair and open to all interested parties, with safeguards in place to avoid domination by any particular proprietary interests.²⁸ The consensus-based process attempts to achieve this goal by vesting the power of the final vote in those administering, formulating, or enforcing regulations relating to public health, safety, and

²⁶ See *id.*

²⁷ See *id.*, *ICC Code Development Process*, http://www.iccsafe.org/cs/PMG/Documents/Code_Dev.pdf.

²⁸ See *id.*

welfare, as opposed to those with strictly commercial interests.²⁹ The code committees involved in the “committee action” step of the code development process represent widespread interests and include consumers, building owners, regulators, builders, contractors, manufacturers, materials associations, testing labs, academia, designers, research labs, and product certifiers.³⁰ But not less than thirty-three percent of any one committee must consist of regulators.³¹

The development, revision, and adoption of model codes in open public forums, through a voluntary consensus process, is critical to obtaining widespread support for and implementation of model codes. Compromise is fundamental to the process. Safety concerns, market viability, industry fairness, construction costs, and other considerations are all brought forth in the public hearing processes. The resulting codes and standards thus encompass a wide range of issues and concerns, and the agenda of no single special interest group takes precedence.³²

²⁹ *See id.*

³⁰ *See id.*, *ICC Code Development Process*, http://www.iccsafe.org/cs/PMG/Documents/Code_Dev.pdf; see also International Code Council, *ICC Code Development Process*, <http://www.iccsafe.org/cs/codes/Documents/misc/CodeDevelopmentProcess.pdf>.

³¹ *See id.*

³² *See id.*

B. Standardized codes at the national level

i. Accessibility guidelines

Although the ICC codes are national in scope, they are generally adopted and implemented at the local (state or smaller geographic area) level. There is, however, some national building-code related activity. Certain federal laws and programs impose minimum standards applicable to both public and private buildings. The Americans with Disabilities Act (ADA), for example, is the federal law that prohibits discrimination on the

Accessibility: A Booming Business

According to the National Association of Home Builders (NAHB), by 2014, the number of Americans who are 55 and older will have reached 85.3 million, compared to 76.6 million in 2010. This demographic shift presents an opportunity for forward-looking architects, engineers, builders, and real estate professionals. According to studies conducted by the NAHB and the MetLife Mature Market Institute, more Americans 55 and older are interested in staying in communities with convenient resources, such as shopping and medical care. The clear trend is away from assisted living facilities and nursing homes, and toward “aging in place,” according to a 2000 survey conducted by AARP. Older Americans don’t want to move out of their beloved homes, but they need maximum mobility and safety as they age.

This desire to stay at home is likely to change the way homes are built, and this is where Universal Design comes in. Universal Design is the term for aesthetically pleasing handicap-accessible living environments that appeal to all individuals, disabled or not. The Universal Design concept has been around since the 1970s, but gained popularity through endorsements from AARP and the NAHB. Its object is to marry functionality with style, so homeowners don’t feel like they are living in a nursing home. Its concepts include:

- **Equitable use:** All people use the design features in the same way.
- **Flexibility in use:** The features can be adjusted depending on the user.
- **Simple and intuitive:** Any user can understand the feature.
- **Perceptive information:** It’s easy to determine information associated with the feature.
- **Tolerance for error:** The design minimizes danger and potential consequences of misuse.
- **Universal low physical effort:** Users won’t break a sweat using the feature.
- **Size and space for approach and use:** Whether seated or standing, there is room to get around and the ability to reach for things.

See Molly Edmonds, How Stuff Works, *How is an aging baby boomer generation changing the design of homes?*, home.howstuffworks.com/baby-boomer-design.htm.

Homes that incorporate Universal Design features may have a sales advantage. As the demand for accessible living grows, and builders work to meet Baby Boomer needs, coordinating the efforts of federal agencies with those of standards-promulgating organizations (such as the ICC) takes on even greater import.

basis of disabilities affecting a person's mobility.³³ The ADA governs access to the workplace, state and local government services, public accommodations, and commercial facilities. Pursuant to the ADA, the United States Architectural and Transportation Barriers Compliance Board (also called the "Access Board") develops and maintains Accessibility Guidelines (the "ADAAG") for all covered facilities.³⁴ The ADA's Accessibility Guidelines set out general guidance on what facilities and structures are subject to the ADA, from public restrooms to playgrounds, as well as more specific information on minimum accessibility thresholds for those facilities, and cross-references other applicable federal regulations.³⁵

The kinds of facilities covered by the ADA—including restaurants, banks, movie theaters, stadiums, grocery and convenience stores, and medical facilities, to name just a few—are often also subject to local accessibility codes. To ease and facilitate compliance with the complex matrix of federal, state, and local accessibility laws, the ADA authorizes the Department of Justice, upon request from a local official, to certify that local laws meet or exceed the ADA's requirements.³⁶ In addition, the Access Board has established an advisory committee to help coordinate its efforts with private-sector

³³ See Americans with Disabilities Act, <http://www.ada.gov/>; 42 U.S.C. ch. 126.

³⁴ See Guidance on the 2010 ADA Standards for Accessible Design, *available at* <http://www.ada.gov/regs2010/2010ADAStandards/Guidance2010ADAstandards.htm>. Compliance with the 2010 standards was required by 2012 and they remain in effect at this time.

³⁵ *Id.*

³⁶ See *Building Codes and the Americans with Disabilities Act*, http://www.iccsafe.org/gr/Documents/AdoptionToolkit/04-Why_Choose_the_I-Codes.pdf. For more information on building accessibility, see the ICC's [Accessibility Info](#) page.

standards organizations like the ICC, and the ICC accessibility guidelines were designed to comply with the ADAAG.³⁷

Other federal laws, like the Fair Housing Act,³⁸ similarly require that certain new housing be accessible and usable by people with disabilities. The Department of Housing and Urban Development (HUD) has issued Fair Housing Accessibility Guidelines (FHAG) pursuant to this Act.³⁹ Again, state and local jurisdictions often have additional requirements. As with the ADAAG, the ICC accessibility provisions have been designed to comply with HUD's guidelines, and HUD has approved the ICC codes as a safe harbor for complying with FHAG.⁴⁰

As the "Baby Boomer" generation ages and consumers become more interested in accessible or universal design, the ICC and other national organizations, such as the National Association of Home Builders (NAHB), can play an important role in developing residential accessibility standards and in advancing housing accessibility goals.⁴¹

³⁷ *Id.*

³⁸ See [42 U.S.C. § 3601-3609 \(2015\)](#); U.S. Dep't of Housing & Urban Dev., *Fair Housing Act*, http://portal.hud.gov/hudportal/HUD?src=/program_offices/fair_housing_equal_opp/progdesc/titled8.

³⁹ See U.S. Dep't of Housing & Urban Dev., *Fair Housing Accessibility Guidelines*, http://portal.hud.gov/hudportal/HUD?src=/program_offices/fair_housing_equal_opp/disabilities/fhag. FHAG includes guidelines adopted by HUD to provide builders and developers with technical guidance on how to comply with the specific accessibility requirements of the Fair Housing Amendments Act of 1988.

⁴⁰ See *Building Codes and the Americans with Disabilities Act*, http://www.iccsafe.org/gr/Documents/AdoptionToolkit/04-Why_Choose_the_I-Codes.pdf.

⁴¹ See, e.g., NAHB, *Fair Housing Accessibility*, <http://www.nahb.org/en/advocate/policy-resolutions/construction-codes-and-standards/fair-housing-accessibility.aspx>.

ii. *Emergency management*

Other federal programs are concerned more with the structural integrity, rather than the accessibility, of buildings. Many believe that the nation's model building codes, such as those promulgated by the ICC, have a greater impact on the quality of construction and how structures will withstand the forces of nature than any other federal program.⁴² The Federal Emergency Management Agency (FEMA), for instance, believes that the philosophy of ensuring the quality of construction at the local level—*before* a disaster—by making the nation's model building codes adequate for all hazards, has made the work of FEMA much easier.⁴³

FEMA's experience with model code organizations began in the early 1980s. FEMA's most significant work with building codes occurred when the International Code Council, formed from the three original model code organizations, attempted to develop a single International Building Code. It became apparent that two sources of seismic code provisions posed a serious issue that threatened to derail the entire effort. FEMA was one of the first outside organizations to meet with the original International Code Council in 1995 to help resolve this issue. FEMA representatives conferred with the relevant parties, developed a plan that responded to most of the concerns that had been raised, and managed the Code Resource Development Committee Project. The Committee ultimately developed the provisions that were successfully balloted into the International Building Code (IBC). This may have been one of the most critical issues

⁴² See Federal Emergency Management Agency (FEMA), *Building Codes*, <http://www.fema.gov/building-codes>; *id.*, *Building Science*, <https://www.fema.gov/building-science>.

⁴³ See *id.*

facing the IBC process, and its resolution significantly improved the quality and applicability of the new IBC. FEMA's efforts were acknowledged by the International Code Council and the International Conference of Building Officials.⁴⁴

C. State and local adoptions of standardized codes

All states and the District of Columbia have enacted statewide codes of either general or specific application—that is, building codes that apply, statewide, to all buildings, or to just some buildings (e.g., healthcare facilities, or public or state-owned buildings) or some aspect of construction (e.g., fire safety).⁴⁵ When enacting these codes, every U.S. state, or parts thereof, has relied on some version of a standardized building code, although the development of state and local codes varies in both degree and procedures followed.⁴⁶

Some states adopt a particular edition of a model code but leave administrative matters to local jurisdictions. Others apply model codes only to state-funded buildings, and still others require code compliance only for certain specific structures, like schools. In some instances, when a state adopts a model code, it adopts the substantive provisions wholesale, but it may tweak the administrative provisions or the engineering provisions to adapt the code to specific regulatory and climate concerns. States with hurricanes, for instance, have different structural concerns than those that get heavy

⁴⁴ See *id.*

⁴⁵ See Reed Construction Data, *Building Code Reference Library*, <http://www.reedconstructiondata.com/building-codes/>; International Code Council, *Code Adoption Process by State*, http://www.iccsafe.org/gr/Documents/AdoptionToolkit/HowStatesAdopt_I-Codes.pdf.

⁴⁶ See International Code Council, *Code Adoption Process by State*, http://www.iccsafe.org/gr/Documents/AdoptionToolkit/HowStatesAdopt_I-Codes.pdf.

snow every winter, or those that suffer earthquakes. Accordingly, some localization of engineering requirements is in order.⁴⁷

i. International Building Code

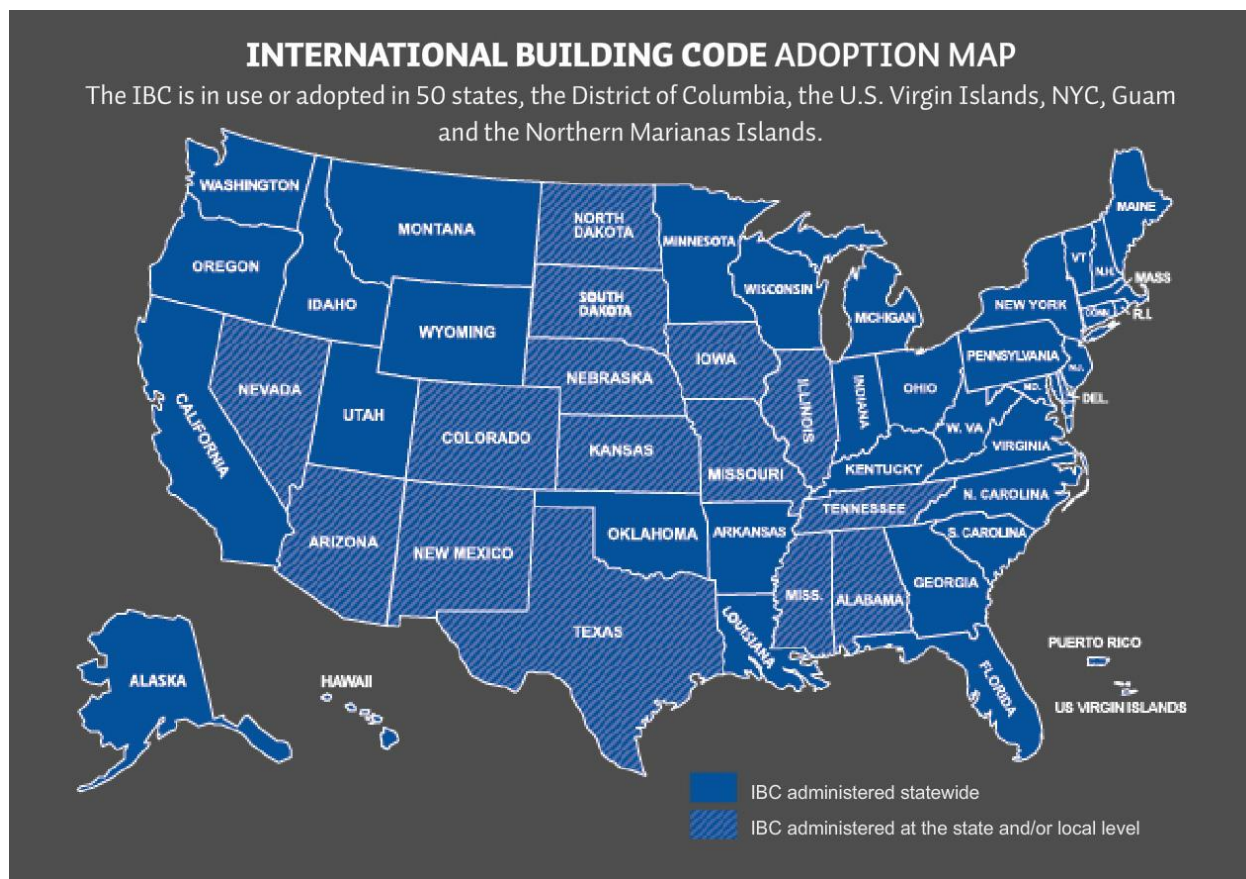
The ICC codes have been adopted to some extent in virtually every U.S. jurisdiction, though some codes are far more popular than others.⁴⁸ The most widespread approval has been achieved by the International Building Code (IBC), which has been adopted or is in use in all fifty states and the District of Columbia, as shown in Figure 2 below.⁴⁹

⁴⁷ See, e.g., Cheryl Runyon, *Natural Disaster Mitigation* (NCSL Legis. Report Vol. 26, No. 11, Oct. 2001) (discussing the responses by Florida, Texas, and other states that chose to implement standardized codes in the wake of severe hurricanes), available at http://www.iccsafe.org/gr/Documents/AdoptionToolkit/04-Why_Choose_the_I-Codes.pdf.

⁴⁸ A summary of ICC Code adoptions by state is reproduced in Appendix 1.

⁴⁹ See International Code Council, *International Code Adoptions*, <http://www.iccsafe.org/gr/Pages/adoptions.aspx> (all maps updated June 2014). For more state-specific information updated as of October 2015, see the ICC's state-by-state adoption chart and jurisdiction adoption chart at <http://www.iccsafe.org/wp-content/uploads/stateadoptions.pdf> and <http://www.iccsafe.org/wp-content/uploads/jurisdictionadoptions.pdf>, respectively. See also Reed Construction Data, *Building Codes Reference Library*, <http://www.reedconstructiondata.com/building-codes/>. For the most up-to-date information, refer to the laws and regulations of a particular jurisdiction.

Figure 2. IBC Adoption Map⁵⁰



The IBC is the foundation for the complete “Family of International Codes®”. The principles of the IBC are based on protecting the public health, safety, and welfare. The provisions of the Code encourage the use of new and smarter technological advances in both materials and design. Today's IBC is known for promoting safety, ease of use, new technology, correlation with other ICC codes, and its open and honest collaborative code development process.⁵¹

⁵⁰ International Code Council, *International Building Code Adoption Map*, <http://www.iccsafe.org/gr/Pages/adoptions.aspx>.

