

NIST CHINA WORKSHOP

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Model Codes and Local Adaptation

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Introduction

- ❖ **Building construction in the U.S. is governed by inter-related codes and standards adopted as construction regulations.**
- ❖ **Construction regulations cover:**
 - Building, Structure,**
 - Plumbing, Gas, Mechanical,**
 - Electrical, Fire, Energy,**
 - Accessibility, etc.**



Introduction

- ❖ **Codes and Standards are developed outside of government, but the...**
- ❖ **Codes and Standards development process is dynamic and includes the public and private sectors.**
- ❖ **Adoption of building construction regulations is primarily the role of local and state government although some federal agencies adopt them as well.**



Building Regulations

❖ A collection of laws, policies, ordinances or other statutory requirements adopted by a government legislative authority involved with the physical structure and health conditions for occupants of buildings.



❖ Codes and standards are the technical foundation for building regulations.



Purpose of Codes

Minimum requirements for public safety, health and welfare in the built environment

- ❖ Safety to Life and property from fire and other hazards
- ❖ Structural Strength
- ❖ Means of Egress
- ❖ Stability
- ❖ Sanitation
- ❖ Light
- ❖ Ventilation
- ❖ Energy conservation

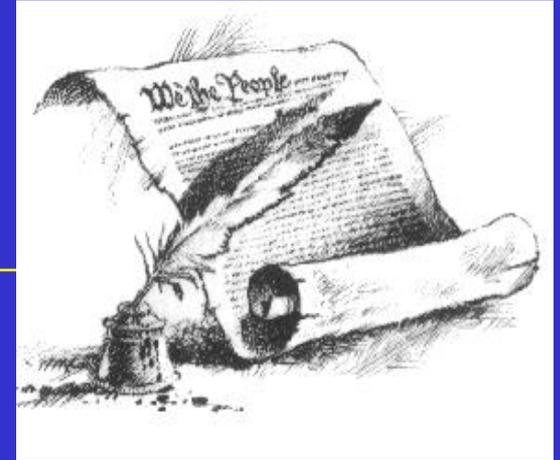


Scope of Codes

- ❖ Construction
 - ❖ Alteration
 - ❖ Movement
 - ❖ Enlargement
 - ❖ Replacement
 - ❖ Repair
 - ❖ Equipment
 - ❖ Use and Occupancy
 - ❖ Location
 - ❖ Maintenance
 - ❖ Removal
 - ❖ Demolition
-
- ❖ Every Building or Structure
 - ❖ Any Appurtenance



Authority



- ❖ 10th Amendment to the U.S. Constitution gives states the right to legislate for the protection of the public health, safety and welfare.
- ❖ States have delegated this authority in a variety of ways to local governments.
- ❖ Trend toward more statewide adoption and oversight of enforcement.

The U.S. SYSTEM

❖ Development

- ❖ Many developers of standards, codes, guidelines, etc.

