Building Codes and Resilience

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Building Resilience Briefing
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IMT
**INSTITUTE
FOR MARKET
TRANSFORMATION**

Overview

- Development of Building Codes

- Adoption of Building Codes

- Enforcement of Building Codes

- Compliance Barriers

- Survey Results

- Conclusions

Development of Building Codes

National Model Codes:
- Consensus-based process
- Run by non-gov't organizations:
  - ICC, NFPA, etc.
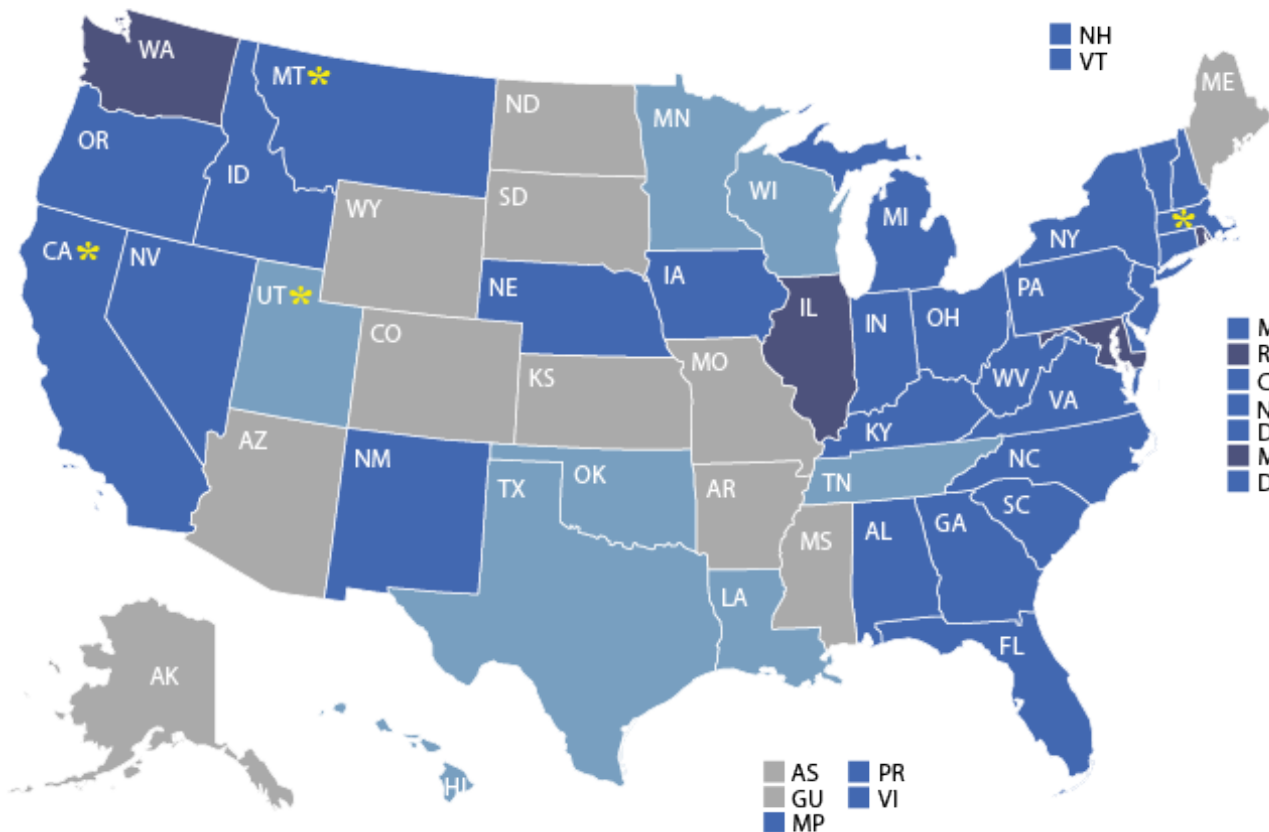- 3-year development cycle
- Final vote by code officials

Incorporate resilience principles in national model building codes.