⁵¹ *Id.*, *Overview of the IBC*, <http://www.iccsafe.org/codes-tech-support/codes/2015-i-codes/ibc/>.

ii. *International Green Construction Code*

Contrast the IBC's popularity with that of the relative newcomer to the standardized code market, the International Green Construction Code (IGCC or IgCC).⁵² As Figure 3 below shows, the IGCC has been adopted or is in use in only thirteen states and the District of Columbia.⁵³

Building Green

With increased attention on environmental concerns, such as emissions and waste disposal, it is natural to expect a progression of responses that begins with individuals self-monitoring and changing their own behavior. For example, recycling began on an individual, voluntary basis, and it required significant personal effort. Each individual recycler had to sort materials, find recycling locations, and then transport those materials at their own cost. As these individual responses gained momentum and acceptance, they become widely adopted, and then, often mandated. It is therefore not surprising that the "green movement," which began on an individual, self-volitional basis, has made its way into building and industry codes.

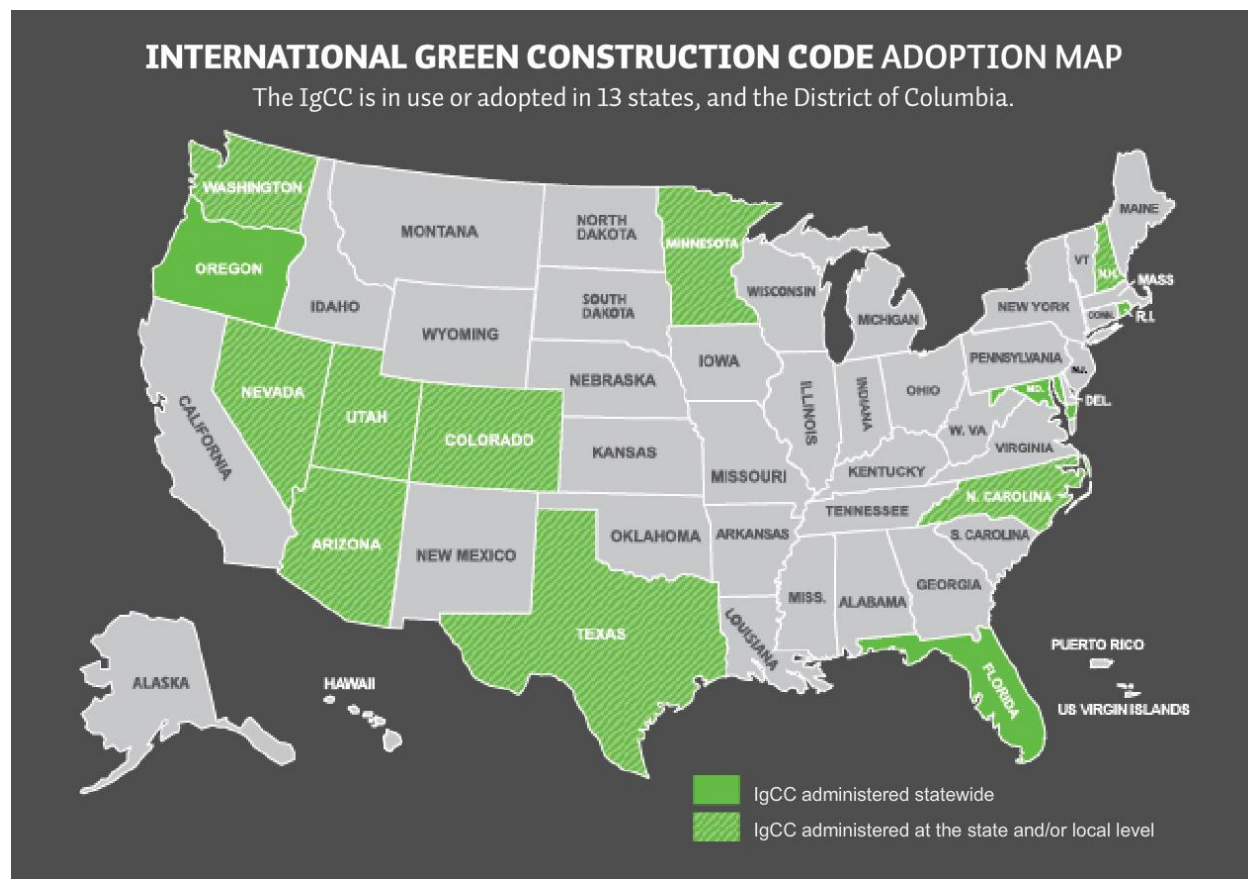
Although the concept of "going green" has been around for many years, it was less than ten years ago that the first International Green Construction Code was adopted by the ICC. The ICC codes have a significant impact on shaping behavior. They become a standard in a given field that is later a legislative or regulatory mandate. In the case of the IGCC, initially only Washington, New Hampshire, and Rhode Island adopted or applied it in all or part of the state. Ten additional jurisdictions have adopted the code since NAR first visited this topic in 2011.

The expected result of widespread adoption of the IGCC is a significant increase in green building materials. According to a forecast by the Freedonia Group, a Cleveland-based research firm, demand for green building products is expected to increase by 13% annually to create a \$71 billion market in 2015. Specifically, sales of green label plus-certified carpets and products made from renewable resources, such as bamboo, and sales of concrete made from recycled materials were expected to increase by 12% and 24% respectively on an annual basis between 2010 and 2015. Thus, what began as a voluntary effort on the part of builders and consumers is expected to turn into a burgeoning new business.

⁵² The IGCC is discussed in more detail in Part III.B below.

⁵³ See International Code Council, *International Code Adoptions*, <http://www.iccsafe.org/gr/Pages/adoptions.aspx> (updated June 2014).

Figure 3. IGCC Adoption Map⁵⁴



The IGCC contains specific requirements that promote safe and sustainable construction. Code officials recognized the need for a modern, up-to-date code governing the impact of buildings and structures on the environment, and the IGCC was borne of this recognition. It is the first model code that includes sustainability measures for the entire construction project and its site—from design through construction, certificate of occupancy, and beyond. The IGCC was developed in collaboration with the American Institute of Architects (AIA); ASTM International; the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE); the Illuminating

⁵⁴ See *id.*, *International Green Construction Code Adoption Map*, <http://www.iccsafe.org/international-code-adoptions/>.

Engineering Society (IES); and the U.S. Green Building Council (USGBC). The IGCC provides a vehicle to regulate the design and performance of both new and renovated buildings in a manner that is integrated with existing codes.⁵⁵

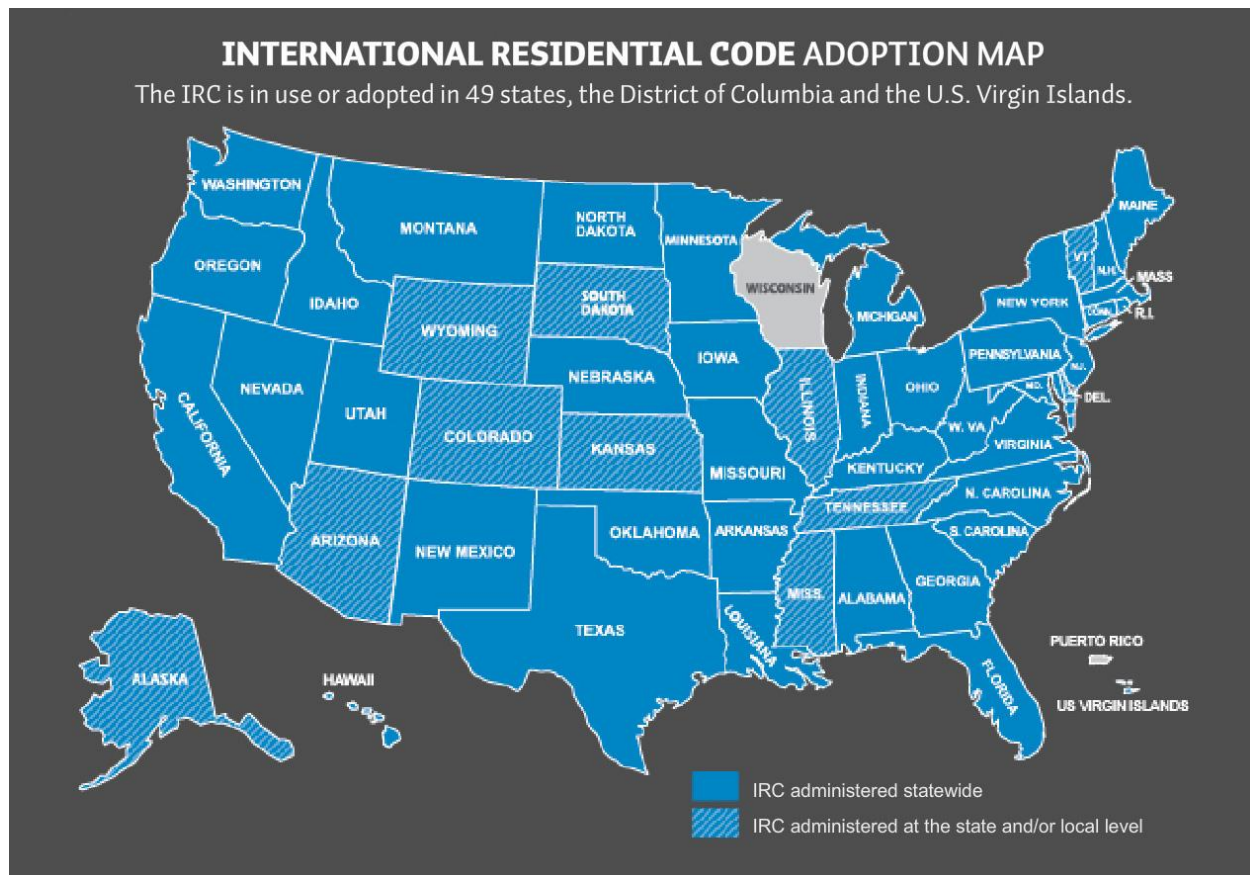
iii. International Residential Code

The International Residential Code (IRC) is second in widespread adoption only to the IBC, having been adopted at the state or local level in forty-nine states and the District of Columbia.⁵⁶ See Figure 4 below.

⁵⁵ *Id.*, Overview of the IgCC, <http://www.iccsafe.org/codes-tech-support/codes/2015-i-codes/igcc/>.

⁵⁶ See *id.*, *International Code Adoptions*, <http://www.iccsafe.org/gr/Pages/adoptions.aspx> (updated June 2014).

Figure 4. IRC Adoption Map⁵⁷



The IRC addresses the design and construction of one- and two-family dwellings and townhouses that are not more than three stories above grade. The Code establishes minimum regulations using prescriptive provisions. The 2015 edition is fully compatible with the Family of International Codes®. The IRC covers all aspects of construction, including:

- Building
- Energy conservation
- Plumbing
- Mechanical

⁵⁷ *Id.*, *International Residential Code Adoption Map*, <http://www.iccsafe.org/international-code-adoptions/>.

- Fuel gas provisions, through an agreement with the American Gas Association
- Electrical provisions from the 2014 National Electrical Code® (NFPA 70)

The IRC, like the other ICC codes, is revised on a three-year cycle through the ICC's consensus code development process, which draws on the expertise of hundreds of plumbing, building, and safety experts from across North America.⁵⁸

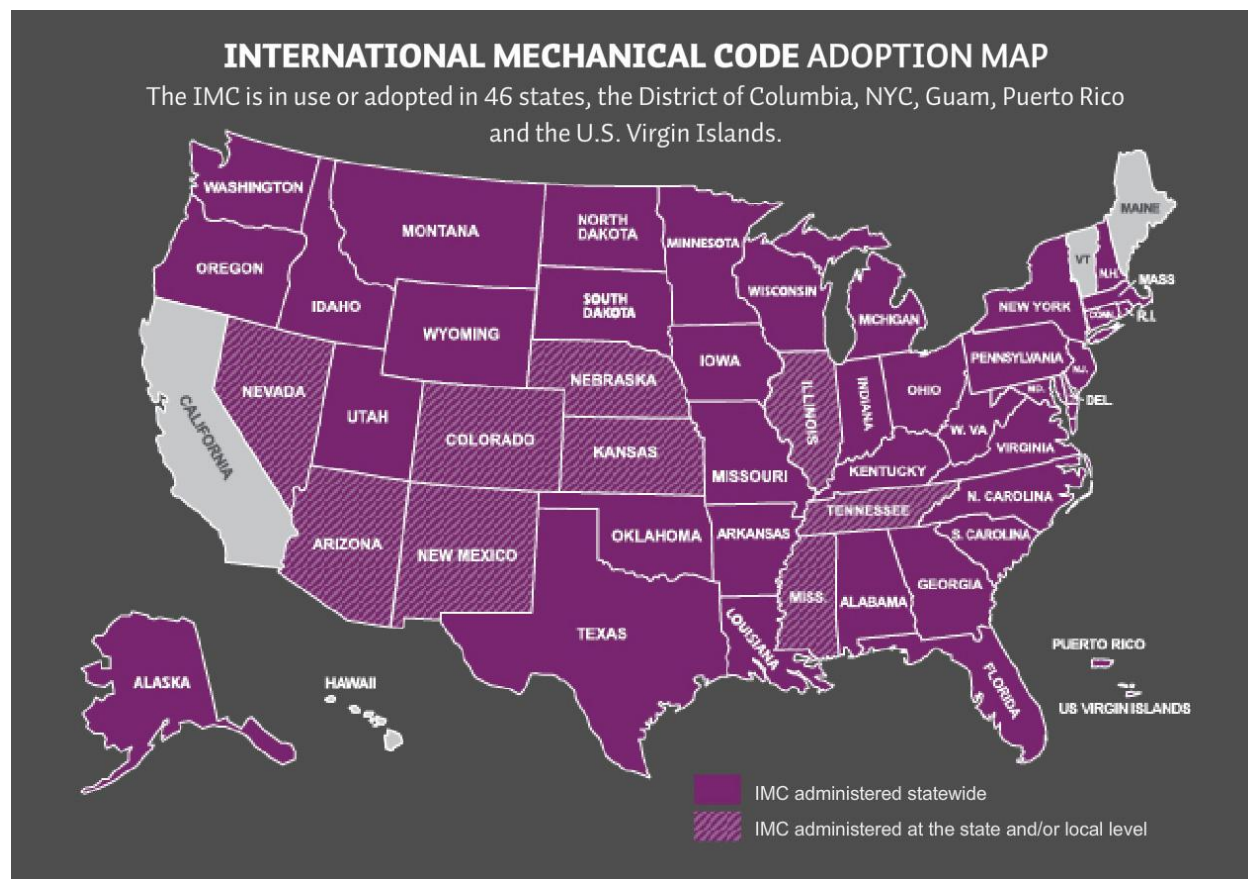
iv. International Mechanical Code

Several other I-Codes have achieved widespread application close to the IRC's. The International Mechanical Code (IMC), for instance, has been adopted at the state or local level in forty-six states and the District of Columbia; the International Energy Conservation Code (IECC) has also been adopted at the state or local level in forty-six states and the District of Columbia. The International Fire Code (IFC) and the International Fuel Gas Code (IFGC) have both been adopted at the state or local level in forty-two states and the District of Columbia.⁵⁹ The state adoptions for these Codes are illustrated in Figures 5 through 8 below.

⁵⁸ International Code Council, *Overview of the IRC*, <http://www.iccsafe.org/codes-tech-support/codes/2015-i-codes/irc/>.

⁵⁹ See *id.*, *International Code Adoptions*, <http://www.iccsafe.org/gr/Pages/adoptions.aspx>.

