

Rating the States

An Assessment of Residential Building Code and Enforcement Systems for Life Safety and Property Protection in Hurricane-Prone Regions



In January 2012, the Insurance Institute for Business & Home Safety (IBHS) published Rating the States: An Assessment of Residential Building Code and Enforcement Systems for Life Safety and Property Protection in Hurricane-Prone Regions. The report evaluated and compared the quality of regulations and processes governing residential building construction in the 18 states most vulnerable to catastrophic hurricanes along the Atlantic Coast and Gulf of Mexico, assigning each state a score on a 100-point scale. The report helped focus public attention on the need for strong statewide building codes; addressed the importance of code enforcement that ensures building code technical standards actually are incorporated into homes; and spotlighted steps that states can take to improve their building code systems, providing better protection for their citizens.

Hurricane Sandy was the most prominent coastal weather event since the publication of Rating the States. However, other severe windstorms, including derechos in 2012 and 2013, and numerous other convective storms and severe winter storms, are reminders that wind risk in these states is not just a coastal concern. Building codes also allow for economies of scale in the production of building materials and construction, as well as providing a level of safety for first responders during and after fires and other disaster events.

Building codes evolve and are amended over time. As a result, state action – or inaction – can change the relative degree of protection provided by a particular code. We are now at the midterm point in the building code cycle between 2012 and 2015. This Rating the States Midterm Update looks at building code activity in the same coastal states featured in IBHS' original report, grouping them according to whether they have taken positive action, negative action, or no action to change their building codes during the ensuing 18 months. Although this update does not re-score each state (original scores are provided for reference), it discusses actions taken and provides more current insights into the strengths and weaknesses of each state system. IBHS plans to issue a new report in 2015, which will revise the rating for each state based on actions taken since the original report.

Atlantic and Gulf Coast States
August 2013



OVERVIEW

Since publication of the original report, most of the states with strong building code systems in place at that time remain committed to building safety; they have updated their codes to the most recent models, and in some instances, passed legislation to further strengthen code protections. By contrast, most of the states with very low scores in the original report have taken no action to improve their codes, thus falling even further behind best practices as reflected in the most current version of the model codes.

SOME OF THE HIGHLIGHTS IN THIS MIDTERM UPDATE INCLUDE:

Eleven of the 18 states (AL, CT, FL, GA, LA, MD, NC, NY, RI, SC, VA) rated in the original report have developed or updated statewide codes, or are well on the way to doing so, since publication of the report in January 2012. While this is primarily positive news, North Carolina and Louisiana have weakened provisions; these are specified in the state-by-state developments section later in this update.

Four states (ME, MA, NH, NJ) have not updated their codes, in some instances making a conscious decision to skip a code cycle and its attendant safety benefits.

Of the four states without a statewide code at the time of the original report (AL, DE, MS, TX), only Alabama has taken positive action, although there is no local enforcement mechanism in place for its new code.



BUILDING CODE BASICS



The purpose of residential building codes is to assure that minimum acceptable life safety standards are used in the design, construction and maintenance of the places where people live. Building codes are intended to increase the safety and integrity of structures, thereby reducing deaths, injuries and property damage from a wide range of hazards. The adoption and enforcement of building codes are especially important for residential buildings because registered design professionals, such as engineers and architects, are less likely to be involved in home design than in commercial construction.

The model building and residential codes used throughout most of the United States are developed by the International Code Council (ICC) and are known as the *International Building Code*® (IBC) and *International Residential Code*® (IRC). These model building codes are updated on a three-year cycle and the latest two editions were published in 2009 and 2012. The ICC also has a family of codes dealing with other building systems such as mechanical and plumbing; however, it should be noted there are other widely accepted sources of model codes dealing with these systems that are being regularly updated. Specifically, the *National Electrical Code*® is published and maintained by the National Fire Protection Association (NFPA). When the model building and residential codes are referenced in this update, they will be identified as the IBC, IRC or ICC codes with the publication date of the edition.

NOTABLE CHANGES

Some notable changes featured in this update (both positive and negative) are summarized below.

Positive Action



MARYLAND

Maryland, which lost points in the original report because it allowed local jurisdictions to weaken the statewide code, enacted two new laws to address this problem. In 2012, the state prohibited local jurisdictions from removing residential sprinkler requirements in the state code, making Maryland a leader in life safety protections for homeowners and firefighters. This was followed in 2013 by enactment of a law preventing local jurisdictions from weakening statewide wind design and wind-borne debris requirements – provisions that get to the heart of hurricane wind protection in a state that experienced Hurricane Sandy.

