The International Code Council is a nonprofit association that provides a wide range of building safety solutions. It develops model codes and standards used worldwide to construct safe, sustainable, affordable, and resilient structures.
The Family of Model Codes

- International Building Code (IBC)
- International Fire Code (IFC)
- International Mechanical Code (IMC)
- International Plumbing Code (IPC)
- International Residential Code (IRC)
- International Energy Conservation Code (IECC)
- International Existing Building Code (IEBC)
- International Fuel Gas Code (IFGC)
- International Property Maintenance Code (IPMC)
- International Private Sewage Disposal Code (IPSDC)
- International Zoning Code (IZC)
- International Wildland-Urban Interface Code (IWUIC)
- ICC Performance Code (ICCPC)
- International Green Construction Code (IgCC)
- International Swimming Pool and Spa Code (ISPSC)
What are Model Codes?

- Developed through a consensus-based process on a three year cycle
- All interested parties can make recommended changes
- Basis for state and local building codes and criteria for federal agencies (GSA, DOD, HUD, OBO, etc.).
Resilience in the built environment starts with strong, regularly adopted, and properly administered building codes. However, to attain whole community resilience, communities must look at the resiliency of all interconnected systems and function of the community as well.
“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 Lot Has Happened Since 2005...

1980-2019 Year-to-Date United States Billion-Dollar Disaster Event Frequency (CPI-Adjusted)

Event statistics are added according to the date on which they ended.

Statistics valid as of October 8, 2019.

https://www.ncdc.noaa.gov/billions/
A Lot Has Happened Since 2005.

1980-2019 Year-to-Date United States Billion-Dollar Disaster Event Cost (CPI-Adjusted)

Event statistics are added according to the date on which they ended.

Statistics valid as of October 8, 2019.
*Cost statistics not included for Tropical Storm Imelda (September 2019), Hurricane Dorian (September 2019), Mississippi River, Midwest and Southern Flooding (July 2019), Arkansas River Flooding (June 2019), Missouri River and North Central Flooding (March 2019)

https://www.ncdc.noaa.gov/billions/
Mitigation is Cost Effective!

<table>
<thead>
<tr>
<th>Natural Hazard</th>
<th>Benefit-Cost Ratio</th>
<th>Exceed Common Code Requirements</th>
<th>Meet Common Code Requirements</th>
<th>Utilities and Transportation</th>
<th>Federally Funded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Hazard Benefit-Cost Ratio</td>
<td>4:1</td>
<td>11:1</td>
<td>4:1</td>
<td>6:1</td>
<td>6:1</td>
</tr>
<tr>
<td>Riverine Flood</td>
<td>5:1</td>
<td>6:1</td>
<td>8:1</td>
<td>7:1</td>
<td></td>
</tr>
<tr>
<td>Hurricane Surge</td>
<td>7:1</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Too few grants</td>
<td></td>
</tr>
<tr>
<td>Wind</td>
<td>5:1</td>
<td>10:1</td>
<td>7:1</td>
<td>5:1</td>
<td></td>
</tr>
<tr>
<td>Earthquake</td>
<td>4:1</td>
<td>12:1</td>
<td>3:1</td>
<td>3:1</td>
<td></td>
</tr>
<tr>
<td>Wildland-Urban Interface Fire</td>
<td>4:1</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>3:1</td>
<td></td>
</tr>
</tbody>
</table>

Natural Hazard Mitigation Saves: 2018 Interim Report Code Findings

BCR of hurricane wind mitigation by increasing roof strength in new buildings to meet 2018 IRC and IBC (by wind band)
BCR of WUI fire mitigation by implementing the 2015 IWUIC for new buildings (by county).
Natural Hazard Mitigation Saves: 2018 Interim Report Code Findings

BCR of earthquake mitigation by increasing strength and stiffness in new buildings (by county) to meet the 2018 IRC and IBC.
Stakeholder net benefits per year of new construction resulting from meeting 2018 IRC and IBC.
Homeowner Perceptions

Most assume they have (relatively) up to date building codes that provide modest protection

Description of Home Building Code

- 27% sắt (Steel)
- 22% Rotted up taken
- 19% 80%
- 16% 10%
- 13% 5%
- 12% 2%
- 11% 1%
- 10% 0%

Protection from Building Codes

- 34% 77%
- 32% 76%
- 30% 75%
- 28% 74%
- 26% 73%
- 24% 72%
- 22% 71%
- 20% 70%

Importance to an Elected Official's Job

- 31% 71%
- 29% 70%
- 28% 69%
- 27% 68%
- 26% 67%
- 25% 66%
- 24% 65%
- 23% 64%

- Maintaining law and order and addressing crime
- Responding well to a natural disaster or extreme weather event
- Ensuring the community holds up well to a natural disaster or extreme weather event
- Keeping taxes low
- Keeping property insurance rates low
- Attracting business to the area
- Protecting the environment

Absolutely Essential

Very Important

The Real-World Impact of Codes

Source: Google Earth

Rockport, TX Post Hurricane Harvey
Photo: Manny A. Perotin, CDM Smith
“Using energy codes to provide enhanced passive survivability provides significant co-benefits. Community and individual resilience is enhanced while building owners and tenants reap energy efficiency related rewards everyday in the form of lower energy bills and greater cost certainty.”

Second in a series
The entire Nation must work as a team to increase pre-disaster mitigation in communities. FEMA will continue to work directly with SLTT and non-governmental partners to advocate for the adoption and enforcement of modern building and property codes. **Disaster resilience starts with building codes, because they enhance public safety and property protection.**

Furthermore, FEMA will encourage robust code enforcement, providing education and training when needed to help convey the value of standardized, up-to-date building codes.

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**National Mitigation Investment Strategy**

Mitigation Framework Leadership Group

August 2019

**Recommendation 3.1** – Encourage Communities to Adopt and Enforce Up-to-Date Building Codes

HUD CDBG-DR, CDBG-MIT

• CDBG-DR:
  • Action Plans to include a description of how the grantee will, “(c) support adoption and enforcement of modern and/or resilient building codes and mitigation of hazard risk, including possible sea level rise, high winds, storm surge, and flooding, where appropriate”

• CDBG-MIT ($6.9 bn)
  • “Grantees are encouraged to propose an allocation of CDBG-MIT funds for building code development and implementation, land use planning and/or hazard mitigation planning activities that may include but need not be limited to: (a) The development and implementation of modern and resilient building codes consistent with an identified model or standard, such as ASCE 24 and ASCE 7 as may be applicable, in order to mitigate against current and future hazards. . . .”
Questions?

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