

# Building Energy Codes: Where Do We Go Now?

---

---

Bill Prindle  
Deputy Director  
ACEEE

NASEO meetings, February 2006



# Overview

---

---

- Background
- History of U.S. energy codes
- Key code-making organizations and processes
- State code adoption overview
- Emerging building energy code issues



# Codes Within the Energy Policy Picture

---

---

- Building Codes
- Appliance Standards
- Rating and Labeling
- Market Transformation
  - Branding
  - Education
  - Financing
- RD&D



# Why Do We Need Building Energy Codes?

---

---

- Buildings account for a third of U.S. energy and carbon
- New construction is a “lost opportunity” market
- Greatest cost-effectiveness
- Design synergies/maximum efficiency
- Consumer protection

# Regulation Vs. Voluntary Programs

---

---

“Building codes are the absolute worst way to affect residential construction practices... except for every other method that has ever been tried”

– Winston Churchill (paraphrased)

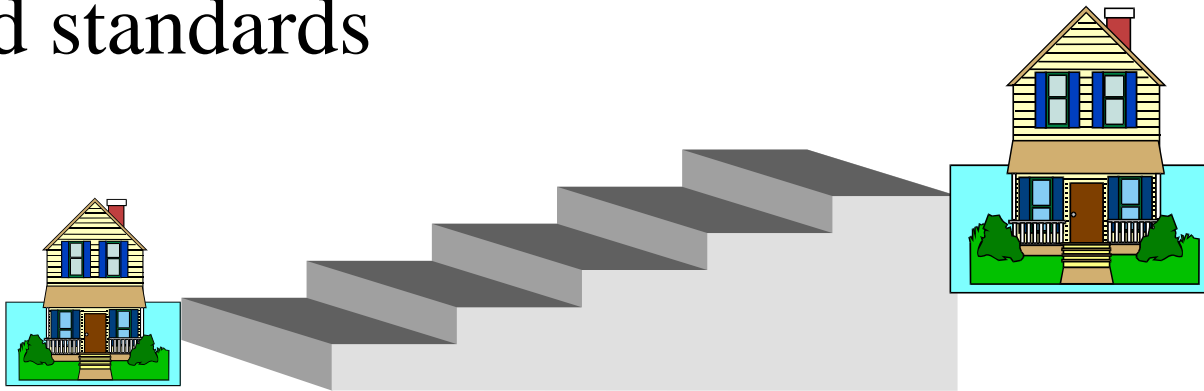


# A Two-Pronged Policy

---

---

- Raise the floor (push the market) via codes and standards



- Raise the ceiling (pull the market) via voluntary programs

# What Can Codes Achieve?

---

---

- Alliance study of the Model Energy Code shows potential savings of
  - 3.4 Quads over 30 years
  - \$38 billion in energy bills (1990s energy prices)
- LBL-ASE analysis of IECC SHGC standard showed 4660 MW impact in just 10 states by 2020
- ACEEE analysis of 2004 IECC wall upgrades showed savings of
  - 500 TBtu over 30 years
  - \$7 billion in energy savings (2005 energy prices)
- A baseline for voluntary programs
- A low-cost market transformation exit plan
- An opportunity to educate builders



# History of U.S. Energy Codes

---

---

- California's Title 24 Standards were the first enforced energy codes, beginning in the 1970s
- American Society of Heating, Refrigerating, and Air-Conditioning Engineers Standard 90 first issued in 1975
- Most states still had no energy codes until the 1990s



# History of U.S. Energy Codes

---

---

- 1986--Council of American Building Officials creates the Model Energy Code
  - First national energy code, as distinct from a standard
  - Created by state and local building officials as a model for state and local adoption
  - Updated in 1989
- 1989--ASHRAE updates commercial standard, called Standard 90.1