NEW JERSEY AND NEW YORK

New Jersey and New York learned firsthand about the importance of building codes when the region was struck by Hurricane Sandy in October 2012. New Jersey had one of the highest scores in the original *Rating the States* Report, and newer structures built to the more recent codes reportedly performed well in the face of Sandy's winds. However, history-making storm surge caused devastating floods and destroyed approximately 30,000 homes. In January 2013, Governor Chris Christie signed emergency regulations to adopt the Federal Emergency Management Agency's (FEMA) updated Advisory Base Flood Elevation (ABFE) maps as the rebuilding standard for the state – a change that should enhance property protection not only from coastal storm surge, but also from riverine flooding that is frequent in the state.

In New York, the original *Rating the States* Report noted that New York City's building regulatory system is exempt from the New York State building code requirements, and in fact had weakened several important wind protection requirements in the state code. The devastation from Sandy initiated a robust dialogue on the importance of strong building codes to the rebuilding process. New York City now is in the process of adopting a 2013 edition of its own code based on the 2009 edition of the IBC, with an anticipated effective date during the first half of 2014. More work is needed to assure that homes built in New York City and the rest of the state meet the latest model building codes, but the state appears to be moving—albeit slowly—in a positive direction.

Negative Action



NORTH CAROLINA

North Carolina has taken legislative and regulatory actions to weaken building code protection requirements. In 2012, the state passed a law that lengthens the adoption cycle of code changes from every three years to every six years. This will result in a significant gap between the time when safety improvements and new technologies are incorporated by experts into the ICC code, and when they are applied in North Carolina. The same legislation weakens local enforcement of the code, while separate action by the North Carolina Building Code Commission will weaken wall bracing provisions in coastal hurricane-prone regions.

STATE-BY-STATE BUILDING CODE DEVELOPMENTS

Positive Action

FLORIDA

(95 points in the original report)

Florida continues to be a leader in building code safety. Since publication of the *Rating the States* Report, Florida has adopted the 2009 editions of the IBC and IRC codes with Florida-specific amendments. These are named the 2010 editions of the: Florida Building Code – Building; and the Florida Building Code – Residential. Currently, the state is in the process of adopting the 2013 Florida Building Code based on the 2012 editions of the ICC codes, having completed review by various Technical Advisory Committees with final rule adoption by the Florida Building Code Commission pending as of August 1, 2013. The projected effective date of the 2013 Florida Building Code is March 2014.

VIRGINIA

(95 points in the original report)

Virginia is currently enforcing the 2009 editions of the IRC and other model building codes, with amendments the commonwealth has adopted. Virginia is in the process of adopting the 2012 editions of the ICC codes. Code changes have been submitted to the Board of Housing and Community Development and will be published in the Virginia Register. After a final hearing and public comment period, in December 2013, the Board will move to approve the final regulations. The projected effective date of the 2012 codes is August 2014.

SOUTH CAROLINA

(84 points in the original report)

Since the publication of the *Rating the States* Report, South Carolina has adopted the 2012 editions of the ICC codes with some state-specific amendments. The state requirements are consistent with the wind provisions in the model building code.

CONNECTICUT

(81 points in the original report)

Connecticut is still enforcing the 2003 editions of the ICC codes, but is in the process of adopting the 2009 edition of the IRC. Specifically, the Connecticut Code and Standards Committee has completed its review, and the state legislature is set to proceed toward approval of the updated editions of the codes with amendments. It is anticipated that the effective date of the updated code will be sometime in fall 2013. While this will be a

positive development, the long delay in code adoption (and the focus on the 2009, rather than the 2012 IRC) is an area of concern, particularly given the number of significant tropical and winter storms that have plagued Connecticut in recent years.

RHODE ISLAND

(78 points in the original report)

Since publication of the *Rating the States* Report, Rhode Island has adopted the 2012 edition of the ICC codes, effective July 2013. While this is a positive development, the state retained deficiencies that were highlighted in the original IBHS report. The state continues to use weakened load path requirements and opening protection requirements. Specifically, Section R301.2.1.2 allows partially enclosed buildings, which undermines opening protection requirements of the code. The original *Rating the States* Report highlighted these deficiencies; however, Rhode Island has continued to approve these practices while adopting the 2012 codes.