Figure 5. IMC Adoption Map⁶⁰



The ICC uses the acronym “PMG” to refer to the model codes, standards, services, and resources related to plumbing, mechanical, fuel gas, and swimming pools/spas. The International Mechanical Code, which establishes minimum regulations for mechanical systems using prescriptive and performance-related provisions, is part of the PMG grouping. Originally, PMG stood for Plumbing, Mechanical, and Fuel Gas, but with the release of the International Swimming Pool and Spa Code (ISPSC) in 2012, it

⁶⁰ See *id.*, *International Mechanical Code Adoption Map*, <http://www.iccsafe.org/gr/Pages/adoptions.aspx>.

has expanded to include pools and spas. Accordingly, the ICC's model PMG codes now include the IPC, IMC, IFGC and ISPSC.⁶¹

v. *International Energy Conservation Code*

The International Energy Conservation Code (IECC) addresses the design of energy-efficient building envelopes and installation of energy-efficient mechanical, lighting, and power systems through requirements emphasizing performance. The IECC is designed to meet these needs through model regulations that will result in the optimal utilization of fossil fuel and non-depletable resources. The code includes separate provisions for commercial buildings and for low-rise residential buildings (three stories or less in height above grade). The IECC is fully compatible with the Family of International Codes[®].⁶²

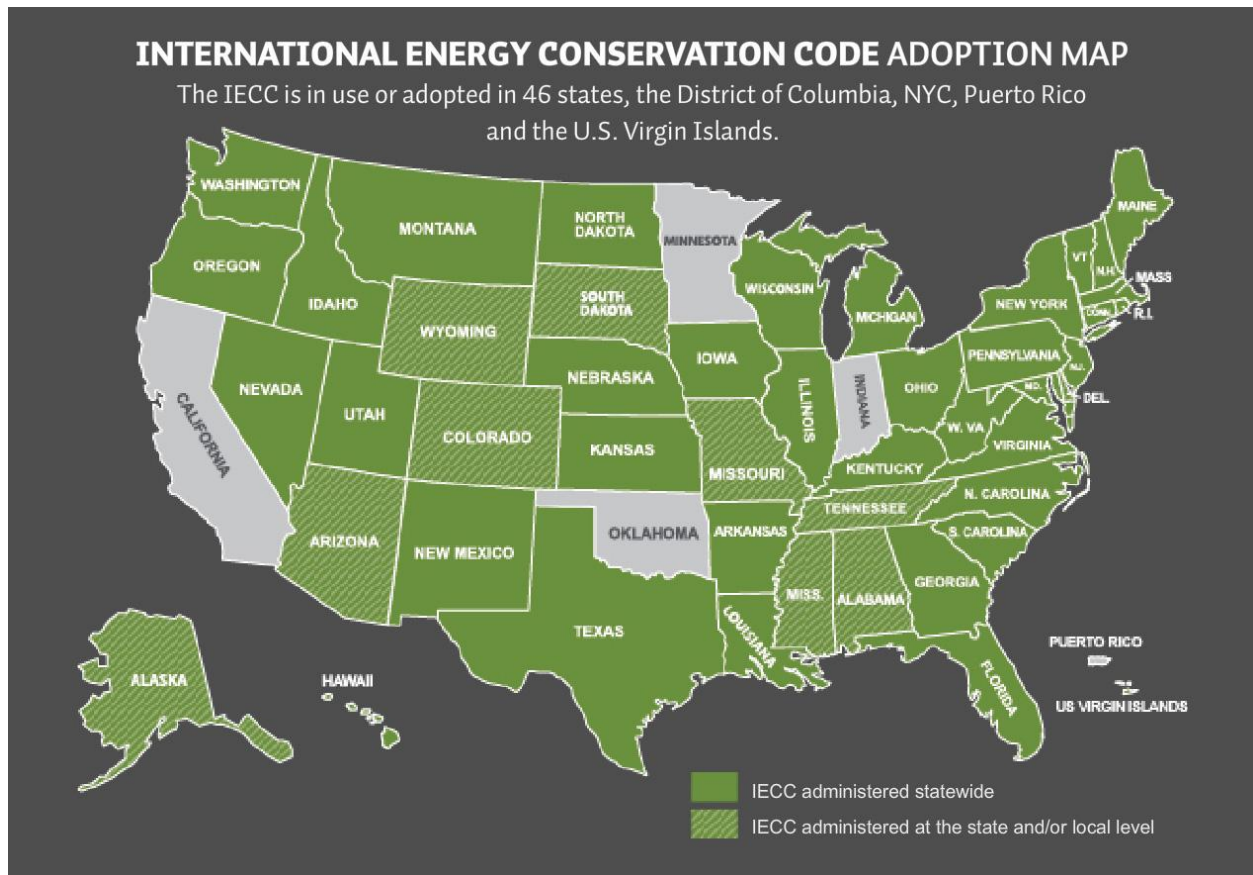
The 2015 IECC has evolved to include a new option for residential compliance, the Energy Rating Index (ERI) path in Section R406, which is supported by home builders and energy efficiency advocates. The 2015 IECC increases energy efficiency, with more flexibility and easier enforcement and compliance for both builders and code officials. The ERI path allows the use of the Home Energy Ratings system (HERS) already used by builders of one-third of all new homes, and the marketing of those new homes to consumers based on those ratings. The IECC, too, is fully coordinated with

⁶¹ See *id.*, *What is PMG?*, <http://www.iccsafe.org/codes-tech-support/codes/2015-i-codes/plumbing-mechanical-fuel-gas-and-swimming-poolspas/>.

⁶² See *id.*, *Overview of the IECC*, <http://www.iccsafe.org/codes-tech-support/codes/2015-i-codes/iecc/>.

the family of I-Codes to ensure consistency and compatibility.⁶³ Figure 6 below shows the adopting jurisdictions.

Figure 6. IECC Adoption Map⁶⁴



⁶³ *Id.*

⁶⁴ See *id.*, *International Energy Conservation Code Adoption Map*, <http://www.iccsafe.org/gr/Pages/adoptions.aspx>.

vi. *International Fire Code*

Code officials also recognized the need for a modern fire code addressing conditions hazardous to life and property from fire, explosion, handling or use of hazardous materials, and the related use and occupancy of buildings and premises. The International Fire Code (IFC) is designed to meet these needs through model code regulations that, like the other codes, safeguard the public health and safety. This comprehensive fire code establishes minimum regulations for fire prevention and fire protection systems using prescriptive and performance-related provisions. The 2015 edition of the IFC, too, is fully compatible with the Family of International Codes®.

The IFC is flexible in that it allows for the use of alternative and innovative materials and performance-based methods in achieving code compliance. That is, it does not give undue preferential treatment to particular types or classes of materials, products, or construction methods. The IFC includes requirements for vacant premises, indoor displays, fire protection water supply, fire apparatus access roads, key boxes, high-piled storage, tire rebuilding and tire storage, mechanical refrigeration systems, explosion control, smoke and heat vents, and lead acid battery systems.⁶⁵

⁶⁵ See *id.*, *Overview of the IFC*, <http://www.iccsafe.org/codes-tech-support/codes/2015-i-codes/ifc/>.

Figure 7. IFC Adoption Map⁶⁶



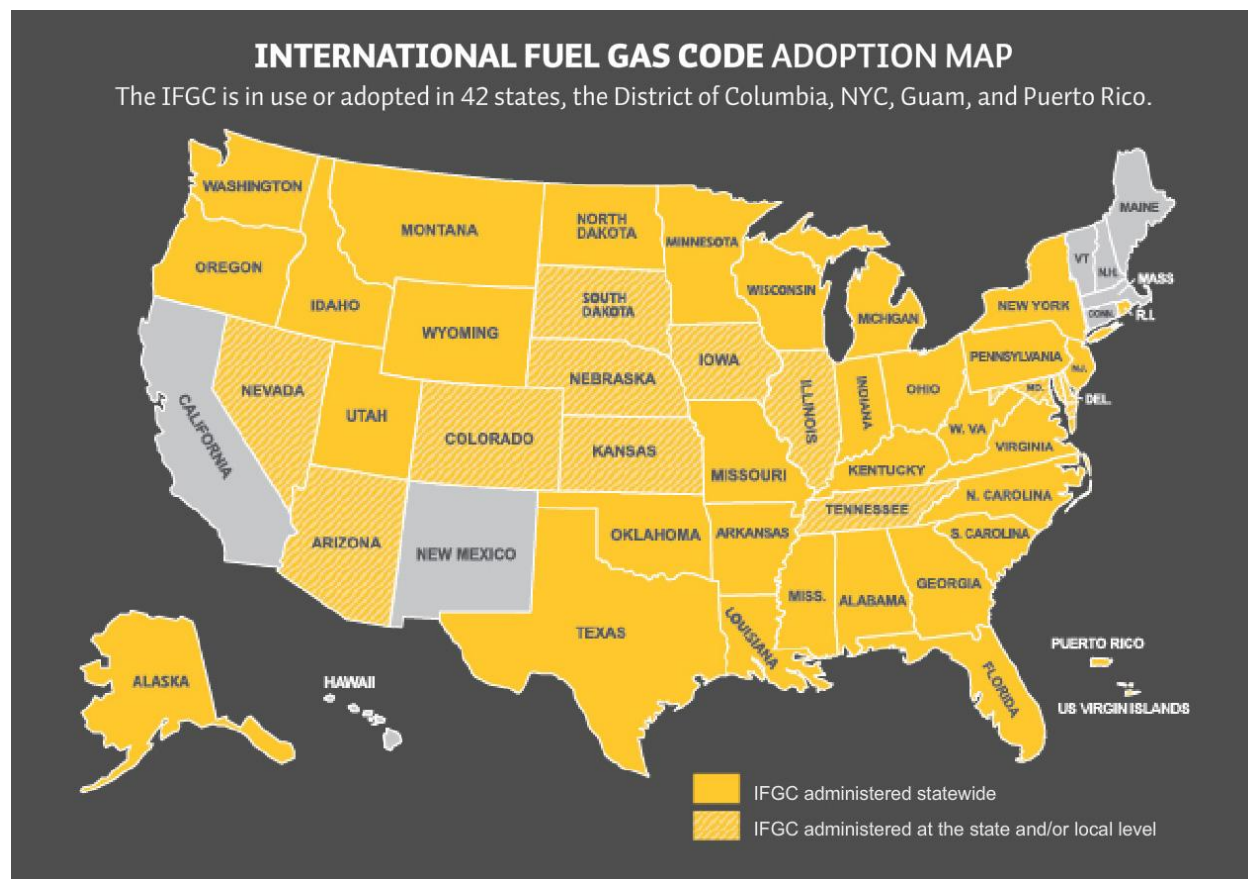
vii. *International Fuel Gas Code*

The International Fuel Gas Code (IFGC), which provides industry-accepted guidance on the safe installation and operation of fuel gas piping systems, appliances, equipment, and accessories, is, as noted above, another part of the group of ICC codes known as the “PMG” Codes.⁶⁷ Figure 8 below shows which states have adopted the IFGC.

⁶⁶ See *id.*, *International Fire Code Adoption Map*, http://www.iccsafe.org/gr/PublishingImages/Adoption_Maps/map-IFC.jpg.

⁶⁷ See *id.*, *What is PMG?*, <http://www.iccsafe.org/codes-tech-support/codes/2015-i-codes/plumbing-mechanical-fuel-gas-and-swimming-poolspas/>.

Figure 8. IFGC Adoption Map⁶⁸

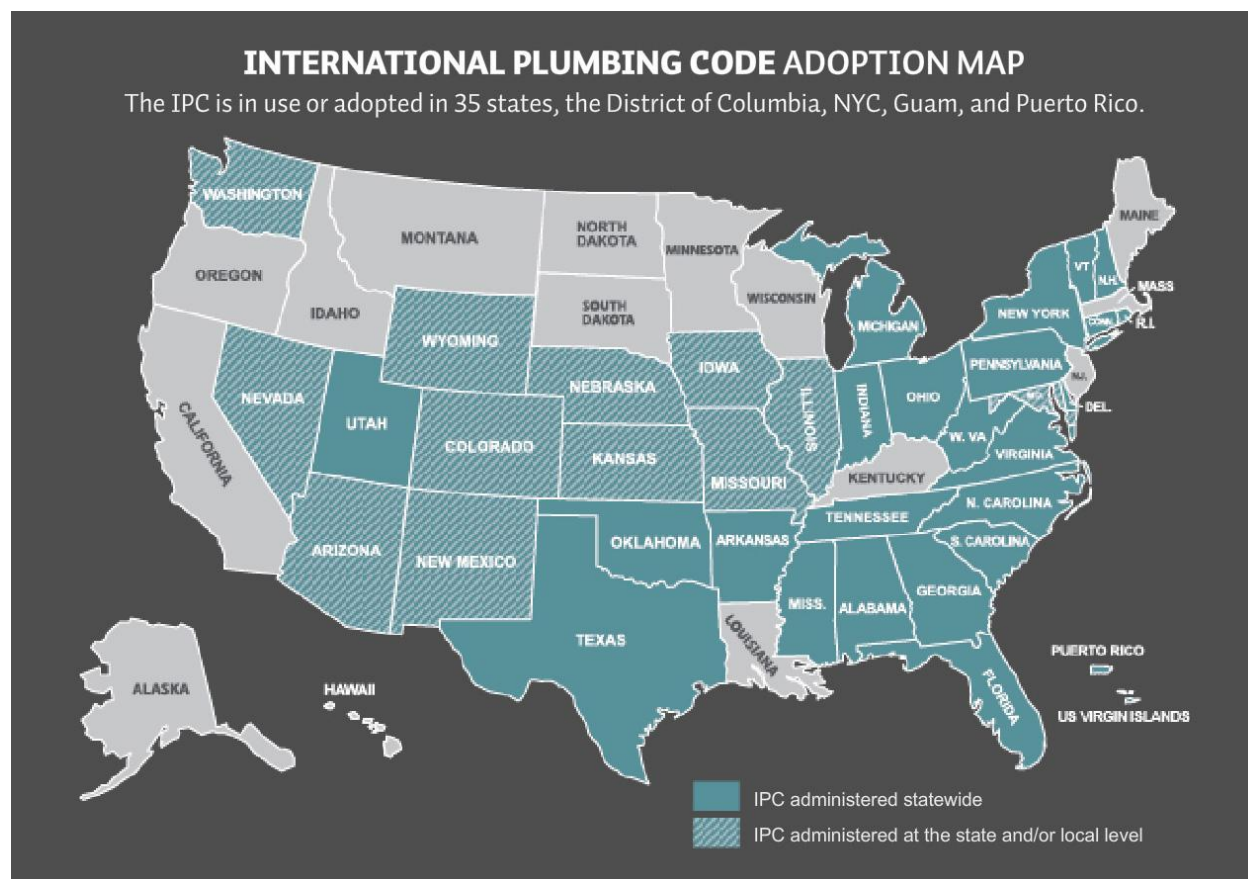


viii. International Plumbing Code

And finally, as Figure 9 shows, the *International Plumbing Code* (IPC) has been adopted at the state or local level in thirty-five states and Washington D.C.

⁶⁸ See *id.*, *International Fuel Gas Code Adoption Map*, http://www.iccsafe.org/gr/PublishingImages/Adoption_Maps/map-IFGC.jpg.

