Addressing Current and Future Risks in Real Estate

Congressional Briefing on Building Climate Resilience in the Real Estate Sector
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Public Law 93-383, Sect. 809

Congress directed the Institute to “exercise its functions and responsibilities in four general areas……….”

- **Develop and maintain** performance criteria for maintenance of life, safety, health, and public welfare for the built environment
- **Evaluate and prequalify** building technology and products
- **Conduct** related and needed investigations
- **Assemble, store, and disseminate** technical data and related information
Institute in Action

INDUSTRY LEADERSHIP & ADVOCACY

FINANCE INSURANCE REAL ESTATE (CFIRE)

OFF SITE CONSTRUCTION COUNCIL (OSCC)

CONSULTATIVE COUNCIL

COORDINATING COUNCIL

WHOLE BUILDING DESIGN GUIDE (WBDG)

BUILDING RESEARCH INFORMATION KNOWLEDGEBASE (BRIK)

INFORMATION RESOURCES & TECHNOLOGY

COMMERCIAL WORKFORCE CREDENTIALING COUNCIL (CWCC)

SCIENCE TECHNOLOGY ENGINEERING & MATHEMATICS (STEM)

GOVERNMENTS ON BUILDING CODES & STANDARDS (NCGBCS)

BUILDING ENCLOSURE TECHNOLOGY & ENVIRONMENT COUNCIL (BETEC)

SUSTAINABLE BUILDING INDUSTRY (SBIC)

FACILITY MAINTENANCE & OPERATION COMMITTEE

LIFELINES RISK & RESILIENCE (LRR)

MULTIHAZARD MITIGATION (MMC)

SECURITY & DISASTER PREPAREDNESS

BUILDING SEISMIC SAFETY COUNCIL (BSSC)

buildingSMART alliance (bSa)

NATIONAL CLEARINGHOUSE FOR EDUCATIONAL FACILITIES (NCEF)

LOW VISION DESIGN COMMITTEE (LVDC)

INSTITUTE IN ACTION
The Growing Impacts of Natural Disasters

U.S. 2017 Billion-Dollar Weather and Climate Disasters

- North Dakota, South Dakota, and Montana Drought Spring–Fall 2017
- Western Wildfires, California Firestorm Summer–Fall 2017
- California Flooding February 8–22
- Colorado Hail Storm and Central Severe Weather May 8–11
- Minnesota Hail Storm and Upper Midwest Severe Weather June 9–11
- Midwest Tornado Outbreak March 6–8
- Central/Southeast Tornado Outbreak February 28–March 1
- Missouri and Arkansas Flooding and Central Severe Weather April 25–May 7
- Southeast Freeze March 14–16
- Southern Tornado Outbreak and Western Storms January 20–22
- Hurricane Harvey August 25–31
- Hurricane Irma September 6–12
- Hurricane Maria September 19–21

This map denotes the approximate location for each of the 16 billion-dollar weather and climate disasters that impacted the United States during 2017.
Frequency of Natural Disasters

1980-2017 Year-to-Date United States Billion-Dollar Disaster Event Frequency (CPI-Adjusted)

Event statistics are added according to the date on which they ended.
Cost of Natural Disasters

1980-2017 Year-to-Date United States Billion-Dollar Disaster Event Cost (CPI-Adjusted)

Event statistics are added according to the date on which they ended.
Money spent on reducing the risk of natural hazards is a sound investment. On average, a dollar spent by FEMA on hazard mitigation provides the nation about $4 in future benefits."
A Valuable Contribution . . . But Questions Remained

Private Sector Initiatives

Building Codes

Lifelines
Hazard Mitigation Saves: 2017 Interim Report Findings

- **Federal grants**: The impacts of 23 years of federal mitigation grants provided by the Federal Emergency Management Agency (FEMA), Economic Development Administration (EDA) and Department of Housing and Urban Development (HUD), resulting in a national benefit of $6 for every $1 invested.

- **Exceed code requirements**: The costs and benefits of designing all new construction to exceed select provisions in the 2015 *International Building Code* (IBC) and the 2015 *International Residential Code* (IRC) and the implementation of the 2015 *International Wildland-Urban Interface Code* (IWUIC). This resulted in a national benefit of $4 for every $1 invested.
## Benefit Cost Ratios by Hazard and Mitigation Measure

<table>
<thead>
<tr>
<th>Hazard and Mitigation Measure</th>
<th>Federally Funded</th>
<th>Beyond Code Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Riverine Flood</td>
<td>7:1</td>
<td>5:1</td>
</tr>
<tr>
<td>Hurricane Surge</td>
<td>Too few grants</td>
<td>7:1</td>
</tr>
<tr>
<td>Wind</td>
<td>5:1</td>
<td>5:1</td>
</tr>
<tr>
<td>Earthquake</td>
<td>3:1</td>
<td>4:1</td>
</tr>
<tr>
<td>Wildland-Urban Interface Fire</td>
<td>3:1</td>
<td>4:1</td>
</tr>
</tbody>
</table>

*BCR numbers in this study have been rounded*
Some Benefits Cannot Be Estimated, so BCRs May Be Low

Changes in future risks also not generally included...
All Stakeholders Benefit from Exceeding Select 2015 I-Code Provisions
Additional Mitigation Measures to Study

• Adoption of Current Building Codes (In Progress)
• Retrofit of Existing Facilities (In Progress)
• Business Continuity Planning (Proposed)
• Utility and Transportation Lifeline Mitigation (In Progress)
• Public-Sector Direct Mitigation Efforts (Proposed)
The most cost-effective manner to achieve resilience is through a holistic and integrated set of public, private and hybrid incentivization programs including mortgages, insurance, finance, tax incentives and credits, and grants.
The Importance of Community-Level Resilience Illustrated

Galveston Texas, Post-Ike

NYC, Post-Sandy
Designing for Life-Cycle Risks
Industry Statement on Resilience

• We **research** materials, design techniques, construction procedures, and other methods to improve the standard of practice.

• We **educate** our profession through continuous learning. Through coordinated and continuous learning, design, construction and operations professionals can provide their clients with proven best practices and utilize the latest systems and materials to create more resilient communities.

• We **advocate** at all levels of government for effective land use policies, modern building codes, and smarter investment in the construction and maintenance of our nation’s buildings and infrastructure.

• We **respond** alongside professional emergency managers when disasters do occur. Industry experts routinely work in partnership with government officials to survey damage, coordinate recovery efforts, and help communities rebuild better and stronger than before.

• We **plan** for the future, proactively envisioning and pursuing a more sustainable built environment.
Recommendations

• Invest in mitigation to reduce future federal obligations

• Encourage state and local governments to adopt and enforce the latest building codes
  – Coordinated interagency code program
  – Prerequisite for certain federal funding

• Support research into incorporating climate risk into design and construction guidance

• Encourage innovative federal programs (and remove barriers) to enhance private-sector investment in mitigation

• All federal investments should recognize current and future risks to assure assets are protected