MARYLAND

(73 points in the original report)

Maryland has adopted the 2012 editions of the ICC codes and taken two important legislative actions to assure that more residents benefit from statewide safety standards since publication of the original *Rating the States* Report. In 2012, the state prohibited local jurisdictions from removing residential sprinkler requirements in the state code. The residential automatic fire sprinkler requirement is a consensus standard that was included in the ICC's 2009 edition of the IRC; however, many states have opted out of the fire sprinkler requirement or allowed local jurisdictions to decide whether or not to adopt it. By specifically preventing local jurisdictions from removing this safety requirement, Maryland is a leader in protecting residents, first responders, and the building stock. In 2013, the state passed another important building code improvement, in this case preventing local jurisdictions from weakening statewide wind design and windborne debris requirements – protections that are important in high-wind design areas of the state. Although Maryland still allows local jurisdictions to weaken other aspects of the state building code, these two important improvements demonstrate Maryland's commitment to strong building and safety codes.

STATE-BY-STATE BUILDING CODE DEVELOPMENTS

Positive Action

GEORGIA

(66 points in the original report)

Georgia is still enforcing the 2006 editions of the ICC codes, having bypassed adoption of the 2009 editions of the ICC codes by claiming unfavorable economic conditions and lack of resources. However, Georgia is in the process of adopting the 2012 editions of the ICC codes. The assigned state task force has approved the proposed amendments to the 2012 IRC, pending the State Codes Advisory Committee's approval. At present there are no amendments that would weaken the wind design provisions of the 2012 edition of IRC. The tentative effective date of the 2012 IRC is January 1, 2014.

NEW YORK

(60 points in the original report)

New York is currently enforcing the 2010 Building and Residential Code of New York State, which is based on the 2006 editions of the ICC codes. The state bypassed adoption of the 2009 editions of the ICC codes, but is now in the process of adopting the 2012 editions of the ICC codes. The tentative effective date for adoption of the 2012 editions of the ICC codes is May 2014. The fact that New York State did not adopt the ICC codes in a timely fashion is an area of concern.

The New York City building regulatory system remains exempt from the New York State requirements, although Sandy was a wake-up call regarding the city's hurricane risk. The city is currently enforcing the 2003 edition of the IBC, but is in the process of adopting the 2009 edition of the IBC into its 2013 edition of the New York City Code. The proposed code and amendments were submitted to the City Council in July 2013. The effective date of the adoption will be nine months after approval by the City Council. The city is addressing opening protection requirements in the context of wind speed maps and requirements of the 2012 edition of the IBC. Also, IBHS is hopeful that both New York State and New York City will adopt automatic sprinkler requirements for one- and two-family residential dwellings that are in the IRC code.

ALABAMA

(18 points in the original report)

Shortly before publication of the *Rating the States* Report, the state provided the Alabama Energy and Residential Board with authority to adopt a statewide residential code. Effective October 1, 2012, the state adopted the Alabama Energy and Residential Codes (AERC) for all jurisdictions statewide. AERC is composed of the 2009 *International Energy Conservation Code*® (2009 IECC) with Alabama amendments, and the 2009 edition of the IRC with Alabama amendments. Even though adoption of the 2009 IECC is mandatory throughout the state by all local governments, local jurisdictions are permitted to continue enforcing residential building codes previously enforced. However, jurisdictions that had not previously adopted a residential building code are now required to adopt the AERC (i.e., both 2009 IECC and 2009 IRC). It should be noted that enforcement aspects of the AERC are not clearly defined in the rule and/or can be considered non-existent.

STATE-BY-STATE BUILDING CODE DEVELOPMENTS

No Action

NEW JERSEY

(93 points in the original report)

New Jersey is currently enforcing the 2009 editions of the ICC codes, with no timetable for adoption of the 2012 editions of the ICC codes. This means that many homes destroyed by Sandy will not incorporate the most recently available model code safety standards. Fortunately, Governor Chris Christie's January 2013 emergency regulations adopting FEMA's updated Advisory Base Flood Elevation (ABFE) maps as the rebuilding standard for the state means that homes rebuilt in flood-prone areas generally will benefit from higher elevations (although many building safety experts, including IBHS, recommend homeowners add at least three feet to the ABFE for their area for an additional margin of safety). In addition, by establishing a statewide protocol, the updated elevation regulations will result in more efficient procedures for residents and businesses to construct, reconstruct, relocate, and elevate buildings in flood hazard areas.

