

Dialogue on National Resilience held at the National Institute of Building Sciences



An Authoritative Source of Innovative Solutions for the Built Environment

DIALOGUE ON NATIONAL RESILIENCE held at the National Institute of Building Sciences

September 19, 2013

SUMMARY REPORT

Resiliency has become a growing concern in the national psyche. President Obama's Climate Action Plan, the Hurricane Sandy Rebuilding Task Force's Rebuilding Strategy and other highprofile documents call for the implementation of measures to improve resiliency. However, assigning who is responsible for implementing such resilience strategies is not clear-cut. Multiple agencies at multiple levels of government, along with the private sector and individual citizens, bear responsibility. Recognizing and aligning the diverse parties involved is a necessary step to achieving resilience. Therefore, the National Institute of Building Sciences (Institute) brought together federal agency representatives, state and local government groups, professional organizations, lifeline providers, insurers, codes and standards developers, and resilience experts to identify current challenges and opportunities to realizing national resilience goals.¹

The Dialogue on National Resilience began with representatives from the Institute, the Council on Environmental Quality (CEQ) and the U.S. Department of Homeland Security (DHS) introducing the key issues, followed by targeted discussions engaging the various groups in attendance.²

Institute President Henry L. Green, Hon. AIA kicked off the event. In his introductory remarks, Green identified the purpose of the Dialogue and the potential outcomes. He explained that, through cooperation across the levels of government and the professionals responsible for our national infrastructure, we can map out a course of action to achieve national resilience. In order to achieve our resilience goals, a multihazard, multi-stakeholder approach is required. Green also highlighted the Institute's efforts to address resilience at both the community level and the individual building level, including the Institute's work with DHS on development of Integrated Rapid Visual Screening tools³ and hosting of a prior summit, "Designing for a Resilient America: A Stakeholder Summit on High Performance Resilient Buildings and Related Infrastructure."⁴

Susan Ruffo, Deputy Associate Director, International Affairs at CEQ, then spoke about the development and implementation of the President's Climate Action Plan. The plan is focused on engaging numerous participants in implementation—particularly across agencies and with the private sector. Responding to climate change and other hazards is a cross-sector endeavor with implications for health, safety and economics. Therefore, resilience is not a federal government issue, but a national issue requiring national engagement. Several federal agencies have recognized the need for engagement with local communities to address climate related issues—

¹ See Appendix I for list of attendees.

² See Appendix II for the dialogue agenda.

³ See http://www.nibs.org/?page=irdp_projects#irvs.

⁴ See http://www.nibs.org/resource/resmgr/Docs/DesigingforResilientAmerica.pdf

the National Oceanic and Atmospheric Administration (NOAA) is working with Toledo, Ohio, to identify future precipitation trends; the U.S. Army Corps of Engineers is working with the South Florida Regional Climate Compact members; and the Centers for Disease Control and Prevention are implementing a Climate Ready Cities program. Agencies are also looking at their internal vulnerabilities through development of climate change impact assessments and adaptation roadmaps.⁵

Ruffo explained that many of the decisions impacting the nation's ability to be resilient are made at the state and local level—including zoning and building codes. However, the federal government can help support such decisions through the provision of tools and other resources. Supporting and then translating global climate research through projects like the Climate Data Initiative can provide necessary information to decision makers and help them understand potential risks. Other existing federal programs can support state and local implementation of resilient strategies, including the Community Development Block Grants from the U.S. Department of Housing and Urban Development (HUD); U.S. Department of Transportation (DOT) grants; revolving loan funds from the U.S. Environmental Protection Agency; and DHS grant programs. However, questions remain on exactly what priorities should be addressed through these and other federal programs.

In addition, Ruffo talked about a new effort the National Institute of Standards and Technology (NIST) has underway to identify standards for resilience. Such an effort will work toward identification of current information needs to understand current risks and how to work within the inherent uncertainties surrounding risk and resilience.

