BUILDING CODES FOR A STRONGER AND SAFER AMERICA

Post Event Report

May 9, 2013

BUILDSTRONG COALITION

Presented by Booz Allen Hamilton

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Introduction

Homes. Schools. Offices. Community centers. These institutions are the foundation of communities across America and face threats from a range of natural disasters—from fires and floods to hurricanes and tornadoes. According to the National Oceanic and Atmospheric Administration, there have been 25 major disasters over the past 2 years that have surpassed $1 billion in economic losses. The economic toll from these events, once the final costs from Hurricane Sandy are tabulated, could near $200 billion, but the greatest cost, of course, has been the tragic loss of hundreds of lives.[1]

Establishing and enforcing sound building codes can help communities across the U.S. better withstand severe storms and weather events, reducing damage caused by weather and lowering recovery costs. Whether for new construction or when rebuilding, building codes cover all aspects of construction including design, construction, and maintenance standards for structures in order to reduce deaths and property damage from weather hazards. Many states have already established and implemented strong building codes aimed at maintaining public safety and lowering recovery costs. A uniform adoption and enforcement of model building codes by states will help to eliminate long-term risks affecting people, property, the environment, and ultimately the economy.

Since 1980, natural disasters have cost the country more than $750 billion.

Source: BuildStrong Coalition

For example, following Hurricane Andrew in 1992, the state of Florida enacted the nation's most stringent building codes specifically targeting wind-caused damage from roofing materials and practices. The result of that code adoption has shown a dramatic benefit to Florida in subsequent hurricane events in 2004–2005 and in more recent times. Following the San Francisco earthquake of 1906, and more recently following the Loma Prieta and Northridge quakes of 1989 and 1994, the state of California enacted significantly stronger seismic building codes that also appear to have shown great effect in smaller quake events that have occurred in the last decade.

In addition, numerous studies undertaken by the United States Fire Administration, the National Institute of Science and Technology and the National Fire Protection Association show that fire codes as part of the building code system are critical to preventing loss of life and providing valuable time for emergency resources to arrive to help minimize damage. Fire codes have resulted in decreases in the loss from fire across the United States in the last 30 years.

On June 1, 2011, Reps. Mario Diaz-Balart (R-FL), Albio Sires (D-NY), and Richard Hanna (R-NY) introduced H.R. 2069, The Safe Building Code Incentive Act of 2011. This legislation would amend the Stafford Act to enhance existing mitigation programs by encouraging states to voluntarily adopt and enforce nationally recognized model building codes for residential and commercial structures in order to qualify for an additional four percent of funding available for post-disaster grants. The law would be administered by the Federal Emergency Management Agency (FEMA) and would not require any additional appropriations. The House passed the bill last year, as part of a larger bill that never made it to the Senate. However, in December 2012, Sen. Robert Menendez (D-NJ) introduced the Senate version of the legislation, which garnered broad bipartisan support. On May 8, 2013, Sen. Menendez and Rep. Diaz-Balart re-introduced the Safe Building Code Incentive Act to encourage states to adopt and enforce strong building codes as a disaster mitigation strategy. Currently, 21 states either qualify for the Safe Building Code Incentive, or could qualify with minor updates to their codes.

BuildStrong is a coalition of national business and consumer organizations, companies, and emergency management officials dedicated to promoting stronger building codes. The BuildStrong Coalition urges enactment of The Safe Building

1 Andrew Freedman, "NOAA: 2012 to rank as second costliest US year since 1980," *The Guardian*, December 21, 2012, http://www.guardian.co.uk/environment/2012/dec/21/climate-change-natural-disasters.

Code Incentive Act. This legislation would encourage states to adopt model building codes to protect property and ultimately save lives from the devastation of natural disasters.

Surveying the Preparedness Community on Stronger Building Codes

The BuildStrong Coalition has been actively engaged in preparedness activities related to building codes since 2007, working with partners across the public, private, and civil sectors. Recently, we gained additional perspectives on the preparedness challenges we face as a nation related to building codes by engaging directly with the preparedness community as well as thought leaders in the construction and design industry. In April 2013, we conducted a survey entitled *Building Codes for a Stronger and Safer America*. It was sent selectively to hazard insurance and disaster management professionals from different levels of government and industry and received responses from 44 participants.

In addition to offering their opinions on emergency preparedness and issues related to safer building codes, participants provided concrete views on the most important hazard mitigation activities and suggestions on improved measurements on the impact of disasters. The survey results offer a comprehensive view of the current state of the nation's preparedness and building code activities—and how whole community thinking can significantly improve preparedness. Complete survey results are included in the Appendix.