Like many of the states in the original *Rating the States* Report, New Jersey's current code deleted the requirements for one- and two-family residential dwelling automatic sprinkler systems that are found in the 2009 edition of the IRC. However, in January 2012, legislation was introduced to correct this deficiency. Enactment of the legislation is uncertain, but would be a very positive action, especially for preventing civilian fire deaths – the vast majority of which occur during home fires.

MASSACHUSETTS

(87 points in the original report)

As was the case when the original *Rating the States* Report was published, Massachusetts is currently enforcing the 2009 editions of the ICC codes. Massachusetts intends to bypass adoption of the 2012 editions of the ICC codes and later adopt the 2015 editions, when they are published by the ICC. Massachusetts' skipping an entire set of code improvements could result in a significant gap between the time when safety improvements and new requirements are included in the model code

and when they become part of the Commonwealth's building codes. Additionally, the commonwealth has done nothing to address some state amendments that have weakened important wind provisions of the IRC.

Like New Jersey, legislation that would require automatic sprinkler systems to be installed in residential one- and two-family dwellings is pending in Massachusetts. Passage of this important safety measure is uncertain.

MAINE

(64 points in the original report)

Maine has not updated its building code since publication of the *Rating the States* Report, and is currently enforcing the 2009 editions of the ICC codes. A major weakness in Maine's code enforcement program is that it allows towns with fewer than 4,000 residents to choose not to have a building code. Unfortunately, recent legislation proposing to reduce the 4,000 population threshold to 2,000, did not advance. The state also considered legislation that would repeal the statewide Maine Uniform Building Code and allow towns and municipalities to selectively adopt parts of the building code or use codes that were in place prior to adoption of the statewide code. Fortunately, it failed, as it would have substantially weakened Maine's code adoption and enforcement program.

NEW HAMPSHIRE

(49 points in the original report)

New Hampshire has made no changes in building code adoption or enforcement since publication of the *Rating the States* Report. The state is currently enforcing the 2009 editions of the ICC codes. Although New Hampshire has a statewide building code, it does not require mandatory enforcement, which is considered a major weakness.

STATE-BY-STATE BUILDING CODE DEVELOPMENTS

No Action

TEXAS

(18 points in the original report)

Past events have demonstrated that Texas is vulnerable to a wide range of natural disasters including hurricanes and strong windstorms. Despite vigorous legislative debate about catastrophe risk and insurance, there have been no statewide building code improvements in Texas since publication of the *Rating the States* Report. Texas has no statewide residential building code and allows local jurisdictions within the state to adopt different editions of the IRC. For areas not covered by local jurisdictions (i.e., unincorporated areas), the state specifies the 2006 edition of the IRC.

The Texas Department of Insurance has adopted windstorm building code standards, but they are voluntary requirements that homeowners must meet for purposes of obtaining windstorm and hail insurance from the Texas Windstorm Insurance Association (TWIA—the state wind catastrophe pool). It is not clear how the building code requirements in areas not incorporated by cities or counties are enforced throughout the state. Without any substantive guidance and uniformity in terms of adoption and enforcement of a modern statewide building code throughout the state, Texas risks huge losses in the event of catastrophic events.

DELAWARE

(17 points in the original report)

As noted in the *Rating the States* Report, Delaware does not have a statewide residential building code, except for a plumbing code, which is based on the 2012 edition of the *International Plumbing Code*® (IPC). There has been no progress toward adoption of a statewide code since the original report's publication.

MISSISSIPPI

(4 points in the original report)

As noted in the *Rating the States* Report, Mississippi has virtually no statewide regulatory process in place for building codes. Seven counties in Mississippi are required to enforce the wind and flood requirements of the 2003 IRC. Earlier in 2013, legislation was introduced to require the county boards of supervisors and municipal governing authorities to adopt a statewide uniform construction code, but it did not advance. It is clear that Mississippi is highly vulnerable to hurricanes and severe wind, but adoption and enforcement of uniform modern statewide building codes have consistently encountered significant opposition and have never made it through the legislature.

STATE-BY-STATE BUILDING CODE DEVELOPMENTS

Negative Action



NORTH CAROLINA

(81 points in the original report)

Since publication of the *Rating the States* Report, North Carolina has amended and adopted the 2009 editions of the ICC codes and named it the 2012 North Carolina State Building Code. However, future adoption of model codes on a timely basis is very much in doubt, insofar as the state enacted legislation in 2013 that changes the adoption cycle for ICC codes from every three years to every six years. The same legislation also sets a limit on the categories of inspections conducted by local jurisdictions. However, the legislation does not identify the main categories of inspections in the construction process, thus risking that a key area in the construction process could be left out. The result is a substantially weakened system of code adoption and enforcement in the state.