Figure 9. IPC Adoption Map⁶⁹



The IPC is a comprehensive model plumbing code that works seamlessly with the ICC's other codes. It sets minimum regulations for plumbing systems and components and is built on the legacy of the BOCA National Plumbing Code, SBCCI Standard Plumbing Code, and ICBO Plumbing Code. Items addressed include backflow prevention; sanitary drainage and venting; traps, grease interceptors, and separators; storm drainage; and nonpotable water systems (rainwater, gray water, and reclaimed water). The IPC and its predecessors have a tradition of innovation while protecting the

⁶⁹ See *id.*, *International Plumbing Code Adoption Map*, http://www.iccsafe.org/gr/PublishingImages/Adoption_Maps/map-IPC.jpg.

health and safety of the public. Development of the 2018 International Plumbing Code began in 2015.⁷⁰

D. Local variations

States, counties, and cities may be empowered to adopt or adjust codes. This power results in a range of regulatory environments that may be divided by as little as a city street. Possible differences include variations in the actual content of building requirements, and in the way those requirements are administered.

i. Substantive differences

Local jurisdictions may, on a statewide, county, city, or regional basis, choose to adopt a standardized code in part or in total. Some states still choose to write their own codes. State and local codes, whether original or adopted from a model, are usually at least based in part on the national model codes published by the International Code Council or other non-governmental promulgating organizations, such as the National Fire Protection Association (NFPA).⁷¹

It is important to remember that although the model codes set proposed minimum thresholds, adopting jurisdictions are free to modify the requirements as they deem appropriate. State and local jurisdictions typically reserve the right to amend the model codes to assure that the requirements for design and construction of buildings are appropriate for the climatic, geographical, geological, political, and economic conditions within their area. Stricter standards may arise, for instance, from the

⁷⁰ See *id.*, *Overview of the IPC*, <http://www.iccsafe.org/codes-tech-support/topics/plumbing-mechanical-and-fuel-gas/international-plumbing-code-ipc-home-page/>.

⁷¹ See *id.*, *International Codes—Adoption by State*, <http://www.iccsafe.org/gr/Documents/stateadoptions.pdf>; <http://www.iccsafe.org/gr/Documents/jurisdictionadoptions.pdf> (local jurisdictions within each state) (both tables updated October 2015).

importance of hurricane protection in the southeastern United States and earthquake protection in the southwest. Certain industry groups, such as fire protection groups or organizations relating to a particular industry segment, may work to support local legislation that incorporates amendments the industry identifies as important to either its work processes or the public welfare.⁷²

Some states choose to apply the I-Codes only to certain buildings, such as state-owned or public facilities. Others are even more selective, applying the standardized codes to only very specific structures, such as schools. Other states make the I-Codes mandatory for any jurisdiction within their borders that adopts a standardized building code, but some make such adoption voluntary. When no mandatory statewide code applies, counties or local jurisdictions may adopt a model code, write their own, or have no code at all. A detailed description of each state and local jurisdiction's variations is beyond the scope of this discussion, but the International Code Council provides a good summary in the interactive maps on its website.⁷³ Enforcement of statewide codes may be under the authority of a state agency, the county, or local municipality.⁷⁴

ii. Procedural differences

Not only does the substantive content of the building codes vary from jurisdiction to jurisdiction, so does the process for adopting codes. When NAR spoke with Shelly

⁷² See, e.g., Online Code Environment and Advocacy Network (OCEAN), Code Status, <http://energycodesocean.org/code-status>; Construction Market Data, *Building Codes*, <http://www.cmdgroup.com/building-codes/>.

⁷³ See International Code Council, *International Code Adoptions*, <http://www.iccsafe.org/international-code-adoptions/>.

⁷⁴ See, e.g., N.Y. Dep't of State, Office of Planning and Development, *Building Standards and Codes*, <http://www.dos.ny.gov/dcea/>.

Wakefield of the Indiana Department of Homeland Security for the original White Paper on this subject, she indicated that Indiana had adopted the 2006 version of the ICC Building, Fire, Mechanical, and Fuel Gas Codes “by reference,” but then made its own amendments to the national models, which resulted in the 2008 Indiana Building, Fire, Mechanical, and Fuel Gas Codes.⁷⁵ Wakefield explained the “adoption by reference” process as taking the I-Codes as a whole, “. . . with the following exceptions.” That is, the statute explicitly adopts the model codes, then lists the state-specific amendments and changes to the ICC’s provisions. When Indiana adopted the 2006 International Building Code, for instance, it deleted the administrative provisions in chapter 1 and replaced them with administrative provisions that applied just in that state. The same was true for the Fire, Mechanical, and Fuel Gas Codes’ administrative chapters. Indiana also amended the definitions in chapter 2 to correspond to how the terms used therein are defined under Indiana law.⁷⁶

According to Wakefield, in Indiana the Fire Prevention and Building Safety Division determines which codes, and which versions of those codes, to adopt. Changes are made with the input of “Consensus Committees,” which are comprised of members of the regulatory and enforcement communities. These committees meet about once a month while changes are being drafted, but only during periods when new codes are under consideration. Just as with the ICC codes, the entire

⁷⁵ Telephone interview with Shelly Wakefield, C.B.O., Mgr. of Code Tech. Dev., Legal & Code Servs., Ind. Dep’t of Homeland Sec. (May 19, 2011). Currently, the Indiana Building, Fuel Gas, Mechanical, and Fire Prevention Codes are based on the 2012 IBC, IFGC, IMC, and IFC. The 2003 Indiana Residential Code is based on the 2003 IRC and the 2006 Indiana Plumbing Code is based on the 2006 IPC. See International Code Council, *State Adoptions—Indiana*, <http://www.iccsafe.org/about-icc/government-relations/map/indiana/>.

⁷⁶ Telephone interview with Shelly Wakefield, C.B.O., Mgr. of Code Tech. Dev., Legal & Code Servs., Ind. Dep’t of Homeland Sec. (May 19, 2011).

amendment/adoption process can take up to three years. New codes are proposed as administrative rules that must be approved by the governor.⁷⁷

When NAR spoke in 2011 with Mike Page of the North Carolina Department of Insurance, Engineering Division, North Carolina's building codes were based primarily on the 2006 ICC codes. That state is "typically" three years behind the ICC code cycle, he said.⁷⁸ Currently, North Carolina applies the 2009 versions of the Codes, except for the International Existing Building Code, for which the 2012 version is used.⁷⁹ Codes are implemented statewide, but enforcement is accomplished at the city and county level. Although cities and counties may go before the Building Code Council to make a case for changes to the state codes, if the local jurisdiction is persuasive, the changes are generally adopted statewide rather than on a local basis.

Page further explained that anyone seeking a change to the building code may apply to the Building Code Council, which meets quarterly. The application is referred to a committee, which studies the request. The applicant has an opportunity to address the committee and explain the requested change in further detail, after which the committee makes its recommendation to the Council. The Council then holds a public hearing at which interested parties may offer additional input, all of which is considered before any changes are ultimately implemented.⁸⁰

⁷⁷ See *id.*

⁷⁸ Telephone Interview with Mike Page, N.C. Dep't of Ins., Eng'g Div. (May 25, 2011).

⁷⁹ See International Code Council, *International Codes—Adoptions by State* (Oct. 2015), <http://www.iccsafe.org/wp-content/uploads/stateadoptions.pdf>.

⁸⁰ Telephone Interview with Mike Page, N.C. Dep't of Ins., Eng'g Div. (May 25, 2011).

New Mexico has adopted the 2009 International Building, Residential, Existing Building, and Energy Conservation Codes.⁸¹ Local jurisdictions may adopt codes that are at least as stringent of the state code. New Mexico also has three state-specific codes: the Earthen Materials Building Code (for adobe and rammed-earth construction), the Non-Load Bearing Baled Straw Building Construction Code, and the Historic Earthen Building Code. The adoption of these codes, as well as a statewide code on solar energy, and one applying to swimming pools, spas, and hot tubs,⁸² reflect the particular concerns of that state's climate, culture, and interests.

Tim Nogler, Managing Director of the Department of General Administration, Washington State Building Code Council, explained that the codes in that state are adopted by the state legislature, which exercises substantial oversight over building code matters in Washington.⁸³ The ICC and other national codes were adopted by reference, but the Code Council was directed to make updates for new conditions and to amend the codes. Although the legislature has the ultimate authority, changes to the codes are actually made at the rulemaking level according to administrative rulemaking procedures, because the Washington state legislature is a part-time body without expertise in code matters. A wide range of governmental and business interests provide input during the rulemaking process. Local variations are permitted as long as they

⁸¹ Telephone Interview with Heather Winkel, former Dir. of Public Outreach, State of N.M., Constr. Indus. Div. (May 23, 2011).

⁸² *Id.*

⁸³ Telephone interview with Tim Nogler, Managing Director, Dep't of Gen. Admin., Wash. State Building Code Council (May 23, 2011).

meet state standards, but state approval is required for any changes that affect one- to four-unit residential construction.⁸⁴

The Massachusetts Building Code is based significantly on the 2009 ICC codes.⁸⁵ Don Finocchio, a Building Code Analyst with the Massachusetts Department of Public Safety's Board of Building Regulations and Standards, notes that the Board prefers to keep the Massachusetts codes as close to the national codes as possible, to facilitate ease and cost-savings for designers. That being said, amendments to the national codes may be recommended by technical committees (such as those concerned with fire prevention, structural considerations, or earthquake loads). Public hearings are held on proposed changes, and the entire process is very open. The resulting codes are implemented statewide, but enforcement is at the local level.⁸⁶

While some states, like Indiana, do not allow any local variations to their state building codes,⁸⁷ other states allow—or even require—code adoption at the city, county, or regional level. In Missouri, for example, local jurisdictions generally make their own code adoption, amendment, and enforcement decisions.⁸⁸ When NAR spoke with Greg Franzen, a Kansas City, Missouri Building Official, for the original version of this White Paper, he noted that Kansas City had adopted the 2006 versions of all of the I-Codes

⁸⁴ *Id.*

⁸⁵ Telephone interview with Don Finocchio, Tech. Code Analyst, Bd. of Building Regs. & Stds., Mass. Dep't of Public Safety (May 25, 2011).

⁸⁶ *Id.*

⁸⁷ Telephone interview with Shelly Wakefield, C.B.O., Mgr. of Code Tech. Dev., Legal & Code Servs., Ind. Dep't of Homeland Sec. (May 19, 2011).

⁸⁸ Telephone interview with Greg Franzen, P.E., M.C.P., Building Official, City of Kansas City, Mo. City Planning & Dev./Dev. Servs. (May 18, 2011).

except the plumbing code (it adopted the Uniform Plumbing Code instead based on strong support from the local plumbing trade group). Although the local codes do not vary much from the national models, there is some local discussion and amendment based on specific concerns. The recent inclusion in the national model code of a fire sprinkler requirement for single-family homes was one such issue. The Missouri legislature passed a law barring local governments from adopting the version of the IRC that includes the sprinkler mandate; if it had not done so, Franzen observed, there would have been cause for local concern, especially from the local homebuilders' association. Indeed, homebuilders in Kansas City have been actively involved in residential code issues in general, Franzen states, because specific methods of doing things are locally preferred, and changing those methods would be controversial and too costly.⁸⁹

California also allows local building code amendments. William Strawn, Manager for Legislative/Public Affairs in the San Francisco Department of Building Inspection in 2011, said that San Francisco has enacted local amendments to the statewide codes adopted by the city.⁹⁰ With regard to one code—the Green Building Code—San Francisco was actually at the forefront of state code adoption. That is, the city adopted its Green Building Code before the state law went into effect, and the state code is actually modeled on San Francisco's Green Building Code. The Green Building Code is compulsory in California; unlike in other states, it sets out mandatory provisions, not just standards that, if applied, will result in certification of a structure as “green.” San

⁸⁹ *Id.*

⁹⁰ Telephone interview with William Strawn, Mgr. for Legis./Public Affairs, San Francisco Dep't of Bldg. Inspection (May 26, 2011) (now Dep't of Bldg. Inspection Communications Officer).

Francisco is probably the strictest with regard to building code requirements, Strawn said, in a state that takes its building codes very seriously.⁹¹

Strawn explained that San Francisco has Code Advisory Committees that meet year-round to provide input on code amendments. The committees, comprised of individuals who apply for the positions, meet once a month to study and talk about what is going on at the state and national level. The committees vote on proposals from the Mayor or Board of Supervisors and then return the proposals to the Department of Building Inspection for final review. San Francisco has learned a lot about earthquakes in recent decades, according to Strawn, and seismic concerns are a big building code issue. Other major concerns relate to green building and energy efficiency. Increasing attention is being paid to water conservation in the plumbing codes, for instance, and electrical codes must consider new usages, such as the capability for charging electric cars. Code adoption is, Strawn observes, a “constantly evolving process” in San Francisco.⁹²

As the above discussion shows, code adoption processes vary from state to state, and even within states. Table 1 below summarizes the procedures employed in each state with regard to standardized building code adoption and implementation.

⁹¹ *Id.*

⁹² *Id.*

Table 1. Code Adoption Process by State⁹³

Jurisdiction	Code Adoption Process
Alabama	Codes for non-state funded buildings are adopted on the local level. Revisions to the State Building Code relating to state-funded buildings only are made by the Alabama Building Commission in accordance with procedures of the Alabama Administrative Procedures Act.
Alaska	Codes are adopted by administrative rulemaking by either the Alaska State Fire Marshal or the Department of Labor. Codes adopted by state agencies are mandatory and subject to state inspection programs, unless a local jurisdiction has been delegated the authority to administer and enforce the state codes.
Arizona	Codes are adopted locally and are predominantly the ICC-codes.
Arkansas	The Arkansas State Fire Marshal's office, State Department of Health and Human Services, and Energy Office adopt Arkansas' codes.
California	Codes are adopted at the state level and enforced on a statewide basis, but local jurisdictions may amend the state codes if the amendments are more stringent and are based on findings justified by climatic, geographic, and topographical conditions of the jurisdiction.
Colorado	Codes are adopted at the local level, except that state agencies adopt building and safety codes that apply to projects under state purview. Code-related concerns are handled by the Department of Regulatory Affairs (DORA), Division of Fire Safety, State Forest Service, Department of Labor, Department of Public Safety and the Governor's Energy Office (GEO).
Connecticut	The state Codes and Standards Committee reviews and recommends which codes to adopt.
Delaware	Codes are adopted at the county and municipal level, and smaller towns generally defer to the counties for code enforcement.
District of Columbia	The District of Columbia Council is the adopting authority in the District. Building regulations are initially developed by the Construction Codes Coordinating Board (CCCCB), which is staffed by the D.C. Zoning Department and is made up of representatives of the building industry; the Department of Consumer and Regulatory Affairs oversees building codes.
Florida	Codes are adopted statewide with mandatory enforcement through the Department of Community Affairs; any code amendments are made by the Florida Building Commission.

⁹³ See International Code Council, *Code Adoption Process by State*, http://www.iccsafe.org/gr/Documents/AdoptionToolkit/HowStatesAdopt_I-Codes.pdf (undated).

Jurisdiction	Code Adoption Process
Georgia	Codes are adopted at the state level through the Department of Community Affairs Building Codes Division and the State Codes Advisory Committee (GSCAC), but the enforcement is left up to the local authority having jurisdiction.
Hawaii	The Building Code Council Agency, created in 2007, has the authority to adopt any code(s) statewide, and then the 4 County jurisdictions have 2 years in which to adopt and amend the state code with local amendments. If the county jurisdictions do not act within the 2-year time line the state code becomes the county's code until the county passes an adopting ordinance.
Idaho	Building codes are adopted by state statute, but local governments have the option to adopt additional codes. Local amendments codes must be no less stringent than the requirements adopted by the state.
Illinois	The State Board of Education (ISBE) enforces the building codes. All other codes are adopted by local municipalities, fire protection districts, and counties.
Indiana	The Indiana Fire Prevention and Building Safety Commission is responsible for all building, fire safety, and building efficiency code adoptions in the state.
Iowa	Iowa imposes a combination of state and locally adopted codes; when municipalities update their codes, they must adopt the codes adopted by the state. The Plumbing and Mechanical Code Advisory council is responsible for the adoption of plumbing and mechanical codes in the state, whereas other codes, including the Energy Code, are adopted by the Iowa Building Code Bureau.
Kansas	Kansas does not enforce a statewide building code, but authorizes local jurisdictions to adopt local building codes; the State Fire Marshal enforces building codes for state owned buildings.
Kentucky	The Kentucky Building Code (KBC) is updated every three years. Changes to the code are submitted to the Board of Housing, Buildings and Construction and, if approved, are forwarded to the Legislative Rulemaking Committee for public comment, further review and final approval. Once changes and amendments are adopted, they become state law by statute. The Division of Building Codes and Enforcement is responsible for complying with code changes and amendments.
Louisiana	Louisiana has adopted the Louisiana State Uniform Construction Code (LSUCC), which is mandatory and enforced statewide. The Louisiana State Uniform Construction Code Council (LSUCCC) is the promulgating authority of the LSUCC, but the LSPC is promulgated by the Louisiana Department of Health and Hospitals (LDHH).