Furthering the Dialogue on Better Building Codes

On May 9, 2013, leaders from industry and government convened for the *National Thought Leader Forum: Building Codes for a Stronger and Safer America* event in Washington, DC. The event provided a senior-level forum for national dialogue on critical issues facing the hazard mitigation industry. Event speakers and panelists included:

- U.S. Representative Mario Diaz-Balart (R-FL)
- Debra Ballen, General Counsel and Senior Vice President of Public Policy, Insurance Institute for Business and Home Safety (IBHS)
- Bill Jenaway, President, Congressional Fire Services Institute
- Honorable Henry L. Green, President, National Institute of Building Sciences
- Jim Salek, Vice President of P&C Underwriting Policy and Programs, USAA
- U.S. Representative Steven Palazzo (R-MS)
- Michael Lingerfelt, FAIA, Disaster Assistance Committee Chair, American Institute of Architects (AIA)
- Jim Rossberg, Managing Director, Engineering Programs, American Society of Civil Engineers (ASCE)
- Tami Torres Fillyaw, Senior Vice President, Outreach and Communications, Federal Alliance for Safe Homes
- Glenn A. Gaines, Deputy U.S. Fire Administrator, United States Fire Administration (USFA), Federal Emergency Management Agency (FEMA)
- Thad Allen, Executive Vice President, Booz Allen Hamilton

More than 60 event participants engaged in the conversation that highlighted the economic, social, and safety benefits of stronger building codes. In presentations and subsequent dialogue, there was consensus that establishing defensible building codes requires solid research-based science and lessons learned from previous natural disasters. Panelists pointed to a series of recent events ranging from Hurricane Sandy and Hurricane Katrina to the community impacted by the tornado in Joplin, Missouri. In each instance, they noted the importance of both establishing and enforcing

building codes to include construction materials, building technique, and design specifications. By investing in these critical mitigation activities, government, industry, and individuals will save money, time, and ultimately lives in recovery.

Throughout the event, panelists emphasized the importance of engaging partners across the public, private, and civil sectors in the message. There was broad recognition that this issue must gain traction at the individual level. Home buyers must be empowered to demand more in building standards and community members must hold their elected officials responsible for their safety and well-being. This will require public education on building standards, emphasis on their impact on public safety, and commitment to resourcing enforcement. Multiple speakers likened this to the automobile safety movement in the 1980s—a topic that garnered significant public concern and impacted government regulations and industry standards. Establishing this style of public campaign will require commitment from industry, government, and associations to reiterate the importance of building codes for the public safety.

According to a FEMA-commissioned study conducted by the National Institute of Building Sciences, every $1 spent on hazard mitigation provides the nation with $4 in future benefits.

Source: *National Hazard Mitigation Saves: An Independent Study to Assess the Future Saving of Mitigation Activities*, **National Institute of Building Sciences, 2005**

The event coincided with Sen. Robert Menendez (D-NJ) and Rep. Mario Diaz-Balart (R-FL) re-introducing the Safe Building Code Incentive Act, which would encourage states to adopt and enforce strong building codes as a disaster mitigation strategy. This energy, combined with the conclusions of the survey, provides a momentum from which the BuildStrong Coalition will continue its commitment to America's public safety.

Conclusions

Stronger building codes save losses of all types—that is the predominant sentiment of both event speakers and survey respondents. In the survey and during the forum, the following major themes emerged regarding community preparedness through establishment and enforcement of strong building codes:

- **Progress will Require Collaboration by Partners at All Levels of Government:** Establishing and enforcing building codes that protect lives and save costs will require cooperation and support from partners at all levels of government. For example, a national or state-level code would need support and enforcement at the local level.
- **Invest Now, Benefit Later:** Strengthening prevention efforts through strong building codes now will reduce economic loss from disasters and save lives in the future. It is estimated that for every dollar spent on prevention, four dollars are saved in recovery.[2]
- **Science Must Drive Building Codes Effort:** Establishing defensible building codes require research-based science that is validated by multiple stakeholders in the private sector, all levels of government, first responders, and home inspectors. This community-driven consensus will ultimately drive enforcement.
- **Strong Homes + Strong Business = Strong Communities:** Building codes serve as the foundation for building and encouraging community resiliency in a disaster—whether a hurricane, hail storm, earthquake, or tornado.

2 Source: *National Hazard Mitigation Saves: An Independent Study to Assess the Future Saving of Mitigation Activities*, National Institute of Building Sciences, 2005.