- ❖ Developed in the voluntary sector for adoption by others

- ❖ Sometimes developed directly by regulatory authorities

❖ Adoption

- ❖ Federal, state or local legislation or regulation

- ❖ Utilities, lenders, insurance and others

❖ Implementation and Enforcement

- ❖ By adopting agency or those under their authority

❖ Compliance

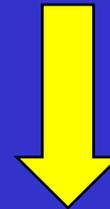
- ❖ By those regulated

The U.S. SYSTEM

NATIONAL
VOLUNTARY



FEDERAL
PREEMPTIVE



DEVELOPMENT



ADOPTION



IMPLEMENTATION



ENFORCEMENT



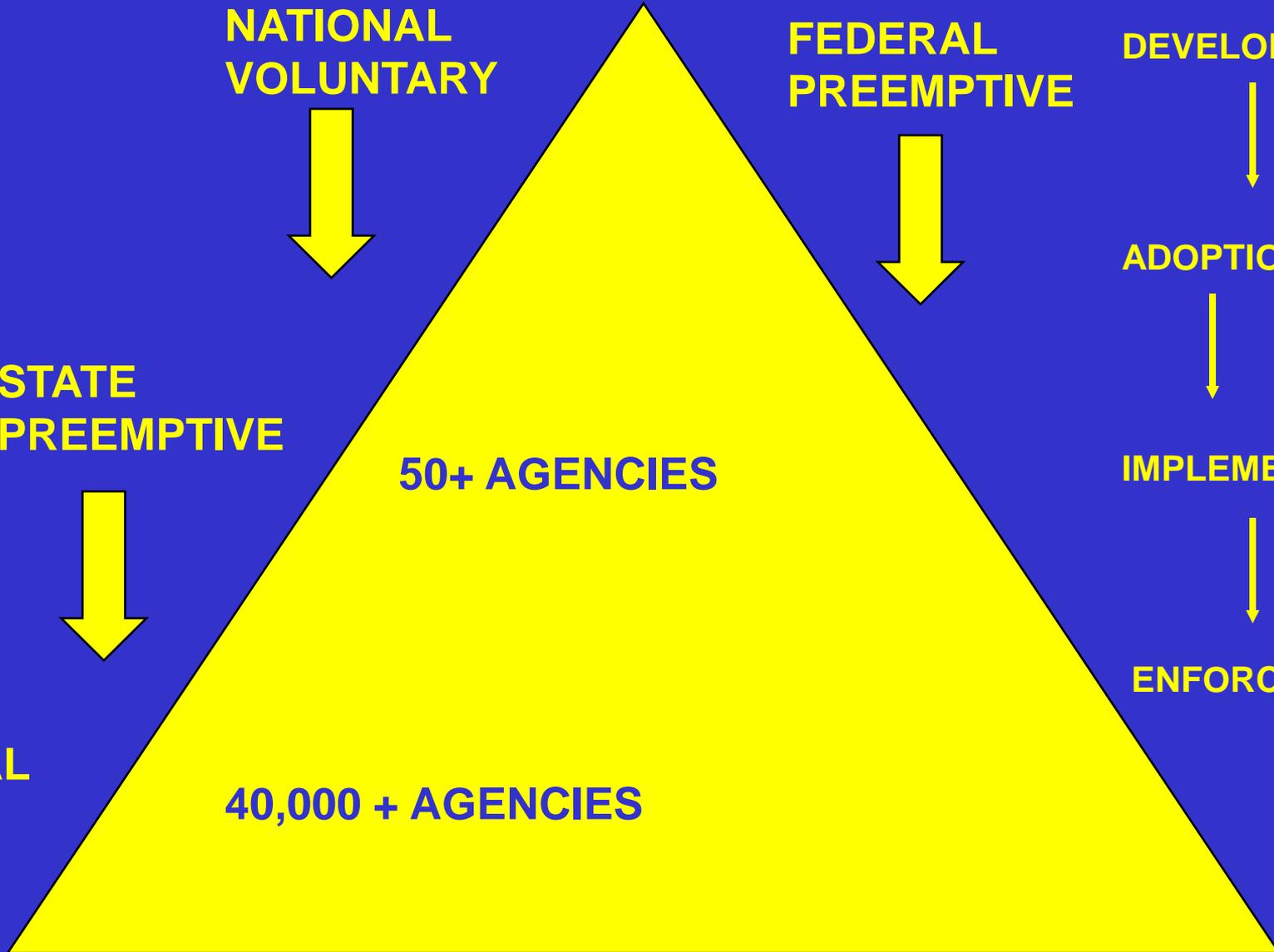
STATE
PREEMPTIVE



50+ AGENCIES

40,000 + AGENCIES

LOCAL



Model Codes in the U.S.

- ❖ A model code is a model law that can be adopted by a federal, state or local legislative body to regulation the construction of buildings.
- ❖ Model codes are used throughout the U.S. because they provide an accessible source of comprehensive, contemporary and respected technical requirements without the difficulties and expense of investigation, research, drafting and promulgation of individual local codes.