Following Ruffo's presentation, the participants identified several challenges and opportunities that need to be addressed in order to move forward a community-wide approach to resilience. The value proposition for investing in resilience activities quickly came to the fore. Participants identified the Office of Management and Budget (OMB) as a potential agency to undertake such an assessment, which would need to look beyond the individual investments and resultant savings made at the building level and instead look to the benefits to communities. The decisionmaking process for investments also must be examined and understood. The group called for the revision of the 2005 report, Natural Hazard Mitigation Saves: An Independent Study to Assess the Future Savings from Mitigation Activities.⁶, which the Institute developed for the Federal Emergency Management Agency (FEMA), (This study, which found that every federal dollar spent on mitigation saves society an average of four dollars, highlighted the need to assess and understand savings beyond just those that accrue to the federal government, but to state and local governments and the local economy.) In addition, the participants expressed concerns that a project-by-project approach for identifying and funding mitigation would have difficulty meeting cost-benefit analysis individually, but multi-stage, multi-sector approaches would likely prove effective and financially justified.

Mike Kangior, Director of Resilience Policy at DHS, shared the Department's vision and current efforts to achieve national resilience. He discussed the Quadrennial Homeland Security Review

⁵ See the DHS Climate Change Adaptation Roadmap,

https://www.llis.dhs.gov/sites/default/files/Climate%20Change%20Adaptation%20Plan.pdf. ⁶ http://www.nibs.org/?page=mmc_projects#nhms.

(QHSR), which identifies "Ensuring Resilience to Disasters" as a key mission area for DHS. The importance of such a priority is reinforced by numerous events, studies and initiatives demonstrating the need for a focus on resilience. He also addressed a number of key concerns. As spotlighted by the American Society of Civil Engineers (ASCE), the nation's existing infrastructure is under stress.⁷ MunichRe [a reinsurance company with global operations], has pinpointed a roughly fourfold increase in disaster occurrence from 1980 to 2011.⁸ The nation's Atlantic and Gulf coasts, with \$10 trillion in insured properties and several trillion dollars of uninsured properties and government owned assets, remain vulnerable to hurricanes. Presidentially declared disasters have increased in recent years, and the past year (2012) was among the hottest on record.⁹ In the face of these issues, there are opportunities to help mitigate impacts, including adoption and enforcement of building codes.

Kangior discussed how Louisiana State University's Hurricane Center estimated that stronger building codes would have reduced wind damage from Hurricane Katrina by 80%, saving \$8 billion.¹⁰ The Insurance Institute for Business and Home Safety (IBHS) also conducted studies reinforcing that resilient structures incur significantly less damage. One showed that insurance losses from Hurricane Andrew (1992) would have been 50% less for homes and 40% less for commercial properties, had structures been built to Florida's 2004 building code.¹¹ Another study showed that modern building codes would have resulted in a 42% reduction of property losses brought on by Hurricane Charley (2004).¹²

In an effort to support investment in resilience and identify the value of resiliency to the building owner and the community, DHS developed the Resilience STAR program.¹³ Kangior explained that the program is designed to bring national attention to the issue of resilience, support market-based solutions and identify returns on investment. A pilot is underway focused on the residential sector, but the goal is to develop programs for all 16 critical infrastructure sectors.

As the nation's built environment undergoes recapitalization every 30 to 50 years, now is the time to work together to assure that the next cycle incorporates the strategies and practices necessary to make the nation more resilient.

