

# **BUILDING CODES ASSISTANCE PROJECT**



# **OPPORTUNITIES IN ENERGY CODES**

**COOL ROOF RATING COUNCIL**

**6.17.09**



**BCAP** Dedicated to the adoption, implementation,  
and advancement of building energy codes

## Let's Talk About ...



- **What is happening in energy code development?**
- **What is the opportunity for expanding new technologies (like cool roofing) in energy codes?**

# BCAP – Building Codes Assistance Project

- Non-profit advocacy group based in D.C. since 1994
- A joint initiative of the
  - *Alliance to Save Energy*,
  - the *National Resource Defense Council*, and
  - the *American Council for an Energy Efficient Economy*
- Provide *resources, education & advocacy assistance* for the adoption, implementation, & advancement of effective energy codes on behalf of **US Department of Energy**



# Opportunity Knocking

- Buildings are the nation's **largest source of global warming pollution**

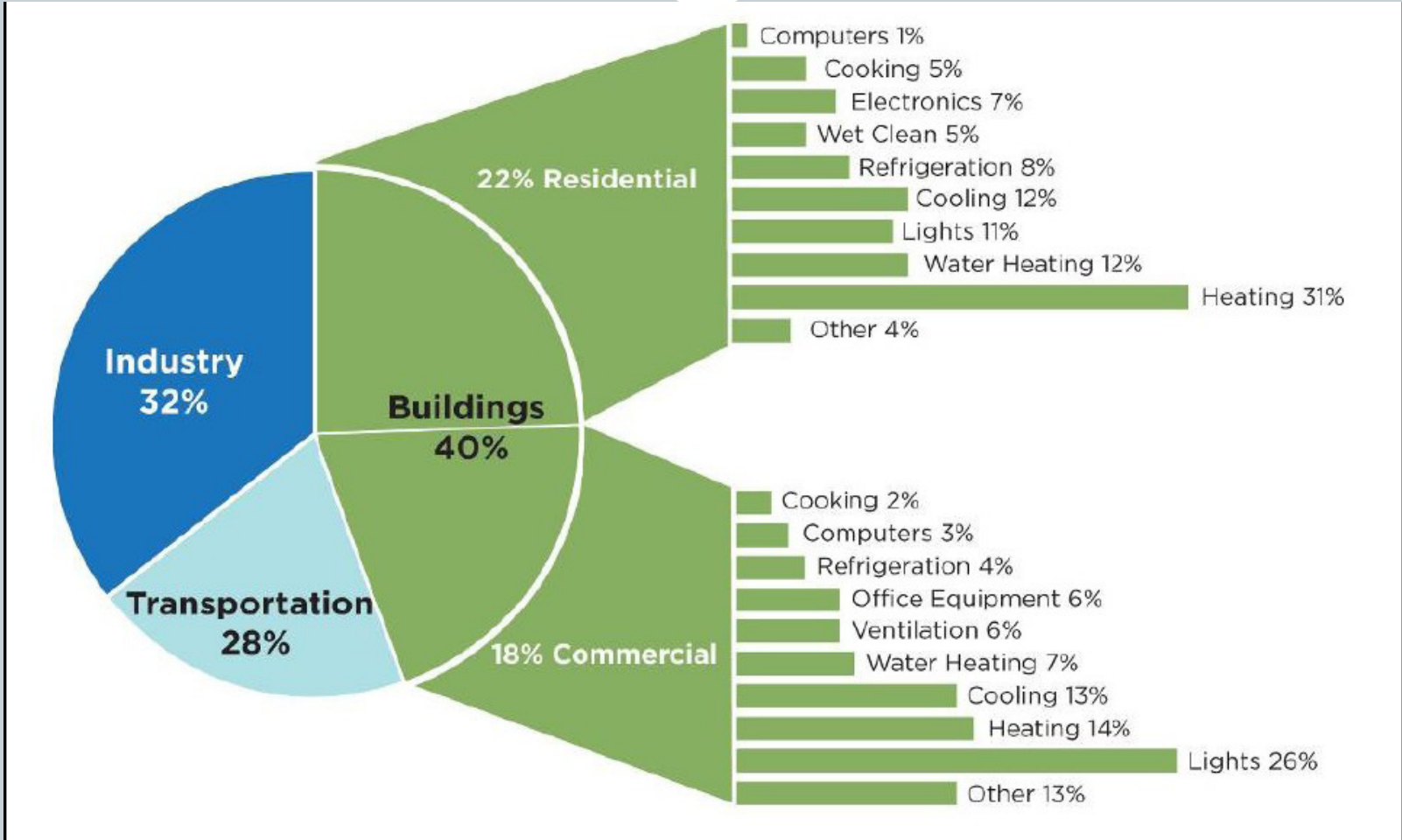


## Efficient buildings

- Reduce stress on power grid and natural gas supplies
- Improve air quality and public health
- Avoid global warming
- Save consumers money