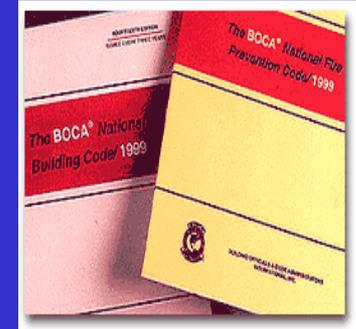
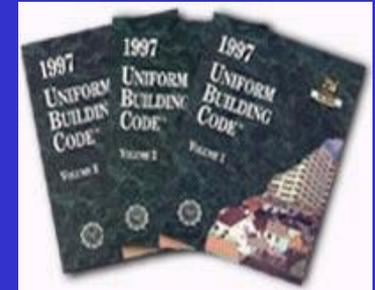
Model Codes in the U.S.

❖ First model code developed by the insurance industry.

❖ Three code organizations established by code enforcement officials:

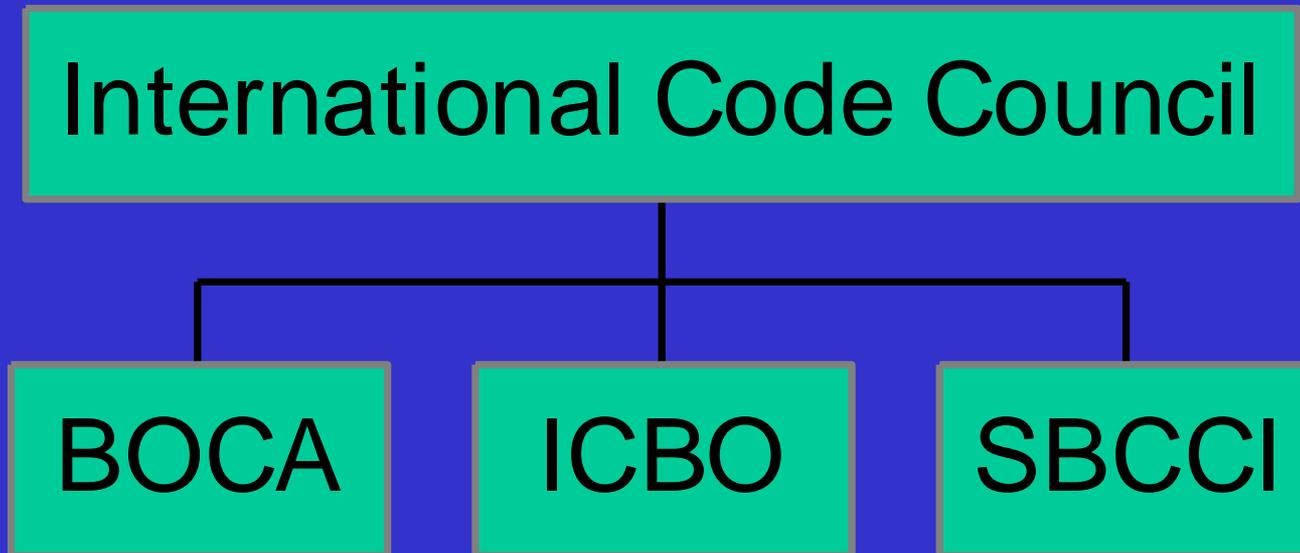
- ❖ BOCA - east & mid-west (1915)
- ❖ ICBO - west (1922)
- ❖ SBCCI - south (1940)

❖ International Code Council established in 1994 by BOCA, ICBO and SBCCI to develop a single code series



