



INTERNATIONAL  
CODE  
COUNCIL®



Alliance  
for National & Community  
Resilience

# What Congress Can Do To Support Better Buildings

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# 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.).*

# 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)



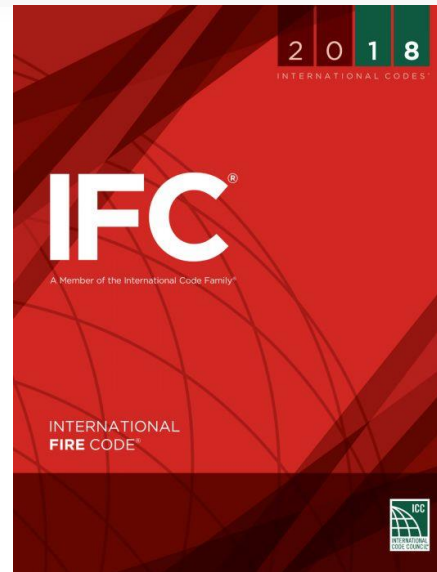
U.S. NEWS

# Carbon monoxide is killing public housing residents, but HUD doesn't require detectors

Residents of a South Carolina public housing complex are demanding answers after two of their neighbors died from the gas.



Requires installation of CO detection in residential structures



Retroactive installation of CO detection for existing residential structures

# Storm Shelters in Tornado Prone Schools

*Modern building codes require storm shelters for schools in tornado prone regions. Yet of the 21 states that regularly face tornado risk, just 7 have requirements in their codes for tornado shelters in schools.*



# Additional Items Captured in Recent Codes



## **2015 International Building Code**

Storm Shelters

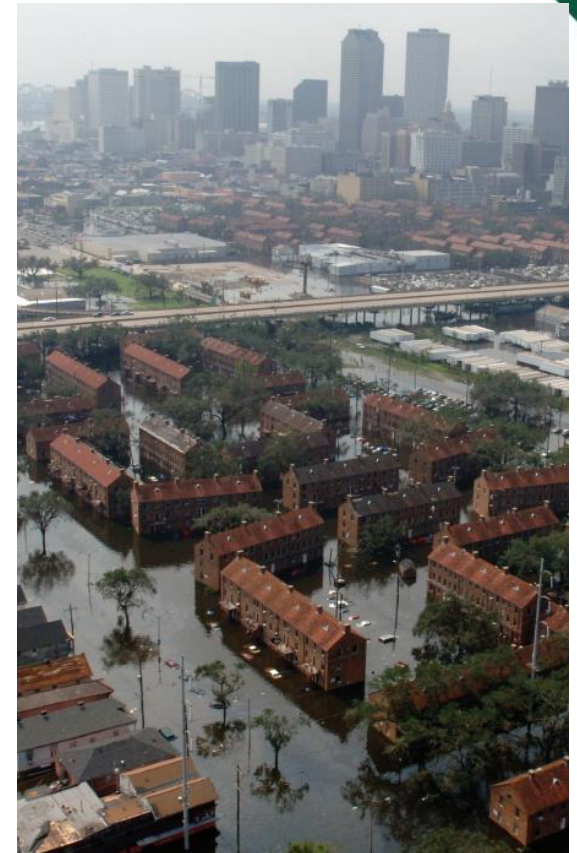
Solar Panels

Seismic Resistance

## **2018 International Building Code**

Structural Improvements

Wind/Earthquake Loads



# Energy Code Contributions to Resilience

Works in Tandem with  
Other Model Codes

## Durability

Durability ensures  
home is livable  
for decades



## Extreme Weather Protection

Better envelopes  
Habitability –  
more lives saved

## Moisture Management

Rot, mold,  
mildew

## Energy Efficiency

Grid Stability  
Microgrids  
Energy Storage

## Fire Safety

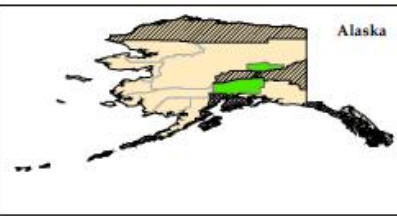
# Modern Codes Mitigate Damage



- \$500M in annualized losses avoided across 8 SE states per FEMA
- Reduced windstorm losses by 72% since Florida's statewide code
- Reduced hail damage 12-28% in Missouri