I-Code Family

Adoption of Building Codes

- State-level activity (w/ few exceptions)
- Most state codes based on Nat'l Model Codes:
  - Often make state amendments
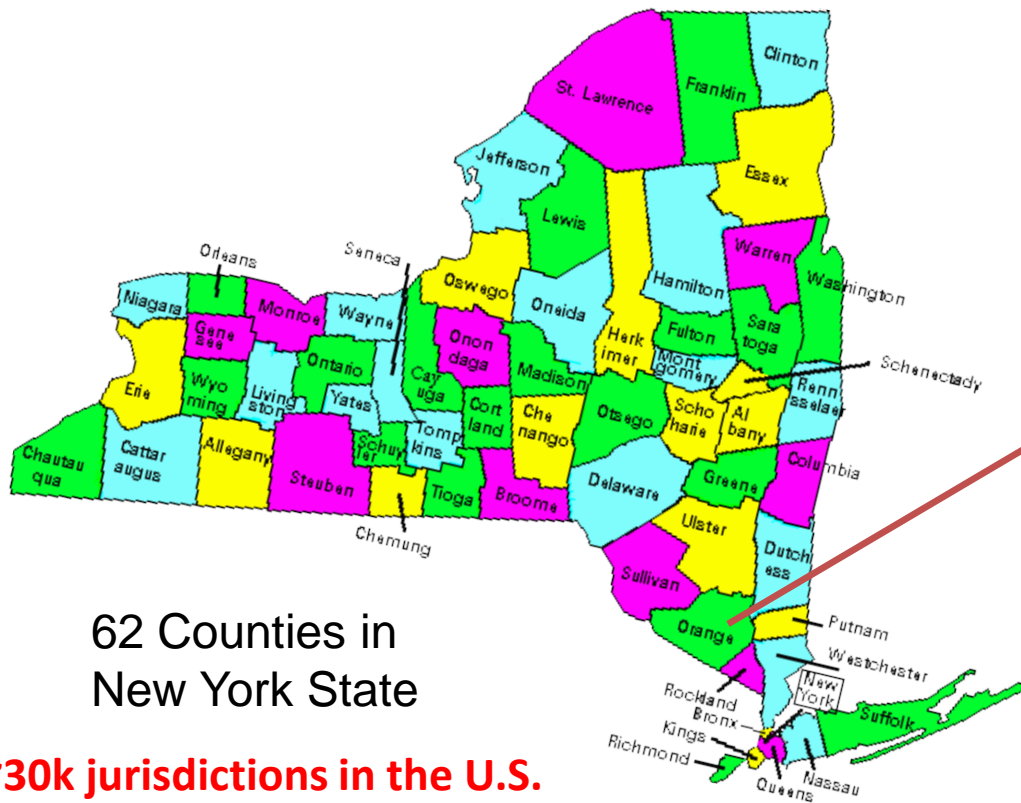
Many states lag in adopting current codes!

meets or exceeds 2012 IECC or equivalent (4)

meets or exceeds 2009 IECC or equivalent (28)

meets or exceeds 2006 IECC or equivalent (8)

no statewide code or precedes 2006 IECC (11)

� state has adopted a new code to be effective at a later date

NOTE: These maps reflect only mandatory statewide codes currently in effect.