Jurisdiction	Code Adoption Process
Maine	The Maine Uniform Building and Energy Code is enforced in all communities with a population greater than 2,000. The Technical Building Codes and Standards Board, appointed by the Governor, resolves conflicts between state building and fire codes.
Maryland	The Department of Housing and Community Development is the statewide adopting authority. Local jurisdictions can amend the state codes to suit local conditions, except for the 2009 IECC and the 2006 MD Accessibility Code (although both codes can be made more stringent). Local jurisdictions must adopt new editions adopted by the state, although they may amend and no penalties are imposed if they fail to adopt in a timely manner.
Massachusetts	The Massachusetts Building Code is approved and administered by the Board of Building Regulations and Standards (BBRS), which is staffed by the Department of Public Safety. The Board of Fire Prevention Regulations (BFPR) is responsible for promulgating a comprehensive fire safety code. The members of the BBRS comprise the Building Code Appeals Board for purposes of deciding appeals of interpretations of the Building Code made by building officials.
Michigan	The Michigan Construction and Fire Codes are promulgated by the Bureau of Construction Codes Commission and State Fire Safety Board, and are evaluated for revisions or modifications every three years. Regulations must be approved by the state legislature. The code adoption process follows the I-Code three year cycle, with a target effective date in January one year following the release of the new I-Codes.
Minnesota	The Minnesota State Building Code is administered by the Minnesota Department of Labor and Industry (DLI), Division of Building Codes and Standards. Local jurisdictions that adopt building codes must adopt the Minnesota State Building Code. The Building Codes and Standards Division also has the authority to develop fire codes, but it has delegated that authority to the State Fire Marshal. ⁹⁴
Mississippi	Mississippi does not have a statewide building code. Building code adoption and enforcement is primarily the responsibility of local jurisdictions. Mississippi does require that state buildings meet the requirements of the 1997 Standard Building Code.
Missouri	Most relevant building codes are adopted locally, but state codes apply to state-owned buildings. The Architecture Practice Act directs architects to apply the standards of the 2009 International Building Code.

⁹⁴ The Minnesota Department of Labor and Industry, Construction Codes and Licensing Division, publishes a handy guide to how building codes are adopted and enforced in that state. See MN Dep't of Labor & Indus., *Minnesota State Building Code Adoption Guide* (July 29, 2010), http://www.doli.state.mn.us/ccld/PDF/bc_pr_code_adoption_guide_1_06update.pdf.

Jurisdiction	Code Adoption Process
Montana	Construction codes are adopted by the Bureau of Building and Standards within the Department of Labor and Industry, with the exception of the fire code, which is adopted by the State Fire Marshal. Montana statutory law grants wide authority to the Bureau to adopt any nationally recognized building code or standard, with the exception of the state fire prevention code. Local jurisdictions adopt building codes by local ordinance or resolution, but local codes must be only those codes adopted by the state. If a local jurisdiction does not adopt codes locally, the state codes apply. State laws do not apply to residential building with less than five dwelling units, but a local jurisdiction that adopts codes locally must include within their scope dwelling units with less than 5 units.
Nebraska	Nebraska statutory law authorizes local jurisdictions to adopt a building code, but jurisdictions that do so must adopt the International Building Code. The statute also requires that jurisdictions update their building codes within two years after a new edition is published. The State Energy Office is authorized to adopt alternate energy standards if they are equivalent to or more restrictive than the International Energy Conservation Code.
Nevada	Nevada has adopted the IBC, but codes are adopted locally in Nevada after regional adoption committees prepare suggested amendments.
New Hampshire	The New Hampshire State Building Code Review Board is charged with the coordination and adoption of the state building code, and also hears appeals of variances or exceptions to the state fire code that have been granted or denied by the State Fire Marshal.
New Jersey	New Jersey's Uniform Construction Code (UCC) adopts codes by regulation. The codes are administered by the Department of Community Affairs (DCA) Division of Codes & Standards. The codes are uniform statewide; local jurisdictions are not permitted to amend.
New Mexico	New Mexico adopts "blended" codes statewide, and current state law allows local adoptions of codes that are at least as restrictive as the state codes. State code adoptions are facilitated by the New Mexico Construction Industries Division (CID).
New York	The State Fire Prevention and Building Code Council is charged with making any changes to the Uniform Code or Energy Code. The Code Council is chaired by the Secretary of State (or his or her delegate) and represents all affected construction constituencies, as well as local and state governmental representatives. The Department of State is responsible for the oversight of code enforcement issues.
North Carolina	North Carolina has mandatory statewide code enforcement, with oversight delegated to the North Carolina Building Code Council.

Jurisdiction	Code Adoption Process
North Dakota	The North Dakota Division of Community Services, Governmental and Technical Assistance updates and amends the State Building Code. Local jurisdictions that adopt a building code must adopt the North Dakota State Building Code, but they may amend the State Building Code to conform to local needs.
Ohio	The Board of Building Standards is the primary state agency authorized to protect the public's safety and welfare in building design and construction. Rules proposed by the Board are filed with the Secretary of State, the Legislative Service Commission, and a committee of the General Assembly known as the Joint Committee on Agency Rule Review (JCARR) at least 60 days prior to adoption. Code changes generally follow the I-Codes three year cycle, with promulgation of the Ohio codes one year later and updates as needed.
Oklahoma	The Oklahoma Uniform Building Code Commission (OUBCC) is responsible for the adoption of all codes and standards for the construction industry including building, residential, energy conservation, existing buildings, plumbing, mechanical, fuel gas and fire codes. The State Fire Marshal's office and the Construction Industries Board also have adopting authority for particular codes.
Oregon	Codes are adopted on a statewide basis. The Oregon Building Codes Division has the authority to adopt building codes by administrative rulemaking. All local jurisdictions must enforce the state code. Fire code adoption is the responsibility of the State Fire Marshal, and the state fire code is considered the minimum standard statewide.
Pennsylvania	Pennsylvania has adopted the IBC and all codes referenced by the IBC except for Property Maintenance. Local jurisdictions can amend the state code to be more restrictive, but restrictions may be appealed to the Secretary of Labor & Industry, who then holds a hearing and determines whether the local amendment will be allowed. The codes are updated following the issuance of new editions of the ICC codes every three years. The Review & Advisory Council reviews the changes from the previous edition, takes input from interested parties, and recommends whether the changes should be included in the updated codes adopted by the state. The updated codes are then adopted through the regulatory process.
Rhode Island	The Rhode Island Building Code is approved and administered by the Building Code Standards Committee, which is responsible for maintaining the currency of state building codes such as the mechanical, plumbing, electrical, conservation, accessibility, and minimum housing codes. The Committee also acts as a Board of Appeals to hear requests for variances or appeals from the State Building Code Commission or from local Boards of Appeals. The Rhode Island Fire Code is administered by the Rhode Island Fire Safety Code Board of Appeal and Review.

Jurisdiction	Code Adoption Process
South Carolina	The SC Building Code Council adopts codes at the state level. Statutes require statewide enforcement by local governments, but there is also a provision that allows jurisdictions to opt out.
South Dakota	South Dakota has no general statewide building code. The state authorizes counties and local governments to adopt model building codes, so long as they adopt the IBC. Jurisdictions may amend the codes to conform to local needs. The State Fire Marshal is authorized to update codes through the state rulemaking process.
Tennessee	The State Fire Marshal's Office is responsible for the enforcement of building (both commercial and residential), plumbing, mechanical, electrical, life safety, and energy conservation codes. Municipalities may be exempt from state enforcement if they have an approved code enforcement department with certified inspectors. Exempt jurisdictions may adopt any code that is at least as strong as the state code.
Texas	Texas mandates uniform building codes for all municipalities (excluding most unincorporated areas) adopting codes, except for the IECC. The building and residential codes are promulgated through legislation. The energy conservation code is promulgated through the State Energy Conservation Office by administrative rule. Municipalities may choose to adopt local amendments and/or newer editions of the International Building Code, International Residential Code, and International Energy Conservation Code at will.
Utah	Until recently, Utah statutory law required statewide adoption of a building code, residential code, plumbing code, mechanical code, and fuel gas code promulgated by a nationally recognized code authority. The 2009 passage of SB211 moved the adoption authority to the state legislature. The Uniform Building Code Commission is now required to make adoption recommendations to the interim Senate Business and Labor Committee.
Vermont	Vermont has adopted and enforced national codes for commercial building safety since 1972. These codes are adopted by regulation and enforced through the State Fire Marshal's Office. Vermont's statewide building code requirements, which apply to public buildings, fall primarily within the domain of the Department of Public Safety, Fire Safety Division.
Virginia	The Department of Housing and Community Development (DHCD) has the authority to promulgate building regulations and a regulatory process for development and adoption of a statewide mandatory minimum/maximum construction code that all 167 units of local government (counties and incorporated cities) must adopt and implement. State colleges and universities are the responsibility of the Virginia General Services Department. The State Fire Marshall, who is within the ambit of the DHCD, is responsible for statewide implementation of the Fire Code, unless localities elect to adopt this code at the local level. Localities can adopt the Property Maintenance Code, which is within the scope of the statewide code.

Jurisdiction	Code Adoption Process
Washington	Building codes are adopted in Washington by statute. The Washington State Building Code Council has authority to amend these codes, with statewide application.
West Virginia	The West Virginia State Fire Commission is responsible for adopting, promulgating, and amending statewide construction codes. When the Commission proposes to adopt a code, the code is first filed with the Secretary of State, and then the Commission conducts a public hearing, after which the rule is filed with the Legislative Rule-Making Review Committee. Once the rule is approved or modified by the Committee, it is introduced as a separate bill during the legislative session. The legislature itself can modify the code by proposing legislation at anytime during the regular session.
Wisconsin	The Wisconsin Department of Commerce, Safety and Buildings Division, is responsible for the Wisconsin's building, fire safety, and energy efficiency codes.
Wyoming	The State Fire Marshal is statutorily authorized to establish minimum fire standards that may not exceed the standards of the I-Codes for all new and existing buildings. Other Wyoming state departments may adopt codes within the scope of their departments' regulatory authority.



III. CURRENT MODEL BUILDING CODE ISSUES

Model codes are pervasive, but as with any regulatory system, there are specific topics that generate particular interest and concern. In recent years, various parties have waged a serious debate about making residential sprinkler systems mandatory. In addition, environmental issues are proving their longevity through a spectrum of potential code measures.

A. Mandatory fire sprinkler provision

One of the hottest issues in model code adoption these days relates to a new mandatory fire sprinkler provision. When the ICC published the 2012 IRC, it included the requirement that fire sprinklers be a standard feature in all new homes. The requirement was initially included in the 2009 edition of the Code, but it faced stiff opposition. The ICC's members were able to overcome efforts from strong opponents, such as the National Association of Home Builders, who once again sought to defeat the requirement for 2012.⁹⁵ R313 of the IRC now requires installation of automatic fire sprinkler systems in new one- and two-family dwellings and townhouses not exceeding three stories above grade with a separate means of egress. Various approaches have been taken in locales across the U.S., including adoption of the requirement, deletion of the requirement by regulatory agencies adopting the IRC as the state standard, and legislative action totally or partially banning such requirements in state and/or local building codes and leaving the matter to be decided by local jurisdictions.

⁹⁵ See International Residential Code Fire Sprinkler Coalition, *2012 Edition of the International Residential Code Retains Fire Sprinklers as Standard Feature in New Homes*, <http://ircfiresprinkler.org/wordpress/sample-page/2012-edition-of-the-irc-retains-fire-sprinklers-as-standard-feature-in-new-homes/>.

Clearly, not everyone approves of the new fire sprinkler requirements for residential construction. In fact, many states' homebuilder associations expended significant effort to block the adoption of that part of the IRC in their states. The Builders Association of Minnesota (BAM), for instance, pushed a state bill⁹⁶ that would prohibit a change in Minnesota law requiring residential fire sprinklers in new single-family

A Red Hot Debate

Remember the "great debate" about mandatory seatbelts? Some old-timers maintained that it was their God-given right to reject seatbelts. In fact, this author's own grandfather cavalierly proclaimed that if he were in an accident, the farther he was thrown, the better. Today, seatbelt use is no longer controversial, but we now hear similar arguments regarding mandatory residential fire sprinklers. Some emphasize the individual's right to freedom of choice, while others emphasize the cost of compliance versus the value of human life and property.

The core of the sprinkler debate tends to focus on the cost of compliance, which can be considered in two parts: (1) the cost and burdens on new construction (which is addressed in the 2012 I-Code); and (2) the cost and burden of retrofitting existing homes (which, while not addressed in the 2012 I-Code, is a logical extension that opponents cite as a cause for concern). The first consideration has an immediate impact on architects, engineers, contractors, real estate professionals selling new homes, and new home buyers, but the impact may actually be farther-reaching. If sprinkler provisions are adopted in a community, will home buyers be dissuaded from buying new homes in general, if existing homes are comparatively cheaper because they don't include the cost of sprinkler systems? Will the new home market and related industries suffer even further?

According to the U.S. Department of Commerce, there were over one million new housing starts in 2014—a nice increase from previous years, but still far lower than in 1972, for which the U.S. Census records over 2.3 million starts. At a suggested cost of \$4,000 per sprinkler system, the total cost at either end of the spectrum would be measured in the billions. It is possible that the sprinkler provision would not have been so strongly opposed by homebuilders even a decade ago, when the U.S. economy, and the real estate market in particular, were stronger, but a requirement that homebuyers and homeowners expend more money could exacerbate the problems already plaguing troubled markets and industries. As such, the fire sprinkler mandates may be controversial for some time to come.

⁹⁶ [Minn. H.F. 460](#). The bill passed the House and the Senate, as amended, but was vetoed by the Governor and then returned and tabled. See https://www.revisor.mn.gov/revisor/pages/search_status/status_detail.php?b=House&f=HF0460&ssn=0&y=2011. The law would ban the requirement of mandatory fire sprinkler installation in any new or existing single-family detached dwelling unit.

homes.⁹⁷ The Minnesota Fire Chiefs Association launched a full-fledged opposition to the bill, arguing that the cost of compliance with the sprinkler requirement would be minimal in view of the potential lives saved.⁹⁸ Although fire marshals have long advocated for mandatory fire sprinklers in new single-family homes, touting it as a life-saving measure, builders say wired smoke detectors offer sufficient protection. Homeowners may include sprinklers of their own volition, of course, but builders say a mandatory requirement could add thousands of dollars to the cost of a home. Some home builders advocate retrofitting even existing housing stock with hard-wired smoke and carbon monoxide detectors as an alternative to the sprinkler requirement—with the emphasis on hard-wiring, so the homeowner cannot take out the batteries on a whim, such as when the TV remote goes dead.⁹⁹

The fire sprinkler debate raged in Maine, too.¹⁰⁰ In that state, homebuilders, real estate agents, and banks opposed similar fire sprinkler requirements for years. Trade groups argued that the up-front costs, which, they say, can range from \$4,000 to \$10,000 for an average-sized new home with a full basement, put homeownership out

⁹⁷ Brian Johnson, *A Pointed Debate on Mandatory Fire Sprinklers*, Finance & Commerce (Feb. 11, 2011), available at <http://finance-commerce.com/2011/02/a-pointed-debate-on-mandatory-fire-sprinklers/>.