# History of U.S. Energy Codes

---

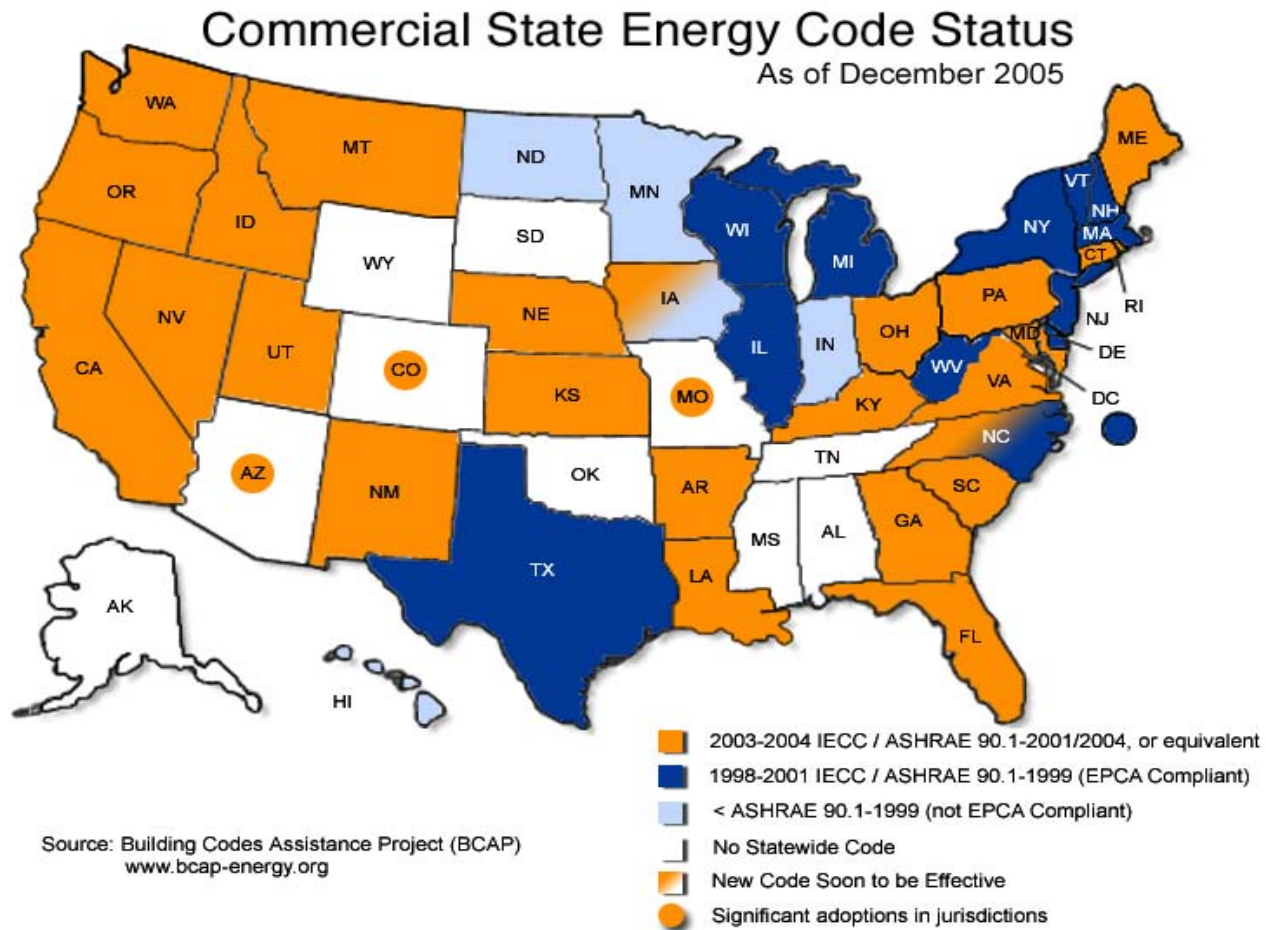
---

- 1992--U.S. Congress passed the Energy Policy Act (EPAct)
  - Requires states to consider adopting the Model Energy Code (MEC) 1989
  - Requires states to adopt ASHRAE standard 90.1
  - Requires U.S. Department of Energy (DOE) to provide assistance to states—spawned current grants program
  - Requires DOE to review future versions of MEC and ASHRAE, triggering state review and reporting
- 1994--ASHRAE issues residential standard 90.2





# Commercial Code Status



# Current Codes Development Processes

---

---

- International Code Council (successor to the Council of American Building Officials)
  - International Energy Conservation Code (IECC) (successor to the Model Energy Code)
- ASHRAE
  - Standard 90.1 (commercial)
  - Standard 90.2 (residential)

# The International Code Council

---

---

- Conducts annual hearings on changes to model codes (the I-Codes)
- Model codes published every 3 years
- States and local jurisdictions may choose to adopt these models
- Latest energy code is the 2006 IECC
- Next version published in 2009