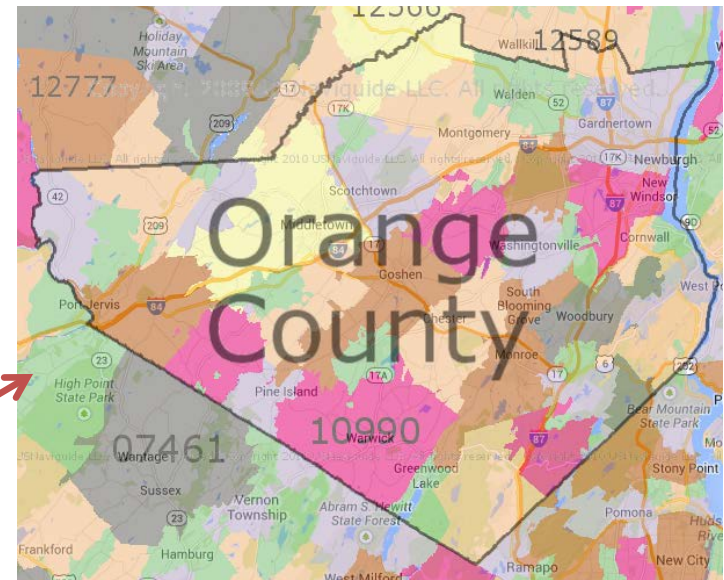More info at: http://energycodesocean.org/code-status

Enforcement of Building Codes

- Enforcement is a local (city/county) level responsibility

- Compliance verified by review of construction documents and on-site inspections.

62 Counties in
New York State

~30k jurisdictions in the U.S.

44 cities/towns in
Orange County

Building Code Enforcement for Resilience

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Deathtrap: Moore tornado debris reveals construction flaws, code violations

By: M. Scott Carter | February 20, 2014 | 35 Comments

(Graphic illustration by Bryan M. Richter)

MOORE — When the storm came, seven students in the Plaza Towers third-grade center sheltered in the hall. At Briarwood, the students and teachers thought the school building would protect them.

Then the tornado hit, and the schools fell.

Instead of offering protection on May 20, 2013, Plaza Towers became a deathtrap, Briarwood a pile of rubble.

Detailed in a soon-to-be-released report for the

Consistent enforcement of current codes is a good step toward more resilient buildings.

Barriers to Effective Compliance

- Lack of knowledge of the code/inadequate training

    - Both code officials and industry

- Constrained resources/inadequate funding

- Lack of political will

- NOT KNOWING WHAT COMPLIANCE ISSUES EXIST!

    - Need for quality assurance procedures

IMT study found that $810M needed nationally to improve energy code compliance rates to 90% or better.

States and cities need resources to educate code officials and industry on building codes.

And the survey says...

A BuildStrong Coalition survey of 44 hazard insurance and disaster response industry and government professionals.

Barriers to Resilience

		Response Percent	Response Count
A lack of understanding within the community of the actual costs of disasters		27.27%	12
Difficulty obtaining and maintaining accurate risk knowledge		9.09%	4
A perceived unaffordability of insurance or under insured homes and business		13.64%	6
Lack of comprehensive and enforced codes and standards		36.36%	16
Other (please specify)		13.64%	6

Need for education and resources for better enforcement

Barriers to Code Adoption and Enforcement

Q5: What are the barriers you see to code adoption and enforcement?

	Response Percent	Response Count
Unclear cost/benefit information	38.64%	17
Poor local risk and threat recognition, warning, response, and recovery capabilities	13.64%	6
Uneven development regulations and code adoption and enforcement	27.27%	12
Fear of increased building costs	63.64%	28
Other (please specify)	13.64%	6

Need for analysis and education on cost/benefit of code provisions

Mitigation strategy with best ROI?

Q6: Which of these is the most important hazard mitigation effort that has a return on investment?

	Response Percent	Response Count
Building codes and regulations that accurately reflect the local risk and mitigation measures that address those risks	82.69%	43
Risk assessment and hazard identification	7.69%	4
Effective public risk communications	9.62%	5
Other (please specify)	3.70%	2

Building codes that reflect local risks

Conclusions…

- **Building codes can improve resilience, but need…**
  - Adoption of current codes
  - local/regional specific strategies
  - Better cost/benefit analysis
  - Education/outreach to code officials and industry, etc.
  - Improved compliance

- **Lessons learned from energy code efforts**
  - Coordinated efforts on development and adoption
  - Methodology cost/benefit analysis
  - Finance mechanisms to improve existing buildings
  - Voluntary programs to pull the market forward
  - Incentive programs to encourage implementation
  - Direct engagement with cities on improving compliance

Thank You

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