2022 NECC Session:
How Energy Codes Help Communities Improve Resilience

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Resilience and Building/Energy Codes

- Life-cycle assessment
- Attention to detail
- Optimum Value Engineering
- Passive Survivability
  - Ensuring critical facilities remain operational
  - FEMA P-1019 – Emergency Power Systems for Critical Facilities: A Best Practices Approach to Improving Reliability
    - Provides guidance on the design and operation of emergency power systems in critical facilities in order to remain operational for extended periods, as needed.

The need for resilient buildings in the face of extreme weather events

- Extreme heat or cold events is something FEMA and the Emergency Management community is exploring more and more
- Building performance objectives
- Community level vs individual building level
- National Initiative to Advance Building Codes (NIABC)

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National Initiative to Advance Building Codes (NIABC)

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White House Launch Announcement

THE WHITE HOUSE

Administration Priorities COVID Plan Briefing Room Español

BRIEFING ROOM

FACT SHEET: Biden-Harris Administration Launches Initiative to Modernize Building Codes, Improve Climate Resilience, and Reduce Energy Costs

JUNE 01, 2022 • STATEMENTS AND RELEASES

"With extreme weather events threatening millions of homes each year, and taking a greater toll on underserved communities, every dollar invested in building code adoption provides eleven times more in savings by reducing damage and helping communities ***recover more quickly.****"*

"Through an all-of-government commitment across the Biden-Harris Administration, the ***Mitigation Framework Leadership Group*** *(MitFLG) will identify opportunities across federal programming to enhance outreach, technical assistance, and capacity building to states, Tribes, territories, and local governments on building codes. For example, agencies will advance the use of innovative incentives in federal funding to support and reward jurisdictions for code adoption and enforcement, to the extent allowed by law, with a focus on assisting historically underserved communities."*

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NIABC Priorities – the MitFLG will lead Federal Agencies to:

- Comprehensively review federal funding and financing of building construction
- Harness $225 million in Infrastructure funding for the Department of Energy (DOE) to support implementation of updated building energy codes and create good-quality jobs
- Incentivize and support communities to adopt current building codes and standards by providing technical assistance, implementing proven strategies and best practices
- Lead by example across the federal building portfolio, by seizing opportunities to advance “above-code” resilience and energy efficiency standards in new projects
  - Establish building code requirements for programs and policies to ensure that buildings and residential properties meet or exceed current, consensus-based building codes and standards
  - Utilize Building Code Adoption Tracking (BCAT) portal for agencies and their program applicants and participants to assess the strength of code adoption by locality

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Building Codes Initiative Benefits Recovery Efforts

- Mitigation Saves and Enables Faster Recovery
  - “Every dollar invested in building code adoption provides eleven times more in savings by reducing damage and helping communities recover more quickly.“
- Reduces expenditures of the DRF
  - $132 Billion estimated reduction in property losses based on forecasted growth associated with use of modern building codes from 2000-2040
- Reduces vulnerability and builds more resilience
  - Building a Home that Stands Strong During a Hurricane | FEMA.gov
- Increasing baseline of code adoption results in more communities protected by building codes

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Design to resist natural hazards and provide environmental benefits

- Has distinct advantages for homeowners, their neighbors, and society in general. For example, every home that survives a hurricane:
  - Provides post-disaster shelter for the home's occupants
  - Minimizes windborne debris to downwind homes
  - Removes the need for one additional temporary housing structure
  - Provides post-disaster sustainability benefits (less material to landfill, less new material needed for reconstruction)

Natural Hazards and Sustainability

- FEMA P-798, Natural Hazards and Sustainability for Residential Buildings (2010)
  - Discusses how to retain or improve natural hazard resistance while incorporating green building practices.
  - Includes matrix highlighting potential positive and negative interactions between specific green building practices and various natural hazards. Energy efficiency examples include:
    - Rooftop solar photo-voltaic panels
    - Increasing insulation on exterior walls

Flood-Damage Resistant Materials

- 2004 DOE/FEMA/HUD collaboration “Field Testing of Energy-Efficient Flood-Damage-Resistant Residential Envelope Systems”
  - Identified materials and methods of making a building envelope flood damage resistant and develop a methodology to create a standard test procedure and standard for certification of building materials and systems as flood damage resistant.
  - ASTM Standard E3075-18, Standard Test Method for Water Immersion and Drying for Evaluation of Flood Damage Resistance was approved and published a few years ago.
  - ASTM Standard Specification for Determining the Flood Damage Resistance of Building Materials (under development)

Energy efficiency and grid flexibility

- FEMA supports energy efficiency in codes and standards consistent with building performance objectives with emphasis on Lifelines that include “Energy - Power Grid, Fuel”
- FEMA considering microgrid projects to be funded under our Hazard Mitigation Assistance Programs - https://www.fema.gov/fact-sheet/hazard-mitigation-assistance-grant-funding-microgrid-projects
- At the building level, FEMA P-348 focuses on protecting building utility systems from flood

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Advancing building resilience through energy codes

- Research to support measures that wholistically incorporate building performance (energy efficient, life-safety, functional after design event, solutions that meet performance-based criteria not just energy efficient criteria, etc.).
  - For example, a common challenge with green roofs in urban hurricane prone areas is concerns with debris field.
  - Improving energy efficiency of an elevated floor system so that it is as close an efficient insulator as a concrete slab.
- Under the NIABC, FEMA works closely and collaborates with DOE through the MitFLG Building Codes Task Force.