- **Importance of Engaging the Whole Community through Public Outreach:** Partners across the public, private, and civil sectors must build a unified message. They must communicate frequently and repetitively to business leaders and government officials to create a national dialogue on building codes.
- **Building Codes are the Minimum Requirements:** The message must change to articulate that building codes are the minimum standards; they are the floor, not the ceiling, of standards necessary to maintain public safety.
- **Education and Training for Building Inspectors:** In addition to establishing strong building codes, more progress is needed to strengthen education and training for building inspectors. This will establish a common baseline of knowledge and build consistency in enforcement.

At the heart of the issue is development. Many survey respondents see unbridled development as the primary reason why costs from natural disasters continue to rise every year. One respondent wrote, "Our vulnerability to natural hazards is increasing, with development increasingly encroaching on lands with greater threats, and increased development resulting in greater flood risks." Responsible development, coupled with stronger and smarter building codes and regulations, would reduce the costs associated with devastating storms and their effects, including protecting jobs, homes, and economic vitality in a given jurisdiction. One respondent wrote, "People do not have to put up with the loss of their lifelong possessions if we would just build smarter and stronger."

Fear of increased costs with stronger building codes and enforcement measures are of significant concern. However, it is clear that respondents believe higher mitigation costs through building codes are much less expensive than the cost of not being prepared at all. One respondent wrote, "The slightly higher cost associated with building to mandated codes is negligible compared to the potential reduction in loss of lives, property damage, and increase in overall community resiliency." In addition, though effective public risk communication was seen as being an important mitigation effort that has a return on investment, many respondents felt that unclear cost/benefit information is a significant barrier to code adoption and enforcement. One respondent indicated, "If people knew that with inexpensive additions or upgrades, they could keep the roof on their house in a storm, we would see an increase in consumer demand." Clearly, educating individuals and communities in risk awareness and hazard mitigation is also key.

FEMA has declared more than 1,700 emergency declarations and major disaster declarations since 2000.

Source: http://www.fema.gov/disasters

Based on the survey findings and the discussion with national thought leaders, there is a clear need for increased community preparedness through establishment and enforcement of strong building codes. Respondents highlighted the importance of communicating and measuring preparedness—and translating that awareness of the importance of preparedness into appropriate mitigation action by the community and individual. That awareness and action are essential in a successful whole community approach. Through this perspective, we hope to further the dialogue on this critical national issue.

Appendix

Survey Results

The survey had 44 respondents with the largest group identifying themselves as insurance industry professionals (31 percent), followed by fire service (17 percent), building code professionals (14 percent), emergency and disaster management managers (12 percent), and flood hazard mitigation professionals (7 percent). Representation from "other" professions (19 percent) included government affairs, communications, and research.

Survey responses came from across the country, with half of the respondents (50 percent) based in the Mid-Atlantic region (Virginia, Maryland, or Washington, DC). Respondents based in Florida were the second largest group, with 7 percent, while California, New York, New Hampshire, Pennsylvania, and Wisconsin were represented with 4 percent. Further study is needed to understand what role, if any, location plays in survey responses. Does a respondent's home state have strong or weak building codes? Active or passive enforcement? High or low frequency of severe weather events? Analyzing these types of location-based issues will offer greater insight into whether or not location is a contributing factor in individual survey responses.

Q3: What do you believe best describes why the costs of damage from natural disasters continue to rise every year?

Half of respondents (50 percent) stated that the greatest reason the costs of damage from natural disasters continue to rise is because development occurs without regard to natural disasters or enhanced codes and standards. Another 20 percent of respondents indicated that a lack of enforceable building codes and standards in many states and localities was to blame for rising costs. Overall, these responses emphasize that most industry professionals surveyed believe that establishment and enforcement of stronger building codes would help improve community emergency preparedness.

Q3: What do you believe best describes why the costs of damage from natural disasters continue to rise every year?

	Response Percent	Response Count
Low responsibility or understanding for personal preparedness in citizens to include appropriate insurance coverage	11.36%	5
Failure to incorporate hazard mitigation requirements in land use planning	4.55%	2
Development occurs without regard to natural disasters or enhanced codes and standards	50.00%	22
Lack of enforceable building codes and standards in many states and localities	20.45%	9
Other (please specify)	13.64%	6

Among those participants who responded "Other" (six responses, 13.64 percent), the following themes emerged:

- Rising costs of construction materials and replacement costs for legacy infrastructure
- Changes in weather patterns and unpredictability of locations and impact
- Challenges in applying previous lessons learned and understanding interdependencies to gain efficiencies

Q4: What is the most significant barrier to improving a community's disaster resilience?