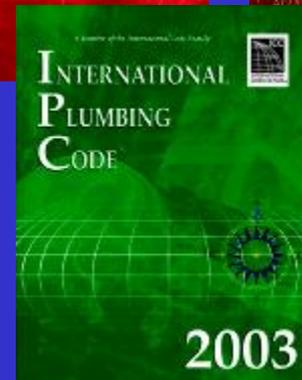
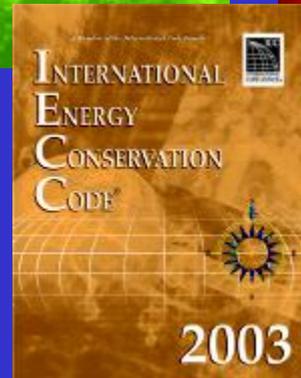
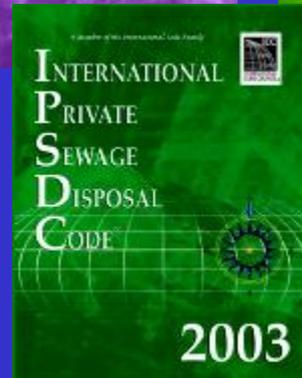
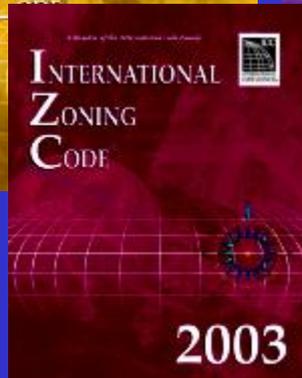
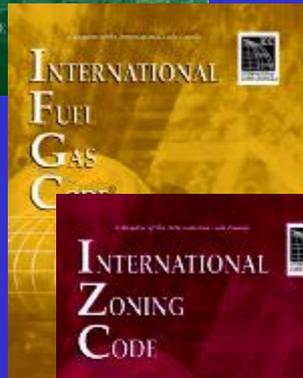
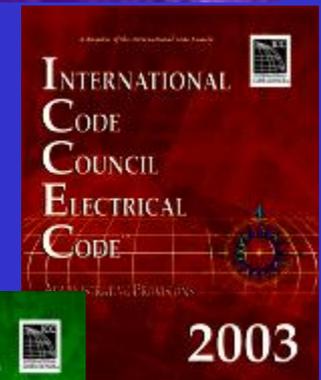
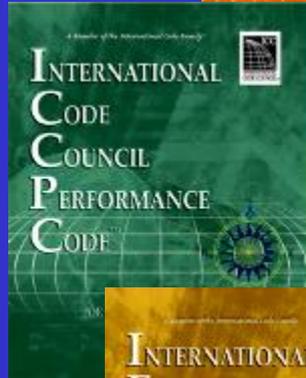
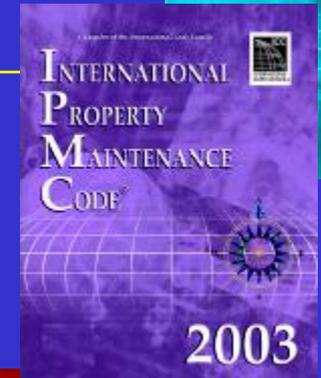
Model Codes in the U.S.

Three code organizations consolidated into a single organization in 2003



The International Codes are a complete family of 14 compatible codes that complement each other.

Models for federal, state and local government to adopt



Standards

- ❖ Codes reference thousands of standards.

 - ❖ health, safety and welfare

 - ❖ minimum quantity & quality

 - ❖ measurement

- ❖ Owners, through the building design and specification process, may reference additional standards.



Standards

- ❖ Three classifications used in codes:
 - ❖ design - methods, procedures, practices
 - ❖ example: NFPA 13 Installation of Sprinkler Systems
 - ❖ materials - quality, properties
 - ❖ example: ASTM C1167 Specification for Clay Roof Tiles
 - ❖ Testing of performance
 - ❖ example: UL 10B Fires Tests of Door Assemblies
- ❖ Criteria established
- ❖ Where and When applicable (scope)