⁹⁸ Shawn Hogendorf, *Stillwater Fire Chief Opposes Bill to Ban Fire Sprinklers in New Homes*, Stillwater Patch, May 3, 2011, <http://stillwater.patch.com/articles/fire-sprinkler-bill-pits-safety-against-cost>.

⁹⁹ Johnson, *supra* n.97, *A Pointed Debate on Mandatory Fire Sprinklers*, <http://finance-commerce.com/2011/02/a-pointed-debate-on-mandatory-fire-sprinklers/>.

¹⁰⁰ Trevor Maxwell, *Sprinkler Requirements Fire Up Arguments*, The Portland Press Herald, July 17, 2011, available at http://www.pressherald.com/news/sprinkler-requirements-fire-up-arguments_2011-07-17.html.

of reach for many families, and that advances in smoke detectors have made homes safer than ever.¹⁰¹

Others oppose sprinkler requirements on the basis of individual property rights. "How far can the government go into our personal property? I think they are crossing the line here," says South Portland, Maine's Gary Crosby, a commercial real estate developer. The government's "name is not on the deed. If I own it, and I want to take the chance of not having a sprinkler in my house, that is my choice," Crosby says. Crosby further notes that "[c]ommercial property is a different issue. I think requirements are appropriate there. But with a single-family house I think [the government] ought to keep [its] hands off."¹⁰²

Pennsylvania REALTORS[®] were behind an effort to repeal a fire sprinkler mandate in that state.¹⁰³ When Governor Corbett signed House Bill 377 into law, repealing a mandate of sprinkler systems in new single-family residential construction, Pennsylvania Association of REALTORS[®] (PAR) then-President Guy A. Matteo, GRI, SRES, proclaimed it "a great victory for consumers and Realtors[®]," and he thanked "Gov. Corbett and the legislature for their hard work."¹⁰⁴

PAR had worked with a statewide coalition, which included the Pennsylvania Builders Association, to successfully urge legislators to repeal the sprinkler mandate. The governor called the repeal a "common sense" measure that will help to keep new

¹⁰¹ See *id.*

¹⁰² See *id.*

¹⁰³ See Pennsylvania Ass'n of REALTORS[®], *Corbett Signs Bill Repealing Sprinkler Mandate*, PRNewswire (Apr. 25, 2011), available at <http://www.prnewswire.com/news-releases/corbett-signs-bill-repealing-sprinkler-mandate-120655949.html>.

¹⁰⁴ See *id.*

home prices within the reach of Pennsylvania's working families. "Whether or not new homes are equipped with sprinklers should be a decision left to individual consumers and not the government," Gov. Corbett said. "While there are arguments on both sides of this issue, I believe the sprinkler mandate is wrong-headed and I'm glad the General Assembly sent this bill to my desk."¹⁰⁵

There has been related action at the federal level as well. In May 2011, the U.S. House of Representatives took up consideration of a bill that would encourage the adoption of a requirement to retrofit *existing* commercial and residential structures with fire sprinklers by providing tax incentives.¹⁰⁶ The bill remains stalled in committees.¹⁰⁷

Table 2 below presents the National Fire Protection Association's information on where most¹⁰⁸ states are at with regard to implementing—or blocking—the new fire sprinkler requirements for residential dwellings.

¹⁰⁵ See *id.*

¹⁰⁶ Fire Sprinkler Incentive Act, <http://thomas.loc.gov/cgi-bin/bdquery/D?d114:1:./temp/~bdw9BH::/home/LegislativeData.php>; <http://thomas.loc.gov/cgi-bin/bdquery/D?d114:2:./temp/~bdw9BH::/home/LegislativeData.php>.

¹⁰⁷ See *id.*

¹⁰⁸ The NFPA information does not cover California, the District of Columbia, or Maryland, all of which, as discussed below in connection with LRC's research, have adopted the IRC with mandatory sprinkler requirements.

Table 2. Status of Sprinkler Requirements in the States¹⁰⁹

State	Promulgating Body Action	For More Information
Alaska	No new local jurisdictions may adopt sprinkler ordinance due to legislative action.	Contact: NFPA Regional Sprinkler Specialist Jeff Hudson .
Alabama	Alabama adopted the 2009 International Residential Code with the following modification: Jurisdictions that did not have a residential building code in effect on March 9, 2010 must begin enforcing the Alabama Energy and Residential Code (AERC) by October 1, 2012. Jurisdictions that already had a code in effect may continue to enforce that code. However, if they choose to update their code, they must adopt the AERC. No jurisdiction can mandate home fire sprinklers with the exception of municipalities that had adopted and were enforcing that provision prior to March 9, 2010.	Contact: NFPA Regional Sprinkler Specialist Tim Travers .
Arkansas	No statewide adoption, but local jurisdictions may adopt sprinkler ordinance.	Contact: NFPA Regional Sprinkler Specialist Tim Travers .
Arizona	No new local jurisdictions may adopt sprinkler ordinance due to legislative action.	Arizona Fire Sprinkler Coalition .
Colorado	Local jurisdictions may adopt sprinkler ordinance. Visit the Colorado Fire Sprinkler Coalition page for a list of local adoptions.	Colorado Fire Sprinkler Coalition .
Connecticut	In conjunction with the Office of the State Building Inspector, the Connecticut Codes	Connecticut Fire Sprinkler Coalition .

¹⁰⁹ NFPA, *Sprinkler Requirements by State*, <http://www.firesprinklerinitiative.org/legislation/sprinkler-requirements-by-state.aspx>. For a list of 2015 legislative activity, see Fire Sprinkler Initiative, *Anti-sprinkler Legislation*, <http://www.firesprinklerinitiative.org/legislation/anti-sprinkler-legislation.aspx>; see also *id.* at <http://www.firesprinklerinitiative.org/legislation/anti-sprinkler-legislation/2013-anti-sprinkler-legislation.aspx> (2013 legislation).

State	Promulgating Body Action	For More Information
	and Standards Committee has voted not to adopt a fire sprinkler requirement for one- and two-family dwellings. In 2015, the Connecticut General Assembly passed a bill requiring landlords to notify tenants on the existence or nonexistence of an operative fire sprinkler system in a dwelling unit.	
Delaware	No statewide code, but local jurisdictions may adopt. On August 6, 2015, Governor Jack Markell signed into law a sprinkler bill requiring builders of new, one- and two-family homes to give buyers a cost estimate for installing fire sprinklers and requiring homebuyers to receive information from the State Fire Marshal's Office about sprinkler benefits.	Contact :NFPA Regional Sprinkler Specialist Tim Travers .
Florida	No statewide adoption, but local jurisdictions are permitted to require sprinklers, pending certain local conditions.	Contact: NFPA Regional Sprinkler Specialist Tim Travers .
Georgia	Georgia's rulemaking body, the Georgia Department of Community Affairs, unable to adopt sprinkler requirements due to legislative action.	Contact: NFPA Regional Sprinkler Specialist Tim Travers .
Hawaii	Local jurisdictions may not adopt sprinkler ordinance due to legislative action. Legislation expires in 2017.	Hawaii Fire Sprinkler Coalition .
Idaho	Rulemaking body unable to adopt due to legislative action.	Idaho Fire Sprinkler Coalition .
Illinois	Local jurisdictions must adopt a building code requiring sprinklers. If locals do not adopt, the 2006 International Building Code is the default.	Illinois Fire Sprinkler Coalition .
Indiana	Rulemaking body removed the fire sprinkler provisions from the adoption of the 2009 IRC.	Contact: NFPA Regional Sprinkler Specialist Jeff Hudson .
Iowa	No statewide adoption, but local	Contact: NFPA

State	Promulgating Body Action	For More Information
	jurisdictions may adopt sprinkler ordinance.	Regional Sprinkler Specialist Jeff Hudson .
Kansas	No new local jurisdictions may adopt sprinkler ordinance due to legislative action.	Kansas Fire Sprinkler Coalition .
Kentucky	“Mini-max” state. Final decision on IRC adoption. ¹¹⁰	Contact: NFPA Regional Sprinkler Specialist Jeff Hudson .
Louisiana	Louisiana State Uniform Construction Code Council and Legislature removed 2009 IRC sprinkler requirements from statewide adoption. Local jurisdictions cannot require sprinklers in one- and two-family dwellings.	Contact: NFPA Regional Sprinkler Specialist Tim Travers .
Maine	No statewide adoption, but passive requirements mandated for floor assemblies in unsprinklered homes. Local jurisdictions may adopt sprinkler ordinance.	Maine Fire Sprinkler Coalition .
Massachusetts	One- and two-family dwellings of more than 14,000 square feet must be sprinklered. Passive requirements mandated for floor assemblies in unsprinklered homes. Two legislative bills bolstering installation of fire sprinklers in new homes currently supported by state sprinkler advocates.	Massachusetts Fire Sprinkler Coalition .
Michigan	Rulemaking body voted not to adopt requirement. Local jurisdictions may not adopt.	Michigan Fire Sprinkler Coalition .
Minnesota	Minnesota's Department of Labor and	Contact: NFPA

¹¹⁰ According to LRC's November 2014 research, the Kentucky Board of Housing, Buildings and Construction adopted the 2012 International Residential Code (IRC), with amendments and a compliance date of January 1, 2014, as the 2013 Kentucky Residential Code for One- and Two-family Dwellings. The Board deleted the IRC mandatory fire sprinkler system requirement from the Kentucky Residential Code. The Kentucky Residential Code establishes minimum and maximum building code requirements for detached single family dwellings, two-family dwellings, and townhouses (hence the “mini-max” designation). Local governments may not adopt or enforce any other building code with respect to those units.

State	Promulgating Body Action	For More Information
	Industry passed requirements for fire sprinklers in new homes larger than 4,500 square feet, effective January 24, 2015. The Minnesota Court of Appeals overturned the requirement in October 2015.	Regional Sprinkler Specialist Jeff Hudson .
Mississippi	If a jurisdiction chooses to adopt a residential code, it must be the International Residential Code. The law does not mandate that the jurisdiction adopt sprinkler requirements.	Contact: NFPA Regional Sprinkler Specialist Tim Travers .
Missouri	Legislative action placed moratorium and mandatory option of residential sprinklers until December 2019.	Missouri Fire Sprinkler Coalition .
Montana	No statewide adoption, but local jurisdictions may adopt sprinkler ordinance.	Contact: NFPA Regional Sprinkler Specialist Jeff Hudson .
Nebraska	Legislative action prohibits statewide sprinkler adoption. Local jurisdictions may adopt sprinkler ordinance.	Contact: NFPA Regional Sprinkler Specialist Jeff Hudson .
Nevada	Local jurisdictions may adopt sprinkler ordinance.	Contact: NFPA Regional Sprinkler Specialist Jeff Hudson .
New Hampshire	New Hampshire's rulemaking body, the New Hampshire State Building Code Review Board, voted to adopt a sprinkler requirement for new one- and two-family homes that would have taken effect in 2011. Legislative action nullified adoption.	New Hampshire Fire Sprinkler Coalition .
New Jersey	The state Assembly and Senate have passed a bill during two legislative sessions requiring sprinklers in new one- and two-family homes. The bills were twice vetoed by Governor Chris Christie, the most recent occurring in 2015 as a conditional veto .	New Jersey Fire Sprinkler Coalition .

State	Promulgating Body Action	For More Information
New Mexico	No statewide sprinkler adoption by legislative action. Local jurisdictions may adopt.	Contact: NFPA Regional Sprinkler Specialist Jeff Hudson .
New York	In 2014, Governor Andrew Cuomo signed legislation requiring tenants to be informed whether or not a home has fire sprinklers. The NY Fire Prevention and Building Code Council voted in 2015 to adopt the 2015 International Residential Code, but remove the requirement to sprinkler new one- and two-family homes. The council also voted to maintain requirement to sprinkler wood frame residences exceeding two stories.	New York Sprinkler Initiative .
North Carolina	North Carolina Building Code Council voted to include a townhome requirement for sprinklers or a two-hour separation between units.	North Carolina Fire Sprinkler Coalition .
North Dakota	Rulemaking body unable to adopt due to legislative action.	Contact: NFPA Regional Sprinkler Specialist Jeff Hudson .
Ohio	The Residential Committee voted to remove sprinklers in lieu of passive protection for engineered construction. Pending approval by rulemaking body.	Contact: NFPA Regional Sprinkler Specialist Jeff Hudson .
Oklahoma	State has a requirement to sprinkler all new townhomes. Local jurisdictions have the ability to adopt requirements for new one- and two-family homes.	Contact: NFPA Regional Sprinkler Specialist Tim Travers .
Oregon	Rulemaking body moved the requirement to the appendix. Local jurisdictions may adopt.	Oregon Fire Sprinkler Coalition .
Pennsylvania	Pennsylvania's rulemaking body, the Uniform Construction Code Review and Advisory Council, had voted to adopt sprinkler requirement for new one- and two-family homes. Legislative action during the 2011 session nullified adoption.	Pennsylvania Fire Sprinkler Coalition .

State	Promulgating Body Action	For More Information
Rhode Island	2012 International Residential Code adopted without the requirement for sprinklers in one- and two-family dwellings.	Contact: NFPA Regional Sprinkler Specialist Tim Travers .
South Carolina	Adoption of 2012 IRC does not include sprinkler requirement. Optional installation in townhouses. Sprinkler mandate will not be considered until after January 1, 2016.	South Carolina Fire Sprinkler Coalition .
South Dakota	Rulemaking body unable to adopt due to legislative action.	Contact: NFPA Regional Sprinkler Specialist Jeff Hudson .
Tennessee	Adoption of 2009 International Residential Code (IRC) with three options: state will not enforce sprinklers in one- and two-family homes, jurisdictions can decide whether to require sprinklers, jurisdictions can opt out of having IRC enforced by super majority of elected officials and after each election the jurisdiction would have to take another vote to opt out.	Tennessee Fire Sprinkler Coalition .
Texas	2009 International Residential Code adopted without sprinkler requirement. Jurisdictions may not enforce sprinkler provisions unless they had sprinkler ordinances in place on January 1, 2009.	Texas Fire Sprinkler Coalition .
Utah	Rulemaking body voted not to adopt requirement.	Utah Fire Sprinkler Coalition .
Vermont	Vermont does not have a statewide residential building code. However, the state has adopted nationally recognized safety standards to protect the public from fire and explosion hazards. The Division of Fire Safety amends the national standards only when necessary to address conditions specific to Vermont. They have adopted NFPA 101, the <i>Life Safety Code</i> ®, but deleted the section on sprinklering one- and two-family dwellings.	Contact: NFPA Regional Sprinkler Specialist Tim Travers .
Virginia	International Residential Code provision for	Contact: NFPA

State	Promulgating Body Action	For More Information
	sprinklers modified to make sprinklers optional and retain trade-offs if choosing to sprinkler homes.	Regional Sprinkler Specialist Tim Travers .
Washington	No statewide sprinkler requirement, but local jurisdictions may adopt under certain conditions. Visit the Washington Fire Sprinkler Coalition page for a list of local adoptions.	Washington Fire Sprinkler Coalition .
West Virginia	The State Fire Commission approved the 2009 International Residential Code in full, but the Legislature removed the sprinkler provision. The 2009 version will stay in effect until at least 2015.	Contact: NFPA Regional Sprinkler Specialist Tim Travers .
Wisconsin	Rulemaking body unable to adopt sprinkler ordinance due to legislative action.	Wisconsin Fire Sprinkler Coalition .
Wyoming	Local jurisdictions may adopt sprinkler ordinance.	Wyoming Fire Sprinkler Coalition .