Most respondents (36 percent) indicated that the most significant barrier to improving a community's disaster resilience is a lack of comprehensive and enforced codes and standards. Following closely behind, 27 percent of respondents selected a community's lack of understanding of the actual costs of disasters. Combined, these two responses (at 63 percent) indicate that adopting model building codes, while also showing the public that implementing these codes can save money, would improve a community's disaster resilience.

Q4: What is the most significant barrier to improving a community's disaster resilience?

	Response Percent	Response Count
A lack of understanding within the community of the actual costs of disasters	27.27%	12
Difficulty obtaining and maintaining accurate risk knowledge	9.09%	4
A perceived unaffordability of insurance or under insured homes and business	13.64%	6
Lack of comprehensive and enforced codes and standards	36.36%	16
Other (please specify)	13.64%	6

Among those participants who responded "Other" (six responses, 13.64 percent), the following themes emerged:

- Challenges in understanding existing threats and risks
- Lack of public awareness regarding building codes and public safety
- Struggles associated with communicating standards and consistently enforcing codes

Q5: What are the barriers you see to code adoption and enforcement?

With the ability to select more than one answer to this question, the majority of respondents (nearly 64 percent) indicated that fear of increased building costs is the greatest barrier to building code adoption and enforcement. Another significant percentage (approximately 39 percent) stated that unclear cost-to-benefit information prevents communities from adopting and enforcing stricter building codes, while 27 percent said that uneven development regulations and adoption/enforcement are barriers. Based on the responses, it is clear that increased costs and understanding their impact and significance are the most significant obstacles to code adoption and enforcement.

Q5: What are the barriers you see to code adoption and enforcement?

	Response Percent	Response Count
Unclear cost/benefit information	38.64%	17
Poor local risk and threat recognition, warning, response, and recovery capabilities	13.64%	6
Uneven development regulations and code adoption and enforcement	27.27%	12
Fear of increased building costs	63.64%	28
Other (please specify)	13.64%	6

Among those participants who responded “Other” (six responses), the following themes emerged:

- Cost of enforcement and inspection for local communities
- Opposition by homebuilder associations
- Lack of understanding among elected officials of importance of building standards

Q6: Which of these is the most important hazard mitigation effort that has a return on investment?

An overwhelming 82 percent of respondents believe that the most important hazard mitigation effort that has a return on investment are building codes and regulations that accurately reflect the local risk and mitigation measures that address those risks. Only 9 percent selected risk assessment and hazard identification or effective public risk communications. In summary, the most selected response indicates that stronger building codes once again surface as essential to successful hazard mitigation efforts. If building codes need to be tailored to risk at a state level, then each state will need to be able to enhance the basic code to meet their risks as well as a code enforcement strategy that allows for compliance.

Q6: Which of these is the most important hazard mitigation effort that has a return on investment?

	Response Percent	Response Count
Building codes and regulations that accurately reflect the local risk and mitigation measures that address those risks	82.69%	43
Risk assessment and hazard identification	7.69%	4
Effective public risk communications	9.62%	5
Other (please specify)	3.70%	2

Among those participants who responded “Other” (two responses), the following themes emerged:

- Public awareness to build understanding of building codes as the “minimum” standards
- Stronger engagement among large utilities and agencies

Q7: Given the types of natural hazards that have occurred or could occur in the area where you live, what would you recommend be communicated with regards to the importance of building codes and standards?

All 44 survey participants answered this write-in question. The following themes emerged regarding communications strategies surrounding the importance of building codes and standards:

- Enhancing outreach efforts on the value of strong building codes and standards
- Educating communities on the importance of code enforcement

- Stressing the link between stronger building codes and better individual and community disaster resilience in natural disasters
- Educating citizens that most mandated building codes are only minimum building requirements

Q8: How can the true costs of disasters be measured against the effectiveness of code and code enforcement?

Nearly all participants provided written responses to this question. The diverse group of hazard insurance and disaster management professionals provided a variety of responses. From their responses, the following themes emerged regarding the true costs of disasters, and how they can be measured against the effectiveness of code and code enforcement:

- While true costs are priceless, stronger building codes can reduce the impact of natural disasters and allow communities to quickly return to normal.
- Communities with building codes and enforcement in place experience less damage, faster recovery times, and greater resilience.
- Conducting damage assessments that compare different code standards after a natural hazard would show less disaster impact in areas where strong building codes and enforcement are in place.
- The cost of mitigation is always much less than the cost of rebuilding and the cost of lost lives.

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