North Carolina also weakened the technical standards in its state building code through adoption by the North Carolina Building Code Council of revised procedures to simplify IRC wall bracing provisions contained in the 2009 edition of the IRC. While these provisions use the same approach adopted in the 2012 edition of the IRC, they are approved for a broader range of wind speeds than allowed by the 2012 IRC (specifically allowing implementation beyond the 110 mph wind zone), including the coastal hurricane-prone regions. This application is not adequately substantiated by current design procedures of the 2012 edition of the IRC; the bracing methods in this edition are intended for regions with wind speeds of 110 mph or less.

In addition, the North Carolina Building Code Council has proposed eliminating permanent anchors for fastening wood structural panels for windborne debris protection. If approved, this change will make it less likely that opening protection is adequately anchored in windborne debris regions of the state.

LOUISIANA

(73 points in the original report)

Louisiana still uses the 2009 editions of the ICC codes with high-wind design triggered by the 2006 edition provisions; however the Code Review Committee has completed review and approval of the 2012 editions of the ICC codes, with Louisiana-specific amendments, and the new code is likely to become effective in January 2014.

Despite taking positive actions after learning harsh lessons from Hurricane Katrina, Louisiana took a step backward in 2013 with the approval of an Emergency Declaration by the State Code Council, which adopted the 2012 editions of the IBC and IRC design wind speed maps, but did not include the new trigger for following high-wind design requirements. By adopting the new design wind speed maps without the maps delineating high-wind design or windborne debris regions, the state created a deficiency in protecting residential dwellings in areas subject to high winds. It is unclear why the state moved ahead with this change through an Emergency Declaration (which normally involves a situation that requires an immediate regulatory solution to preserve the health and safety or general welfare of the public), or why the Louisiana State Code Council ignored technical input that identified the deficiency.

2012 IBHS Ratings by State: Highest to Lowest

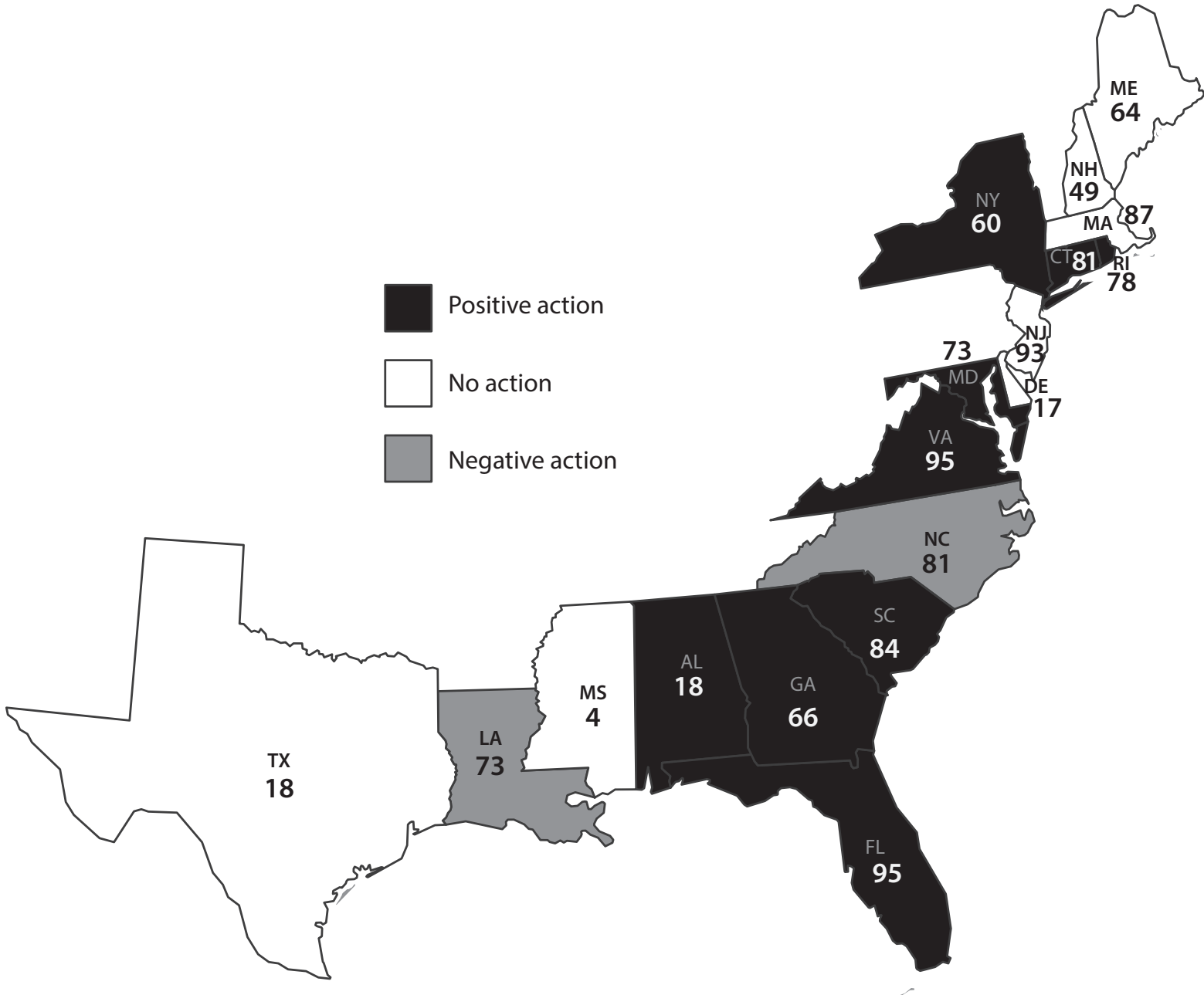
Scale 0-100* with 2013 Midterm Update Assessments