Model Code Adoption

By Federal, state or local legislative or regulatory action

Applicable in all areas covered by the action

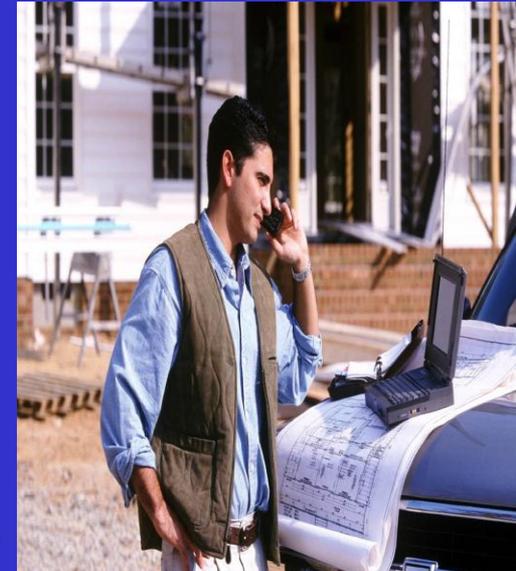
Mandatory maximum/minimum

Mandatory minimum with amendment allowed

Mandatory only if agency elects to adopt a code

By insurance, builder, utility, etc. action

As part of professional practice ethics



Code Implementation and Enforcement

- ❖ State or local agency enforces adopted building construction regulations:
 - ❖ Review and approval of plans, test data, calculations
 - ❖ Inspection of product manufacturing, fabrication, testing
 - ❖ Inspection of building construction
 - ❖ Performance of 3rd parties associated with conformity assessment

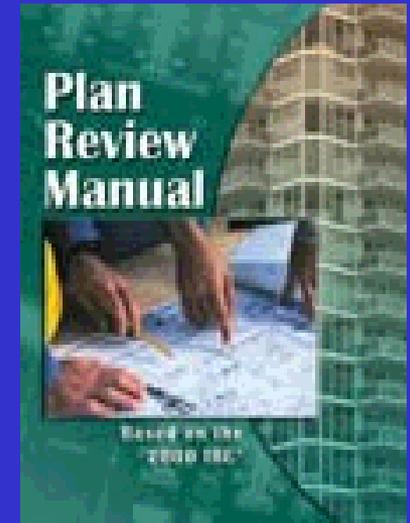
- ❖ Building owner, design professional, builder, contractor, manufacturer etc. is responsible to comply and provide verification of compliance



Compliance Methods

Verification that criteria have been satisfied

- ❖ from the plans or through field inspection
- ❖ based on testing, calculations and other evidence directly linked to specific criteria in the adopted codes and standards
- ❖ evaluation against the intent of the codes and standards based on equivalent performance



Code Compliance

Specific and prescriptive provisions

- ❖ 5 cm. X 10 cm. wood members @ 0.5 meters o.c. with 4 - 12 d nails
- ❖ 2 layers of No. 15 Felt
- ❖ Limit corridor length to 100 feet

Compliance is easily determined with no additional assistance or backup materials needed



Code Compliance

❖ **Specific provisions based on reference to other criteria or testing**

- ❖ Limit flame spread to 75 per ASTM E84
- ❖ Test and list the furnace to ANSI Z 21.47

❖ **Compliance is easily determined but with reliance on a test report and/or inspection of production**

- ❖ Code official could perform testing and follow-up QA inspection or can rely on others but has responsibility to review and monitor them
- ❖ Code official can rely on others to review and monitor



Code Compliance

No specific provisions but an allowance for approval based on an evaluation and assessment of performance equivalency with something that is allowed - Alternative Methods and Materials

- ❖ Review testing and certification activity conducted in support of code compliance
- ❖ Determine the documentation required and what may or may not be acceptable given the code requirements
- ❖ Review and evaluate the documentation submitted and determine if the intent of the code is satisfied
- ❖ Approve the acceptability of third parties providing information used in determining compliance



Summary



- ❖ Majority of codes and standards development is accomplished in the voluntary sector
- ❖ Authority to regulate in order to protect public health and safety in buildings belongs to the states
- ❖ States and local jurisdictions use model codes and referenced standards as the basis for building regulations
- ❖ Implementation and enforcement by state and local agencies rely on plans, test data, calculations, on site inspections etc.
- ❖ Those in the building industry are responsible for documenting compliance with what is adopted

Summary



• QUESTIONS ?

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