Following Kangior's remarks, participants held a discussion and identified key issues to be addressed by the stakeholders in resilience. Participants broached whether, while building codes and infrastructure design criteria are updated, are they producing the desired levels of resilience? They also questioned the need to incorporate social perspectives, as well as identify technical provisions to support resilience. By providing the right message in a manner appropriate for the

⁷ http://www.infrastructurereportcard.org/

⁸

 $http://www.munichreamerica.com/site/mram/get/documents_E1449378742/mram/assetpool.mr_america/PDFs/3_Publications/ks_severe_weather_na_exec_summary.pdf$

⁹ http://www.climate.gov/news-features/understanding-climate/state-climate-2012-highlights

¹⁰ http://www.eng.lsu.edu/news/2006/1/new-lsu-hurricane-center-study-shows-stricter-building-codes-and-better-construction-practices-will-dramatically-reduce-damage-from-future-mississippi-gulf-coast-hurricanes

¹¹ http://www.disastersafety.org/disastersafety/hurricane-andrew-resources/

¹² http://www.disastersafety.org/hurricane/hurricane-charley/

¹³ See https://www.disastersafety.org/resilience-star/

audience, resilience can become an individual desire that could influence how policymakers address community-level investments.

The discussion also highlighted the need for an understandable, yet comprehensive, definition of resilience to support current decision making and set future directions for investment and policy development. Producing relatable data at the point where such data can inform and influence decision making is important—participants identified that the time when financial decisions are made is one such input point. The Climate Data Initiative is one step in providing an open, computer readable data source, but the data still must be presented in a meaningful way at the appropriate time. Participants pointed out that identifying metrics for resilience is equally challenging—and must evolve from abstract notions to measurable standards that can be used to demonstrate value.

Representatives from state and local government-related organizations provided insight into the challenges their members face with implementing strategies for resilience. Some communities may be in risk denial and only focus on the current "known" issues. Building codes are seen by some community leaders as having negative consequences on economic growth. Community ratings conducted for various purposes, including the National Flood Insurance Program and private sector insurance programs, should be expanded to address development of community-wide resilience ratings, which could be used to assist in awarding of federal and state grants, identification of best practices, and supporting private-sector decision making, including insurance underwriting and financial investments. Programs like ICLEI's STAR Community Index¹⁴ and Resilient Cities for America¹⁵ provide an important framework for engaging policymakers and communities.

Participants pointed out the need to identify parallel opportunities to address sustainability and resilience as part of a multi-faceted approach to achieve community goals. Code departments and infrastructure maintenance and updates are important aspects of local governments, but they are often overlooked as valuable contributors to community resilience planning and disaster response. Unfunded infrastructure liabilities place a strain on the economic resilience of communities.

Current funding mechanisms for code departments do not reflect their importance to the community. In many jurisdictions, building departments are expected to cover all expenses through funds collected through permit fees. When construction activity is robust, departments are generally able to maintain adequate funding and save contingency funds for future slowdowns in construction. However, when the economy (and thus state and local revenue) declines, any surplus maintained by the department is seen as a source of revenue for the general fund, thus leaving departments unable to maintain personnel and training. Establishing code departments as independent enterprise functions that support businesses may be an opportunity to circumvent these cyclical impacts. The code department also needs to transition from the perception as an adversary to design and construction to an advisor.

¹⁴ http://www.icleiusa.org/sustainability/star-community-index

¹⁵ http://www.resilientamerica.org/

The group focused considerable attention on the challenges of pre-incident planning versus emergency response. Participants identified, as a chronic challenge, the concept of "disaster politics," where elected officials and other community leaders get a measureable result from responding to a hazard rather than getting attention for pre-disaster planning. Demand for preevent planning and investment must be built at the local level. Potential messages to build such local demand include focus on social equity, kindness and neighborly responsibility. Communities and their leaders must be aware of the consequences of a failure to act—while recognizing that their actions or failures to act may have regional and national consequences. Investments in resilience not only impacts a community's buildings and infrastructure, but also supply chains and business continuity (even outside the immediate community).

Facilitating dialogue across groups of elected officials in a community and across various departments can help facilitate planning and increase effectiveness during a response to an event. Linkages can be created by engaging congressional representatives, state legislators, county and city council members, mayors, public works directors, building department directors, emergency response directors, utility leaders, and other community leaders in regular discussions about community needs—including resilience-related needs.