| State | Total | Adoption of code, universality, and weakening provisions | Enforcement Officials | Contractor Licensing | Midterm Update |
|----------------|-------|--|-----------------------|----------------------|----------------|
| Florida | 95 | 48 | 22 | 25 | ▲ |
| Virginia | 95 | 48 | 24 | 23 | ▲ |
| New Jersey | 93 | 49 | 23 | 21 | ■ |
| Massachusetts | 87 | 46 | 21 | 20 | ■ |
| South Carolina | 84 | 45 | 18 | 21 | ▲ |
| Connecticut | 81 | 40 | 24 | 17 | ▲ |
| North Carolina | 81 | 40 | 22 | 19 | ▽ |
| Rhode Island | 78 | 44 | 19 | 15 | ▲ |
| Louisiana | 73 | 48 | 15 | 10 | ▽ |
| Maryland | 73 | 43 | 15 | 15 | ▲ |
| Georgia | 66 | 31 | 15 | 20 | ▲ |
| Maine | 64 | 33 | 22 | 9 | ■ |
| New York | 60 | 37 | 23 | 0 | ▲ |
| New Hampshire | 49 | 39 | 0 | 10 | ■ |
| Alabama | 18 | 0 | 0 | 18 | ▲ |
| Texas | 18 | 18 | 0 | 0 | ■ |
| Delaware | 17 | 4 | 0 | 13 | ■ |
| Mississippi | 4 | 0 | 0 | 4 | ■ |

IBHS rankings were weighted based on the following variables:

- 50 percent for variables that relate to adoption and enforcement of building codes;
- 25 percent for variables that measure code official certification and training; and
- 25 percent for variables that relate to on-site implementation, as measured by contractor and subcontractor licensing.

IBHS Midterm Updates by State: Map View



CONCLUSION

The IBHS Rating the States: Midterm Update demonstrates that states can and will take positive action to update and/or improve their building code systems to better protect their citizens. Half of the 18 hurricane-prone states rated in the original report have acted to strengthen their code regimes, while only two took action to weaken their systems. The remaining seven states have made no changes that impact the effectiveness of their codes. Neither the original report, nor this midterm update, was intended to reprimand or reward individual states. The purpose of these reports is to provide states with a path to improvement; specifically, they delineate the information and tools (engineering expertise, data collection and analysis) states need to identify where their systems may be deficient and need improvement. IBHS plans to issue a new report in 2015, which will revise the rating for each state based on actions taken since the original report was published in 2012. The Institute is hopeful that more of the hurricane-prone states along the Gulf Coast and Atlantic Seaboard will take meaningful actions to keep the code provisions up-to-date and strengthen their enforcement practices, which ultimately will lead to safer, stronger communities.



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