Consistent with the table above, research conducted by Legal Research Center in November 2014 indicates that only a handful of jurisdictions (California, the District of Columbia, Guam, Maryland, and West Virginia) had at that time adopted the IRC with mandatory sprinkler requirements. About a third had adopted either the 2009 or 2012 IRC, but with amendments deleting R313. Another approximate-third enacted laws prohibiting state agencies and/or local governments from adopting mandatory fire sprinkler requirements, but over twenty percent of U.S. jurisdictions allowed local jurisdictions to adopt building codes that include mandatory sprinkler systems in new homes. Generally, such states do not have statewide building codes.¹¹¹

¹¹¹ For the detailed research results, visit www.lrc.legalebook.com and select the 2015 *Fire Sprinklers in New Homes* Annual Report from the NAR library.

Litigating Green

As the ICC finalized the International Green Construction Code in 2012, industry participants needed to be mindful of its impact on their potential liability. It is important to remember that, while “building green” is currently a voluntary movement in most jurisdictions, if a jurisdiction adopts the IGCC, it will become the minimum standard for design and construction. The IGCC is not a green rating or certification system. Its provisions are compulsory, which means that those who do not comply will be violators. Compliance will be mandatory, just as compliance is for the International Fire, Plumbing, and Electrical Codes, or any other codes that have been adopted. If the design or construction of a structure doesn’t meet the minimum green standards and there are damages as a result, it is possible that the violation would be negligence *per se*—that is, in itself evidence of negligence.

Therefore, as jurisdictions adopt green building codes, there is a likelihood of increased litigation in three primary areas: (1) non-compliance with code provisions resulting in enforcement actions and civil litigation; (2) negligent training, hiring, and supervision of employees and independent contractors who are not familiar with the new products and methods needed to meet the new requirements; and (3) failure to update contracts to address the impact of the green codes on the parties’ rights and responsibilities.

As jurisdictions adopt green codes, architects, engineers, contractors, attorneys and real estate professionals need to be familiar with the code provisions in their particular jurisdiction. LEED certification, while helpful, does not address a specific jurisdiction’s compulsory requirements, and those who have been “building green” for some time on a voluntary basis will need to avoid the temptation of thinking they already know how to “build green” based on voluntary standards they have followed. Thus, training and professional development will be a key to avoiding liability.

In addition, the increased focus on green construction is generating a wellspring of new sometimes-not-thoroughly-tested products and materials. All interested and involved parties will need to consider who bears the risk of using a new product in construction. Consider, for instance, a new “green” vapor barrier that fails. The damages (e.g., mold or dry rot) could be substantial. A plaintiff’s attorney will be looking for negligence and culpability wherever it can be found. As green codes are adopted across the country there are new standards, in a new field, which opens up opportunities for enterprising lawyers. The best defense is a good offense, including proactive training, education, careful contract drafting, and thorough risk assessment.

B. Green building

Energy efficiency and “green building” promise to continue as areas of high interest.¹¹² As noted by William Strawn, Legislative/Public Affairs Manager in the San Francisco Department of Building Inspection, the City of San Francisco, and the state of California in general, has significant interest in green-building and energy-efficiency

¹¹² For more information related generally to this subject, see Frank C. Aiello & Vicki C. Krueger, *Governmental Responses to Climate Change—An Updated Look at State and Local Actions Affecting the Real Estate Industry* (NAR® 2015).

concepts.¹¹³ Plumbing codes now include consideration of water conservation issues (“green plumbing”—requiring low-flow shower heads and toilets, for instance—is a hot issue), and electrical codes consider new usages, like charging electric cars.¹¹⁴ Green building codes, once a model for certification, are becoming compulsory rather than voluntary.¹¹⁵

The National Association of Home Builders (NAHB) Green Building Program offers several resources and tools to help builders and others involved in real property transactions learn how to “go green.”¹¹⁶ A key element of the program is a certification system, administered by the NAHB Research Center. The Center accredits home certification program verifiers and acts as the sole certifying body for the Green Building Program. Certification is based on the NAHB Model Green Home Building Guidelines¹¹⁷ and the ICC 700 National Green Building Standards¹¹⁸—a much needed and nationally recognized standard definition of green building. The Standard includes provisions that define green attributes for developments, multi-unit dwellings, and single-family homes (as well as remodeling and additions).

¹¹³ Telephone interview with William Strawn, Mgr. for Legis./Public Affairs, San Francisco Dep’t of Bldg. Inspection (May 26, 2011).

¹¹⁴ *Id.*

¹¹⁵ *Id.*

¹¹⁶ See NAHB, Green Building, *Remodeling and Development*, <http://www.nahbgreen.org>.

¹¹⁷ The guidelines are available at http://www.pinelandsalliance.org/downloads/pinelandsalliance_118.pdf.

¹¹⁸ These standards are available for purchase via a link on the NAHB website, <http://www.nahb.org/en/research/nahb-priorities/green-building-remodeling-and-development/ngbs-green-certification.aspx>, and at <https://builderbooks.com/2012-icc-700-national-green-building-standard.html>.

Factors considered in granting certification include:

- Lot and site development
- Resource efficiency
- Energy efficiency
- Water efficiency
- Indoor environmental quality
- Homeowner education¹¹⁹

The NAHB Green Building Program, like other energy-efficiency stamps of approval, can be the catalyst for boosting sales in today's market.

The ICC's International Green Construction Code, by contrast, was created with the intent that it be administered by code officials and adopted by governmental units on a *mandatory* rather than voluntary basis, and it is thus distinguishable from certification programs like that of the NAHB and the U.S. Green Building Council's LEED ("Leadership in Energy and Environmental Design") certification program.¹²⁰ The IGCC is applicable to the construction of high performance commercial buildings, structures, and systems, including existing buildings subject to alterations and additions, and it also applies to residential occupancies other than low-rise residential buildings that fall under the scope of the IRC. The IGCC is intended to be easily useable by manufacturers, design professionals, and contractors alike. It incorporates features that allow

¹¹⁹ For more information, see Home Innovation Research Labs, *Certification—Green Homes and Products*, <http://www.homeinnovation.com/green>.

¹²⁰ See International Code Council, *International Green Construction Code*, <http://www.iccsafe.org/cs/IGCC/Pages/default.aspx>. For more information on LEED certification, see the U.S. Green Building Council's LEED page, <http://www.usgbc.org/DisplayPage.aspx?CategoryID=19>.

jurisdictions to customize requirements to suit local geographical conditions and environmental priorities.¹²¹

The IGCC contains provisions on the fundamental aspects of green and sustainable building, including:

- Site development and land use
- Material resource conservation and efficiency
- Energy conservation, efficiency, and earth atmospheric quality
- Water resource conservation and efficiency
- Indoor environmental quality
- Building operation, maintenance, and owner education

Its broad scope covers the design, construction practices, equipment, maintenance, and site-location aspects of green building, and it interacts extensively with the other ICC codes to the extent their provisions are referenced therein.¹²² This new code promises to be on the forefront of building trends in the coming years.

¹²¹ See International Code Council, *International Green Construction Code*, <http://www.iccsafe.org/cs/IGCC/Pages/default.aspx>.

¹²² *Id.*



IV. IMPACT OF STANDARDIZED CODES

Standardized building codes can have major impacts on several segments of industry and society. Perhaps most importantly, they can be an important tool for safeguarding the health and safety of the general public. If they are followed, building codes can provide protection against catastrophes like fires and structural collapse, and they help guard against the general deterioration of homes, schools, stores, restaurants, hotels, and other commercial and industrial structures as well. Standardized codes may also help keep construction costs down by providing uniformity throughout the construction industry. They can remove much of the guesswork from the building process, thereby making it more efficient and less expensive, and thus, through consistency and economies of scale, reducing costs for developers, entrepreneurs, and consumers alike. Model codes also help enable manufacturers to produce building products consistently and uniformly, thereby achieving greater manufacturing economies that can be passed on to the builder or developer, and ultimately the consumer.¹²³

It is easy to see how the model codes' impact can extend to the real estate profession. Predictable standards may help keep construction and manufacturing costs, as well as insurance costs, down, thereby making homeownership more affordable for more consumers and business ownership (or expansion) a more viable option for more entrepreneurs. Greater affordability across the board potentially increases both business-development and homeownership opportunities, which, in turn increases real estate business. In addition, the standardized codes' implementation of design and

¹²³ See *id.*, *Introduction to Model Codes*, http://www.iccsafe.org/gr/Documents/AdoptionToolkit/04-Why_Chose_the_I-Codes.pdf.

construction standards that help maintain property values over time can also have a corresponding financial impact on REALTORS®.

Not all code requirements are equally popular, however—in fact, some may be viewed as increasing and complicating the building and development process. The new IRC fire sprinkler requirement, for instance, has been the subject of much controversy in the building and real estate industries because of the impact it has on housing costs. Indeed, there is a flip side to the model-code coin. Some observers note that, at least in theory, standardized building codes could adversely affect housing production, and actually increase housing costs.¹²⁴ Restrictions on the use of cost-saving materials and technologies, administrative conflicts between different administering bodies (e.g., building and fire departments), and inadequately trained inspectors, to name just a few examples, may actually increase real estate development costs—and headaches. Some commentators have pointed to studies concluding that code inadequacies can increase the cost of new housing anywhere from one percent to over 200 percent, but this wide range of estimates itself casts doubt on those conclusions, and the underlying research for these studies has been questioned.¹²⁵

The Building Owners and Managers Association International (BOMA) is a national commercial real estate trade organization with an aggressive codes and standards advocacy program.¹²⁶ BOMA's advocacy team gets involved in code and standards development at the proposal stage rather than waiting until after their release.

¹²⁴ David Listokin & David Hattis, *Building Codes and Housing* (U.S. Dep't of Housing & Urban Dev. (Apr. 2004), http://www.huduser.org/rbc/pdf/building_codes.pdf.

¹²⁵ See *id.*

¹²⁶ See BOMA International, *Building Codes and Voluntary Standards*, <http://www.boma.org/industry-issues/building-codes/Pages/default.aspx>.

BOMA maintains that involvement in code development by the real estate profession is critical because “the potential cost to the commercial real estate community is huge – so are the potential benefits. Each cycle there are hundreds of code changes submitted,” per BOMA, and advocacy can result in avoiding costs “by defeating overly burdensome codes proposals.”¹²⁷ BOMA, in conjunction with the National Multifamily Housing Council, The National Apartment Association, and the NAHB, has published a detailed list of changes implemented in the 2015 I-Codes and whether their adoption would result in increased or decreased construction costs.¹²⁸

In any event, because of the codes’ potential impact—whether positive or negative—it is definitely worth keeping an eye on state and local government building code activities.

¹²⁷ *Id.*, *State and Local Code Adoption Resources & Policies*, <http://www.boma.org/industry-issues/building-codes/Pages/STATE-AND-LOCAL-CODE-ADOPTION-RESOURCES-.aspx>.

¹²⁸ *Id.*, *2015 Model Code Summary of Important Changes* (Oct. 2014), <http://www.boma.org/industry-issues/building-codes/Documents/2015%20ICC%20Important%20Changes%20FINAL.pdf>.



V. CONCLUSION

Model building codes are not a new phenomenon. In fact, globally, they date back to ancient civilization, and domestically, their origins date back to the earliest American settlements. For as long as there have been common communities, there has been a concern for the safety, accessibility, and structural integrity of both public and private buildings. This concern is reflected in the standardized codes.

Not all code provisions are equally popular with all interested parties, but those promulgated by the International Code Council (ICC), which are perhaps the most widely adopted of all model codes, attempt to embody consensus-based standards that serve no single commercial interest. Standardized building codes can be a REALTOR®'s friend, in that they may help keep properties affordable over the long haul, and they may help maintain the integrity of the real estate market. Some provisions, like the new fire sprinkler requirements, may be more controversial than others, but the code adoption process, both at the ICC level and within state and local governments, allows for the input and impact of interested parties. REALTORS® may be well advised to take advantage of these opportunities.

Bibliography

For more information about building codes, please refer to the following articles, discussions, and other resources.

Sources (in order cited)

International Code Council, <http://www.iccsafe.org/Pages/default.aspx>.

Codes available for purchase on the ICC's website, <http://shop.iccsafe.org/codes.html>.

International Code Council, *Introduction to Model Codes*, <http://www.iccsafe.org/gr/Documents/AdoptionToolkit/04-Why Choose the I-Codes.pdf>.

National Association of Home Builders (NAHB), <http://www.nahb.org/>.

NAHB, *Construction, Codes & Standards*, <http://www.nahb.org/en/research/nahb-priorities/construction-codes-and-standards.aspx>.

U.S. Dep't of Energy, *Comparison of Standard 90.1-2010 and the 2012 IECC with Respect to Commercial Buildings*, <https://www.iccsafe.org/gr/Documents/IECC-Toolkit/2012IECC ASHRAE%2090%201-10ComparisonTable.pdf>.

ASHRAE *Standards, Research & Technology*, <https://www.ashrae.org/standards-research--technology/standards--guidelines>.

International Code Council, *About the International Code Council*, <http://www.iccsafe.org/gr/Documents/AdoptionToolkit/02-About the ICC.pdf>.

International Code Council, *2015 Complete 14 Collection*, <http://shop.iccsafe.org/codes/2015-international-codes-and-references/2015-complete-14-collection.html>.

International Code Council, *ICC Code Development Process*, <http://www.iccsafe.org/cs/codes/Documents/misc/CodeDevelopmentProcess.pdf>.

David A. Todd, *Understanding the Building Codes* (Buildipedia Oct. 29, 2010), <http://buildipedia.com/aec-pros/from-the-job-site/understanding-the-building-codes>.

International Code Council, *Introduction to Building Codes*, <http://www.iccsafe.org/codes-tech-support/topics/plumbing-mechanical-and-fuel-gas/introduction-to-building-codes/>.

International Code Council, *Code Development*, <http://www.iccsafe.org/code-development-2/>.

International Code Council, *Current Code Development Cycle*,
<http://www.iccsafe.org/current-code-development-cycle/>.

International Code Council, *cdpACCESS*, <http://www.iccsafe.org/codes-tech-support/cs/cdpaccess/>.

International Code Council, *Code Development Forms*,
<http://www.iccsafe.org/cs/codes/Pages/publicforms.aspx>.

Americans with Disabilities Act, <http://www.ada.gov/>; 42 U.S.C. ch. 126.

Guidance on the 2010 ADA Standards for Accessible Design, *available at*
<http://www.ada.gov/regs2010/2010ADASTandards/Guidance2010ADASTandards.htm>.

International Code Council, *Building Codes and the Americans with Disabilities Act*,
http://www.iccsafe.org/gr/Documents/AdoptionToolkit/04-Why_Choose_the_I-Codes.pdf.

International Code Council, Building accessibility, [Accessibility Info](#).

[42 U.S.C. § 3601-3609 \(2015\)](#).

U.S. Dep't of Housing & Urban Dev., *Fair Housing Act*,
http://portal.hud.gov/hudportal/HUD?src=/program_offices/fair_housing_equal_opp/prog_desc/title8.

U.S. Dep't of Housing & Urban Dev., *Fair Housing Accessibility Guidelines*,
http://portal.hud.gov/hudportal/HUD?src=/program_offices/fair_housing_equal_opp/disabilities/fhefhag.

Building Codes and the Americans with Disabilities Act,
http://www.iccsafe.org/gr/Documents/AdoptionToolkit/04-Why_Choose_the_I-Codes.pdf.

NAHB, *Fair Housing Accessibility*, <http://www.nahb.org/en/advocate/policy-resolutions/construction-codes-and-standards/fair-housing-accessibility.aspx>.