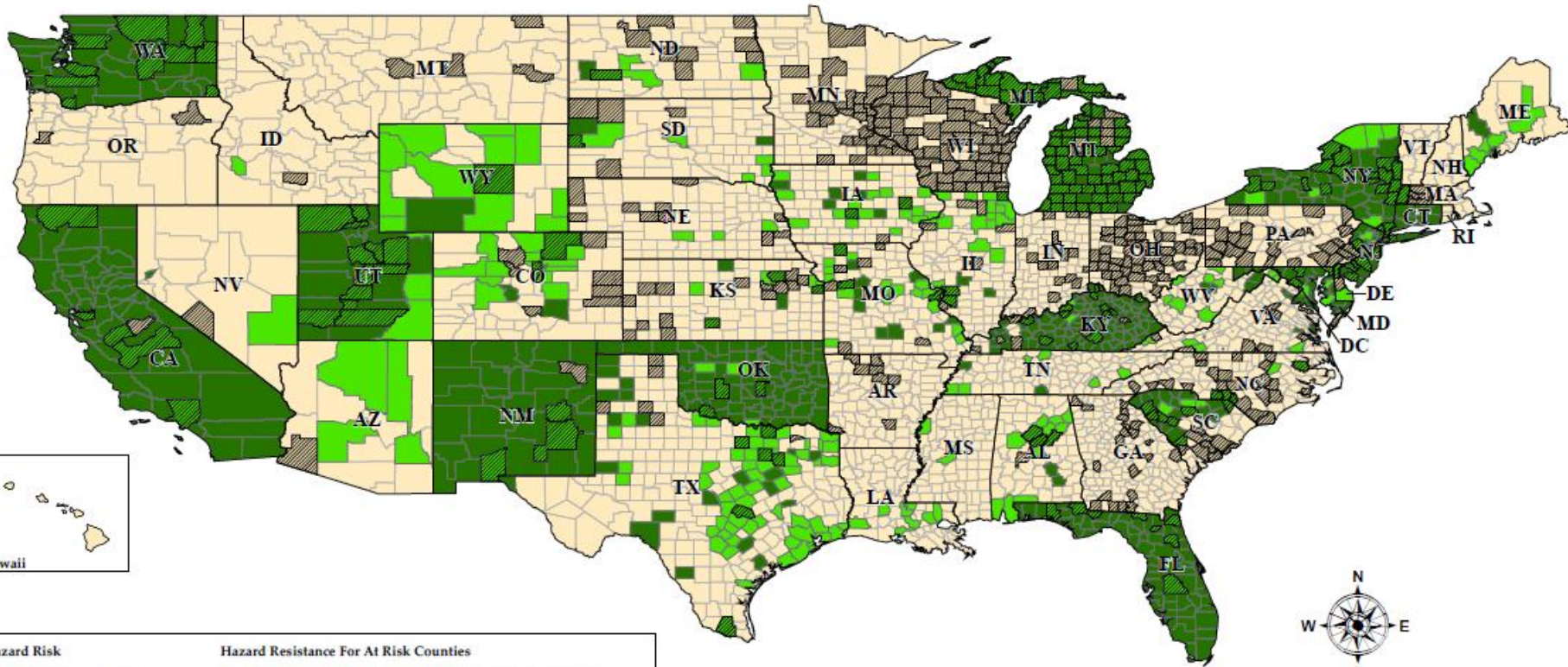
# U.S. Hazard Risk

## Counties in the BCEGS Database that Have Adopted Hazard-Resistant Building Codes and Participate in the NFIP

December 21, 2018



FEMA



### Hazard Risk

Reporting jurisdictions which are at high risk for hurricane, flood, seismic, damaging wind, or tornado

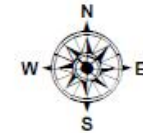
Jurisdictions are known locations which may have participated in the BCEGS survey done by ISO or provided by Building Code Adoption Tracking Research. Jurisdiction is the common name for the area, with defined political boundaries, served by the building department. Jurisdictions include, but are not limited to, cities, towns, townships, boroughs, villages, counties, and parishes. Many small crossroad communities are counted as jurisdictions.