At a community level, decisions must be made both pre- and post-event, including whether recovery is just replacing the previously existing infrastructure or an opportunity for improvement.

As already identified, building codes were cited as a key area for advancing resilience policies. However, many misconceptions on the role of building codes abound. Participants identified af couple of key messages around codes were identified:

- 1. Codes help communities bear risk by setting minimum requirements to build to identified risks.
- 2. Codes minimize the impact of an adverse event.

In addition to focusing on these messages, a greater understanding of how code adoptions and enforcement can impact a community's credit rating and the affordability of insurance by its citizens and businesses must be developed and communicated in an understandable way. The lack of an instantaneous pay back on code adoptions and enforcement, and the implementation of their requirements in individual buildings, adds an additional burden to overcome. It is necessary to educate citizens and elected officials on the value of building codes. The Safe Building Code Incentive Act currently introduced in Congress was cited as one means for expanding utilization of building codes to realize resilience goals.¹⁶

Standards developers identified several issues relevant to both the development of standards that address resilience and their implementation in the marketplace. ASCE is in the process of incorporating resilience into their existing standards, but they are currently struggling with how to address the interconnectedness and uncertainties surrounding resilience. Understanding the economic and societal views of resilience is important. The power distribution sector may serve as a model for other sectors as that sector generally focuses on a ten-year time horizon for decision making. There was little doubt that the design community can support any level of

¹⁶ http://beta.congress.gov/bill/113th/senate-bill/905, http://beta.congress.gov/bill/113th-congress/house-bill/1878

performance required, but that a corresponding level of regulatory requirement or other insistence is required to actually move towards a specific basis of design.

Based on the day-long discussion, the participants made the following recommendations:

- Support state and local implementation of resilience strategies through federal agency programs, including grants.
- Identify current information needs and methods for addressing inherent uncertainties in resilience planning and implementation.
- Identify the value proposition for investment in resilience—particularly beyond the level of individual investments, but impacts to the community as a whole.
- Revise the National Institute of Building Sciences Multihazard Mitigation Council report *Natural Hazard Mitigation Saves: An Independent Study to Assess the Future Savings from Mitigation Activities* to address current savings and the benefits that accrue to state and local governments and the private sector.¹⁷
- Develop multi-sector, multi-stage programs that recognize and implement the crosssector, multi-disciplinary and community level strategies required to achieve resilience.
- Promote the adoption and enforcement of strong building codes.
- Develop a consistent and concise definition for resilience.
- Develop a decision support tool for state and local governments and the private sector for investments in resilience.
- Conduct a study on the impact of building codes and code departments on local economies.
- Develop a community-wide resiliency rating to support grant making, identification of best practices, and private-sector decision making.
- Communities should hold regular meetings of elected leaders from federal, state and local government, city and county departments, utilities and other leaders to address community-wide issues including resilience. An initial national meeting of leaders from representative groups may be desirable to start the dialogue.
- Develop a National Resilience Strategy with engagement from state and local leaders.¹⁸

¹⁷ Since the Dialogue was held, the MMC has developed a concept paper and begun fundraising to conduct such a study, which would specifically focus on the value of private sector investment in mitigation.

¹⁸ While the announcement came out after the Dialogue occured, the Council on Climate Preparedness and Resilience and the State, Local, and Tribal Leaders Task Force on Climate Preparedness and Resilience, established by the November 1, 2013 Executive Order: Preparing the United States for the Impacts of Climate Change, may address this recommendation. http://www.whitehouse.gov/the-press-office/2013/11/01/executive-order-preparing-united-states-impacts-climate-change.