Federal Emergency Management Agency (FEMA), *Building Codes*,
<http://www.fema.gov/building-codes>.

Federal Emergency Management Agency (FEMA), *Building Science*,
<https://www.fema.gov/building-science>.

Reed Construction Data, *Building Code Reference Library*,
<http://www.reedconstructiondata.com/building-codes/>.

International Code Council, *Code Adoption Process by State*, http://www.iccsafe.org/gr/Documents/AdoptionToolkit/HowStatesAdopt_I-Codes.pdf.

Cheryl Runyon, *Natural Disaster Mitigation* (NCSL Legis. Report Vol. 26, No. 11, Oct. 2001) http://www.iccsafe.org/gr/Documents/AdoptionToolkit/04-Why_Choose_the_I-Codes.pdf.

International Code Council, *International Code Adoptions*, <http://www.iccsafe.org/gr/Pages/adoptions.aspx> (all maps updated June 2014).

International Code Council, State-by-State Adoption chart, <http://www.iccsafe.org/wp-content/uploads/stateadoptions.pdf> (updated as of October 2015).

International Code Council, State-by-State Jurisdiction Adoption chart, <http://www.iccsafe.org/wp-content/uploads/jurisdictionadoptions.pdf> (updated as of October 2015).

International Code Council, *Overview of the IBC*, <http://www.iccsafe.org/codes-tech-support/codes/2015-i-codes/ibc/>.

International Code Council, *International Green Construction Code Adoption Map*, <http://www.iccsafe.org/international-code-adoptions/>.

Overview of the IgCC, <http://www.iccsafe.org/codes-tech-support/codes/2015-i-codes/igcc/>.

International Code Council, *International Residential Code Adoption Map*, <http://www.iccsafe.org/international-code-adoptions/>.

International Code Council, *Overview of the IRC*, <http://www.iccsafe.org/codes-tech-support/codes/2015-i-codes/irc/>.

International Code Council, *What is PMG?*, <http://www.iccsafe.org/codes-tech-support/codes/2015-i-codes/plumbing-mechanical-fuel-gas-and-swimming-poolspas/>.

International Code Council, *Overview of the IECC*, <http://www.iccsafe.org/codes-tech-support/codes/2015-i-codes/iecc/>.

International Code Council, *International Energy Conservation Code Adoption Map*, <http://www.iccsafe.org/gr/Pages/adoptions.aspx>.

International Code Council, *Overview of the IFC*, <http://www.iccsafe.org/codes-tech-support/codes/2015-i-codes/ifc/>.

International Code Council, *International Fire Code Adoption Map*, http://www.iccsafe.org/gr/PublishingImages/Adoption_Maps/map-IFC.jpg.

International Code Council, *International Fuel Gas Code Adoption Map*, http://www.iccsafe.org/gr/PublishingImages/Adoption_Maps/map-IFGC.jpg.

International Code Council, *International Plumbing Code Adoption Map*, http://www.iccsafe.org/gr/PublishingImages/Adoption_Maps/map-IPC.jpg.

International Code Council, *Overview of the IPC*, <http://www.iccsafe.org/codes-tech-support/topics/plumbing-mechanical-and-fuel-gas/international-plumbing-code-ipc-home-page/>.

International Code Council, *International Codes—Adoption by State*, <http://www.iccsafe.org/gr/Documents/stateadoptions.pdf> (updated October 2015).

International Code Council, *International Codes—Adoption by State*, (local jurisdictions within each state) <http://www.iccsafe.org/gr/Documents/jurisdictionadoptions.pdf> (updated October 2015).

Online Code Environment and Advocacy Network (OCEAN), Code Status, <http://energycodesocean.org/code-status>.

Construction Market Data, *Building Codes*, <http://www.cmdgroup.com/building-codes/>.

N.Y. Dep't of State, Office of Planning and Development, *Building Standards and Codes*, <http://www.dos.ny.gov/dcea/>.

International Code Council, *State Adoptions—Indiana*, <http://www.iccsafe.org/about-icc/government-relations/map/indiana/>.

International Code Council, *Code Adoption Process by State*, http://www.iccsafe.org/gr/Documents/AdoptionToolkit/HowStatesAdopt_I-Codes.pdf (undated).

MN Dep't of Labor & Indus., *Minnesota State Building Code Adoption Guide* (July 29, 2010), http://www.doli.state.mn.us/ccld/PDF/bc_pr_code_adoption_guide_1_06update.pdf.

International Residential Code Fire Sprinkler Coalition, *2012 Edition of the International Residential Code Retains Fire Sprinklers as Standard Feature in New Homes*, <http://ircfiresprinkler.org/wordpress/sample-page/2012-edition-of-the-irc-retains-fire-sprinklers-as-standard-feature-in-new-homes/>.

Minn. H.F. 460. The bill passed the House and the Senate, as amended, but was vetoed by the Governor and then returned and tabled. See

https://www.revisor.mn.gov/revisor/pages/search_status/status_detail.php?b=House&f=HF0460&ssn=0&y=2011.

Brian Johnson, *A Pointed Debate on Mandatory Fire Sprinklers*, Finance & Commerce (Feb. 11, 2011), <http://finance-commerce.com/2011/02/a-pointed-debate-on-mandatory-fire-sprinklers/>.

Shawn Hogendorf, *Stillwater Fire Chief Opposes Bill to Ban Fire Sprinklers in New Homes*, Stillwater Patch, May 3, 2011, <http://stillwater.patch.com/articles/fire-sprinkler-bill-pits-safety-against-cost>.

Trevor Maxwell, *Sprinkler Requirements Fire Up Arguments*, The Portland Press Herald, July 17, 2011, http://www.pressherald.com/news/sprinkler-requirements-fire-up-arguments_2011-07-17.html.

Pennsylvania Ass'n of REALTORS®, *Corbett Signs Bill Repealing Sprinkler Mandate*, PRNewswire (Apr. 25, 2011), available at <http://www.prnewswire.com/news-releases/corbett-signs-bill-repealing-sprinkler-mandate-120655949.html>.

Fire Sprinkler Incentive Act, <http://thomas.loc.gov/cgi-bin/bdquery/D?d114:1:/temp/~bdw9BH::/home/LegislativeData.php>; <http://thomas.loc.gov/cgi-bin/bdquery/D?d114:2:/temp/~bdw9BH::/home/LegislativeData.php>.

NFPA, *Sprinkler Requirements by State*, <http://www.firesprinklerinitiative.org/legislation/sprinkler-requirements-by-state.aspx>.

Fire Sprinkler Initiative, *Anti-sprinkler Legislation*, <http://www.firesprinklerinitiative.org/legislation/anti-sprinkler-legislation.aspx>;

Fire Sprinkler Initiative, *Anti-sprinkler Legislation*, (2013 legislation) <http://www.firesprinklerinitiative.org/legislation/anti-sprinkler-legislation/2013-anti-sprinkler-legislation.aspx>.

LRC 2015 *Fire Sprinklers in New Homes* Annual Report www.lrc.legalebook.com.

Frank C. Aiello & Vicki C. Krueger, *Governmental Responses to Climate Change—An Updated Look at State and Local Actions Affecting the Real Estate Industry* (NAR® 2015).

NAHB, Green Building, *Remodeling and Development*, <http://www.nahbgreen.org>.

NAHB Green Building Guidelines http://www.pinelandsalliance.org/downloads/pinelandsalliance_118.pdf.

NAHB Green Building Guidelines for purchase, <http://www.nahb.org/en/research/nahb-priorities/green-building-remodeling-and-development/ngbs-green-certification.aspx>,

Green Building Guidelines for purchase, <https://builderbooks.com/2012-icc-700-national-green-building-standard.html>.

Home Innovation Research Labs, *Certification—Green Homes and Products*, <http://www.homeinnovation.com/green>.

International Code Council, *International Green Construction Code*, <http://www.iccsafe.org/cs/IGCC/Pages/default.aspx>.

U.S. Green Building Council, LEED certification, <http://www.usgbc.org/DisplayPage.aspx?CategoryID=19>.

David Listokin & David Hattis, *Building Codes and Housing* (U.S. Dep't of Housing & Urban Dev. (Apr. 2004), http://www.huduser.org/rbc/pdf/building_codes.pdf.

BOMA International, *Building Codes and Voluntary Standards*, <http://www.boma.org/industry-issues/building-codes/Pages/default.aspx>.

BOMA International, *State and Local Code Adoption Resources & Policies*, <http://www.boma.org/industry-issues/building-codes/Pages/STATE-AND-LOCAL-CODE-ADOPTION-RESOURCES-.aspx>.

BOMA International, *2015 Model Code Summary of Important Changes* (Oct. 2014), <http://www.boma.org/industry-issues/building-codes/Documents/2015%20ICC%20Important%20Changes%20FINAL.pdf>.

Appendixes

Appendix 1.

International Building Codes Adopted by U.S. State as of October 2015

International Codes-Adoption by State (October 2015)

ICC makes every effort to provide current, accurate code adoption information. Not all jurisdictions notify ICC of code adoptions.
To obtain more detailed information on amendments and changes to adopted codes, please contact the jurisdiction. To submit code adoption information: www.iccsafe.org/adoptions

X = Effective Statewide A = Adopted, but may not yet be effective L = Adopted by Local Governments S = Statewide adoptions with limitations **XL = Adopted by the State for Local**

Adoption

12= 2012 Edition 09 = 2009 Edition 06 = 2006 Edition 04 = 2004 Edition 03 = 2003 Edition 00 = 2000 Edition

* The title of the 2000 and 2003 IUWIC Code was changed to IUWIC in the 2006 version.

Jurisdiction	IBC	IRC	IFC	IMC	IPC	IPSDC	IFGC	IgCC	IECC	IPMC	IEBC	ISPSC	ICCP	IUWIC	IZC	ICC 700
Alabama	S09, L	XL	S09, L	S09, L	S09, L	L	S09, L		XL	L	L		L		L	
Alaska	X09	L06L09	X09	X09			X09		L06, X12 SRF							
Arizona	S09, L	S09, L	S06, L	S09, L	S09, L	L	S09, L	L	S09, L	L	L	L	L	L	L	L
Arkansas	X12	X12	X12	X09	X06	L	X06		X09	L	L					
California	X12	X12	X12							L	X12	L		L		
Colorado	S12, L	S12, L	S12, L	S12, L	X12, L	L	X12, L	L	S12, L	L	S12, L	L12	L	S12, L	L	L
Connecticut	X03	X09	X03	X03	X03				X09	L	X03					
Delaware	L12	L12	L12	S15	S12		S15		S12	L						
District of Columbia	X12	X12	X12	X12	X12		X12	X12	X12	X12	X12	X12				
Florida	X12	X12		X12	X12		X12	X	X12	L12	X12					
Georgia	X12	X12	X12	X12	X12		X12		X09	XL12	XL12	XL12		XL12		XL08
Hawaii	X06	X06, L06							X06, L09							
Idaho	X12	X12	X12	X12			X12	L12	X12, L12		X12					L
Illinois	S09, L	L	S09, L	S09, L	L	L	S09, L		X12	S09, L	S09, L	L12	L	L	L	
Indiana	X12	X03	X12	X12	X06		X12									
Iowa	S09, L	S09, L	X09	S09, L	L	L			X12	L	S09, L				L	
Kansas	L	L	S06, L	L	L	L	L		S09, L	L	L					
Kentucky	X12	X12	X12	X12					X09/X12	L						
Louisiana	X12	X12	L	X12			X12		X09, L	L	X12					
Maine	X09	X09							X09		X09					
Maryland	X15	X15		X15	L15	L	L	X12	X15	X15	X15					
Massachusetts	X09	X09		X09					X12		X09					
Michigan	X12	X09	L	X12	X12	L	X12		X09	L	X12		L			
Minnesota	X12	X12	X06	X12			X12		X12	L	X12					
Mississippi	S12, L	S12, L	S12, L	S12, L	S12, L	L	S12, L		L	L	S12, L		L			
Missouri	S12, L	S00, L	L	S12, L	S12, L	L	S00		S12	L	L		L	L	L	
Montana	X12	X12	L	X12			X12		X12		X12					
Nebraska	S12, L	S12, L	L	L	L	L	L		S12, L	L	S12, L			L	L	
Nevada	S12, L	S12, L	S12, L	L	L	L	L		S12, L	L	L		L	X09, L		
New Hampshire	X09	X09	L	X09	X09			L	X09	L	X09					
New Jersey	X15	X15	X15	X15			X15		X15	L		X15				
New Mexico	X09	X09	X03	L	L		L		X09	L	X09		L	L		
New York	X06	X06	X06	X06	X06		X06		X09R, X12C	X06	X06					
North Carolina	X09	X09	X09	X09	X09		X09	X	X09		X12					
North Dakota	S12, L	S12, L	L	S12, L			S12, L		S12, L	L	L					
Ohio	X09	A09	X09	X09	X09		X09		X09	L					L	
Oklahoma	S09, X	S09, X	S09, X	S09, X	S09, X	L	S09, X		S03, L	S06, L	S09, X		S06, L	L	L	
Oregon	X12	X09	X12	X12			X12	X	X12							
Pennsylvania	X09	X09	X09	X09	X09		X09		X09	L	X09		X09	X09		
Rhode Island	X12	X12		X12	X12		X12	X12	X12	X12						
South Carolina	X12	X12	X12	X12	X12		X12		X09	XL12	XL12	XL12	XL12			
South Dakota	S15, L	L	S09, L	S09, L		L	L		L	L12	S15, L		L	L		
Tennessee	S06, L	X09	S06, L	L	L		L		X06	L	L	L12	L		L	
Texas	X06	X00	L06	L06	L06	L	L06		X09	L	L06	L12	L	L	L	
Utah	X12	X12	X12	X12	X12		X12		X12					X06		
Vermont	X12	L			X12				X15							
Virginia	X12	X12	X12	X12	X12		X12		X12	X12	X12	X12				
Washington	X12	X12	X12, L	X12	L12, L15		X12, L	L	X12, L12	L	X12, L		L	L09		
West Virginia	X12	X09		X12	X12		X12		X09	X12	X12					
Wisconsin	X09		L	X09			X09		X09		X09					
Wyoming	X12, L	L12	X12, L	X12, L	L12	L12	X12, L		L12	S12	S12, L	L12	L12	L12	L12	
U.S.Territories	IBC	IRC	IFC	IMC	IPC	IPSDC	IFGC	IgCC	IECC	IPMC	IEBC	ISPSC	ICCP	IUWIC	IZC	ICC 700
Guam	X09	X09	X09	X09	X09	X09	X09				X09					
Northern Marianas Islands	X09															
Puerto Rico	X09	X09	X09	X09	X09	X09	X09		X09		X09					
U.S. Virgin Islands	X12	X12	X12	X12					X12							

****New York State and NYC adopt the 2009 IECC for Residential and the 2012 IECC for Commercial****

Oct-15 TBA, LB, DN, BS, VW, CL, MR, WN

Appendix 2. Other Code & Standards-Related Organizations

Air Conditioning and Refrigeration Institute (ARI)

www.ahrinet.org

American National Standards Institute (ANSI)

www.ansi.org

American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE)

www.ashrae.org

American Society of Mechanical Engineers (ASME)

www.asme.org

American Society of Testing and Materials (ASTM)

www.astm.org

International Association of Plumbing and Mechanical Officials (IAPMO)

www.iapmo.org

National Association of Home Builders (NAHB)

www.nahb.org

National Association of Plumbing-Heating-Cooling Contractors (PHCC)

www.phccweb.org

National Conference of States on Building Codes and Standards, Inc. (NCSBCS)

www.ncsbcs.org

National Fire Protection Association (NFPA)

www.nfpa.org

Underwriters Laboratories (UL)

www.ul.com