A reporting jurisdiction has reported information to BCEGS or another research group

### Hazard Resistance For At Risk Counties

- Counties In Which 100% Of Reporting Jurisdictions Have Adopted Hazard-Resistant Building Codes and Participate in the NFIP
- Counties In Which Less Than 100% Of Reporting Jurisdictions Have Adopted Hazard-Resistant Building Codes
- Counties In Which Less Than 100% Of Reporting Jurisdictions Have Adopted Hazard-Resistant Building Codes and/or do not Participate in the NFIP
- Reporting Counties that Have Not Adopted Hazard-Resistant Building Codes
- Reporting Counties that Have Not Adopted Hazard-Resistant Building Codes and/or do not Participate in the NFIP

Based on BCEGS data provided by Insurance Services Office (ISO), December 21, 2018 or other research groups



# Building Codes are Highly Cost Effective Mitigation Measures



## National Benefit-Cost Ratio Per Peril

\*BCR numbers in this study have been rounded

**Overall Hazard Benefit-Cost Ratio**

Exceed common code requirements

**4:1**

Meet common code requirements

**11:1**

Utilities and transportation

**4:1**

Federally funded

**6:1**



**Riverine Flood**

**5:1**

**6:1**

**8:1**

**7:1**



**Hurricane Surge**

**7:1**

Not applicable

Not applicable

Too few grants



**Wind**

**5:1**

**10:1**

**7:1**

**5:1**



**Earthquake**

**4:1**

**12:1**

**3:1**

**3:1**



**Wildland-Urban Interface Fire**

**4:1**

Not applicable

Not applicable

**3:1**

# Total Costs and Benefits of Meeting the 2018 IBC and IRC

## **Benefit: \$13 billion**

46% – Property: \$7

23% – Additional living expenses and direct business interruption: \$3

12% – Casualties and PTSD: \$1

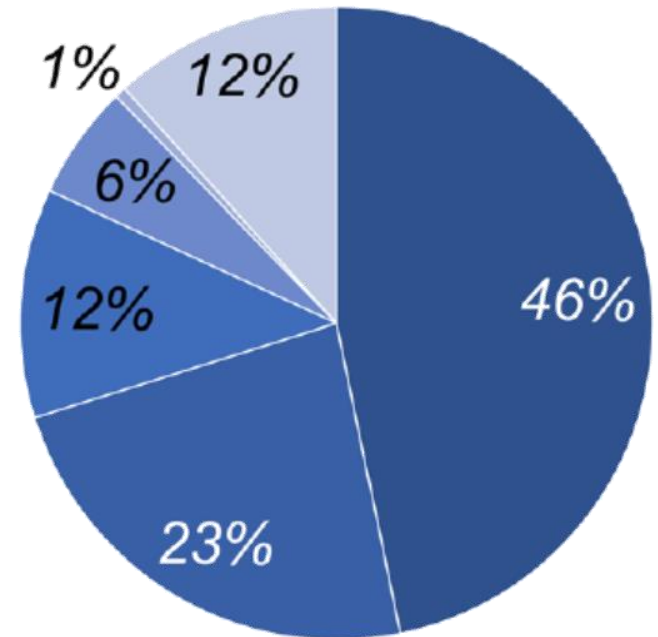
12% – Indirect business interruption: \$1

6% – Insurance: \$1

1% – Urban search and rescue: \$0.02

Billions 2018 USD

**Cost: \$1.2 billion**



# Code Adoption Considerations



- Codes adopted
  - Statewide, variants, home rule
  - Amendments
  - Editions
- Legislative vs. regulatory updates
- Enforcement

# Federal Validation



- Existing Regulatory Validation
  - FEMA’s strategic plan/minimum standards
  - HUD CDBG-DR
  - GSA/DOD code requirements
  - CPSC grants
- Congressional Validation
  - Bipartisan Budget Act cost-share
  - DRRA pre- and post-disaster assistance for administration and enforcement
  - Pre-disaster grant funding criteria



# Protecting Federal Investments

## Protecting Americans



The federal government will spend billions (if not trillions) of dollars on infrastructure including schools, public housing, transit stations, bus terminals, airports, medical facilities, and community centers. In many instances, these structures will be built to the codes in place at the local level.

**→ All projects receiving federal funds should be built to the latest edition of the model codes**

- **15 states do not require jurisdictions adopt codes. In some of these states upwards of 25% of the residents live in communities with codes 9 years or older**
- **8 states have no statewide energy conservation code and 11 have codes over 9 years old. Modern codes are ~25% more efficient than those in 2010.**

# Protecting Federal Investments

## Protecting Americans



FEMA found that requiring building codes as part of the National Flood Insurance Program would reduce losses, increase property values, reduce insurance rates, make NFIP more actuarially sound.

**→ Include minimum code requirements in NFIP reauthorization**

Federal agencies make significant contributions to code development and adoptions in the form of R&D, technical assistance and grants.

**→ Provide appropriate funding for DOE BTO (\$268 million) and NIST (\$652.7 million for Scientific and Technical Research Services and \$150 for construction)**

# May is Building Safety Month



- Annual public awareness campaign in its 39th year
- Proclamations from all levels of government
- Shared amplification
- Reception 5/22 5-730pm @LiUNA



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