DIALOGUE ON NATIONAL RESILIENCE Appendix I

ATTENDEES

Charles "Chuck" Adams, U.S. Department of Homeland Security Nneka Assing, American Gas Association Bilal Ayyub, University of Maryland Debra Ballen, Insurance Institute for Business and Home Safety Jackita Bass, U.S. Department of Homeland Security Debbie Bassert, National Association of Home Builders Laura Berkey-Ames, American Public Works Association Jerry Brashear, The Brashear Group Jim Brooks, National League of Cities Charles Casey, American Society of Civil Engineers Stephen Cauffman, National Institute of Standards and Technology Ryan Colker, National Institute of Buildings Sciences Duane Desiderio, The Real Estate Roundtable Tammy Dickinson, Office of Science and Technology Policy Casey Dinges, American Society of Civil Engineers Gary Ehrlich, National Association of Homebuilders Michael Erbesfeld, Building Owners and Managers Association Matt Fuchs, U.S. Department of Homeland Security Matt Gannon, Farmers Insurance Mark J. Golden, National Society of Professional Engineers Rachel Grandpre, Council on Environmental Quality Henry Green, National Institute of Building Sciences Jason Hartke, U.S. Green Building Council Carl Hedde, MunichRE/Insurance Institute for Business and Home Safety Gwainevere Hess, U.S. Department of Homeland Security Ben Husch, National Conference of State Legislatures Casey Jackson, U.S. Department of Homeland Security Seth Jonas, Institute for Defense Analyses Mike Kangior, U.S. Department of Homeland Security Earle Kennett, National Institute of Building Sciences Dana Kotecki, U.S. Department of Homeland Security Linda Langston, Linn County Supervisor/National Association of Counties Christopher Lindsay, International Association of Plumbing and Mechanical Officials John Lyons, U.S. Department of Homeland Security Jalal Mapar, U.S. Department of Homeland Security Cooper Martin, American Institute of Architects Eoin McCarron, Institute for Defense Analyses Rachel Mouser, National Emergency Management Association Joanne Neukirchen, Booz, Allen, Hamilton Lindene Patton, Zurich Insurance Group

Janet Quist, U.S. Department of Homeland Security John Ritterpusch, National Association of Home Builders Jim Rossberg, American Society of Civil Engineers David Rouse, American Planning Association Susan Ruffo, Council on Environmental Quality Landis Rush, National Association of Counties Jen Salerno, Booz, Allen, Hamilton Asha Sharma, Council on Environmental Quality Peter Shebell, U.S. Department of Homeland Security Dominic Sims, International Code Council Olivia Starr, American Planning Association Guy Tomberlin, International Code Council Mary Wilson, Herndon, Virginia/American Public Works Association Sara Yerkes, International Code Council

DIALOGUE ON NATIONAL RESILIENCE

Appendix II

PROGRAM

| 9:00 – 9:30 am | Welcome & Introductions Henry L. Green, Hon. AIA, President, National Institute of Building Sciences |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| 9:30 – 10:00 am | The President's Climate Action Plan Susan Ruffo, Deputy Associate Director, International Affairs, Council on Environmental Quality |
| 10:00 – 10:30 am | Creating a Resilient Nation Mike Kangior, Director of Resilience Policy, U.S. Department of Homeland Security |
| 10:30 – 10:45 am | Break |
| 10:45 – 11:30 am | State and Local Government Perspectives on Resilience (participant presentations) |
| 11:30 am – 12:15 pm | Building Codes as Building Blocks to Resilience (participant presentations) |
| 12:15 – 1:15 pm | Networking Lunch |
| 1:15 – 2:00 pm | Designers, Builders and Owners: Making Initial Decisions and Managing the Risk (participant presentations) |
| 2:00 – 2:45 pm | Lifelines as Vital Linkages and Facilitators of Resilience and Recovery (participant presentations) |
| 2:45 – 3:00 pm | Break |
| 3:00 – 3:45 pm | Discussion: Challenges and Opportunities in Development of a Holistic Resiliency Framework |
| 3:45 – 4:30 pm | Wrap Up and Next Steps |

National Institute of Building Sciences 1090 Vermont Avenue, NW, Suite 700 Washington, DC 20005-4950 www.nibs.org