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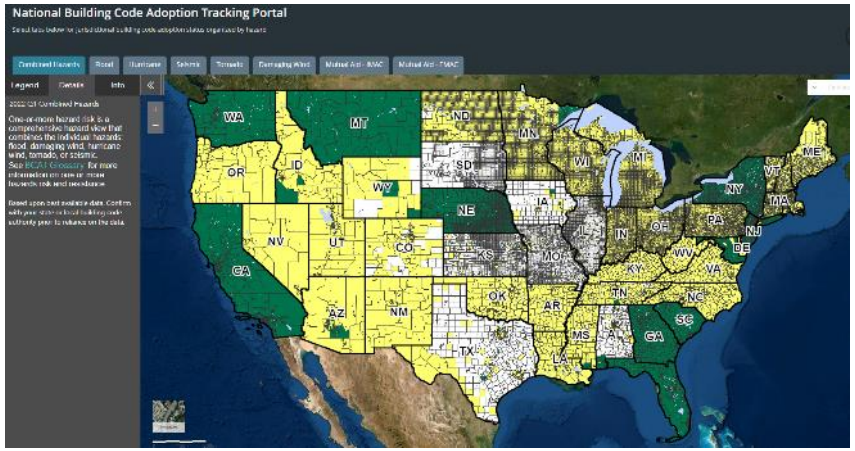
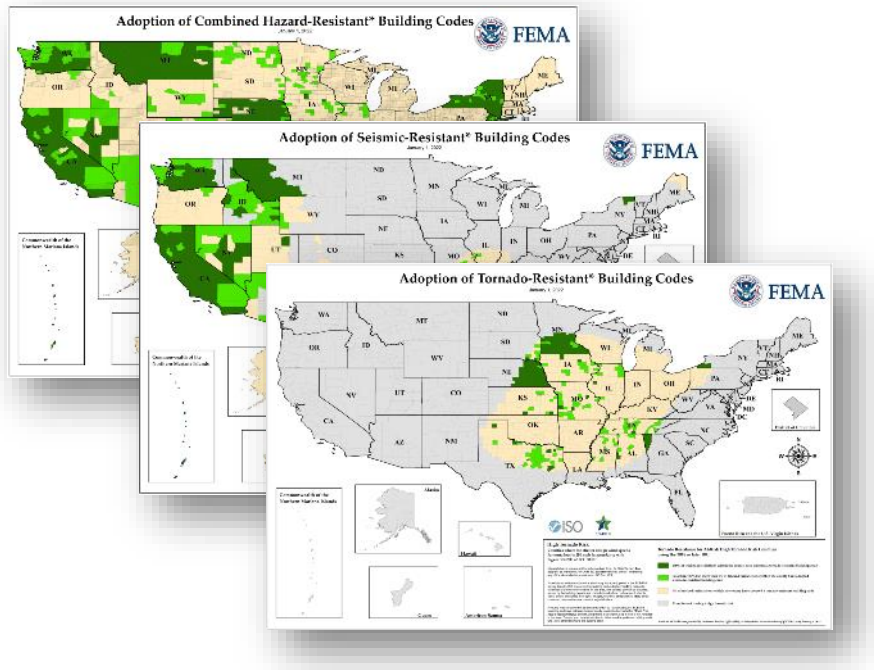
NIABC Mapping Tools: FEMA Building Code Adoption Tracking



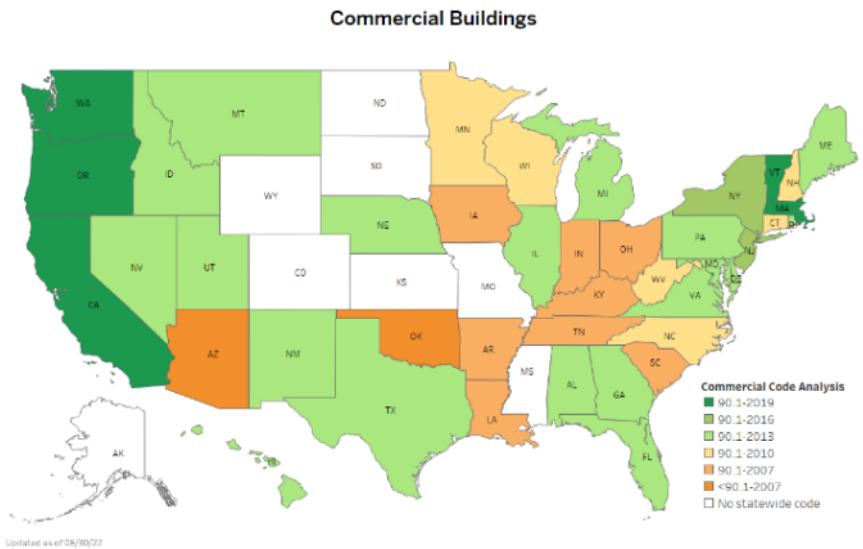
FEMA BCAT WebGIS Portal

www.fema.gov/bcat



Quarterly Hazard Maps

NIABC Mapping Tools: DOE State Energy Code Adoption



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