# The 2006 IECC

---

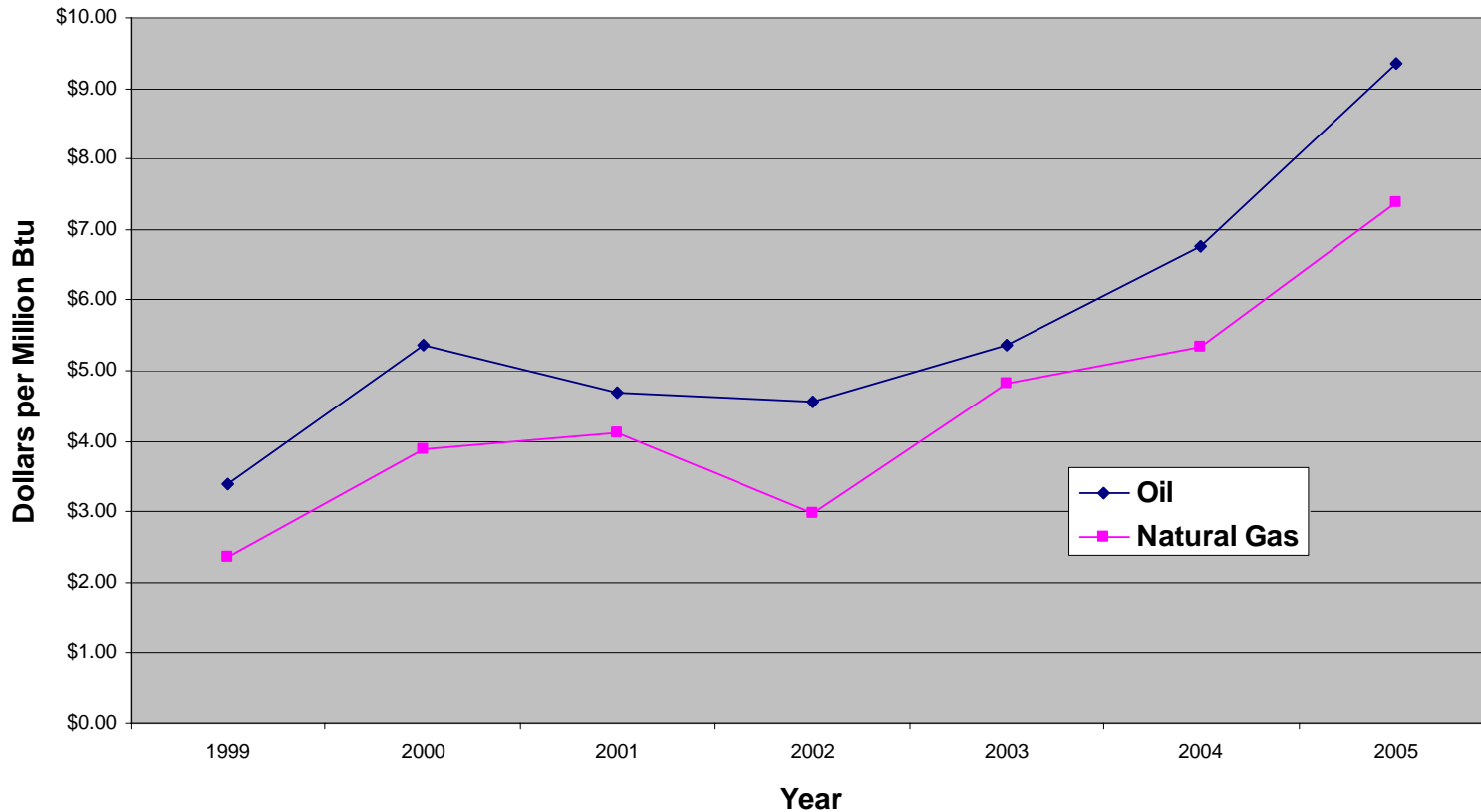
---

- Represents a massive overhaul of the code format
- Considerably simpler and less ambiguous
- DOE invested substantial resources in developing this new format
- New format not aimed at increasing stringency
- However, home heating oil prices have doubled since DOE began working on this document



# Energy Prices Have Doubled

Fuel Prices 1999-2005  
(source: EIA-AEO 2006)



# How Can Energy Codes Meet These New Challenges?

---

---

- Better Stringency
- Better implementation and enforcement
  - Training
  - Compliance tools
  - Consequences
- New ways to integrate building performance with code requirements

# Getting Better Building Performance from Codes

---

---

- Learning from Building America and Energy Star: total building performance
- Stopping the leaks—framing and ducts
- Downsizing HVAC systems through good envelope design *and construction*
- Using the building performance community
  - HERS/RESNET
  - Performance compliance tools



# Energy Code Issues: Where Do We Go Now?

---

---

- Simplicity vs. stringency—what's next?
- Implementation—who pays?
- Better coordination of codes with voluntary programs

*And in the bigger picture.....*

- Transforming the building industry
  - Industrialization
  - Making systems more installer-proof