# How to Reduce Energy Use in New Buildings?



Source: ACEEE

# Using Codes to Save Energy



- **Codes are a cost-effective strategy but are not without costs (training, resources, enforcement, etc.)**
- **Do not cover:**
  - Plug loads
  - NAECA appliances and equipment
  - Building orientation
  - Building layout
  - Equipment maintenance
  - Building operations
  - Occupant behavior

# Codes:



Old way of thinking: *The worst we can build*

OR

The best we can expect ... given current technologies,  
costs, practices, opportunities, etc.

# Savings from Codes?

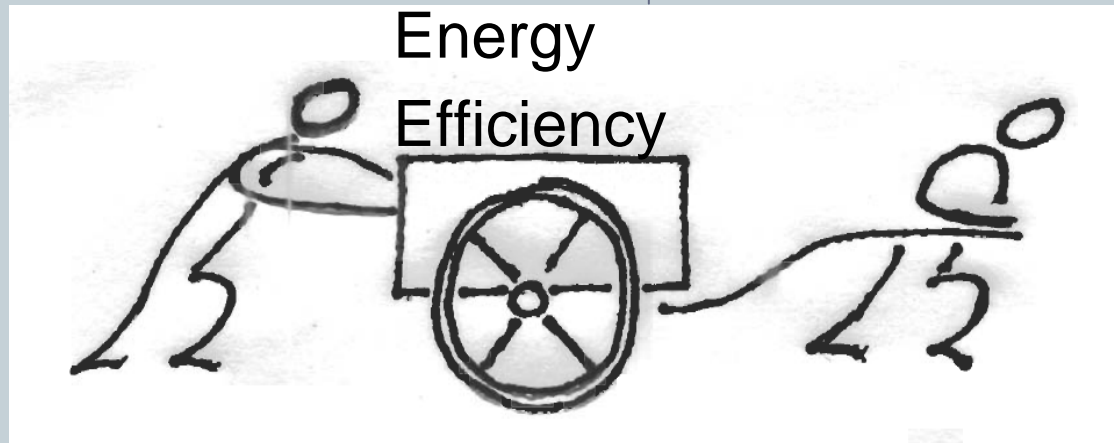


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## **Codes tell you the legal minimum requirements for a building**

- Developments in building technology and practices are enabling more energy efficient buildings
- The sector is moving towards “zero-net energy”
- Codes are going to pull up the bottom of the market in step with the “zero” goal

# Codes in Context



Source: US DOE

- **Push**

- Appliance Standards
- **Building Energy Codes**

- **Pull**

- ENERGY STAR
  - ✦ Appliances
  - ✦ Home Energy Ratings
- Tax Credits

# Feds are Getting Serious

## **Waxman-Markey (“Climate Bill”)**

- 2006 IECC and Standard 90.1-2004 = baseline
- 30% more efficient on enactment
- 50% more efficient for:
  - Residential construction by 2014
  - Commercial construction by 2015
- 5% additional savings every following 3 years until 2030



# Today's Codes

- **Standard 90.1-2010**
  - 30% Beyond 2004 edition
    - ✦ Standard 90.1-2007 ~ >7%
- **2012 IECC**
  - 30% Beyond 2006 edition?
    - ✦ 2009 IECC ~ > 17%



***Source: US DOE***

# The future?

## Waxman-Markey (“Climate Bill”) continued ...

- After 2030, DOE must consider feasibility and life-cycle cost effectiveness in setting new targets (and consider ways to achieve zero-net-energy buildings)

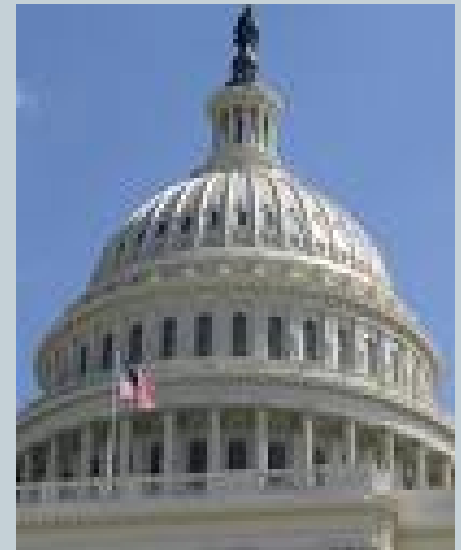


# What else?

## Waxman-Markey (“Climate Bill”)

continued ...

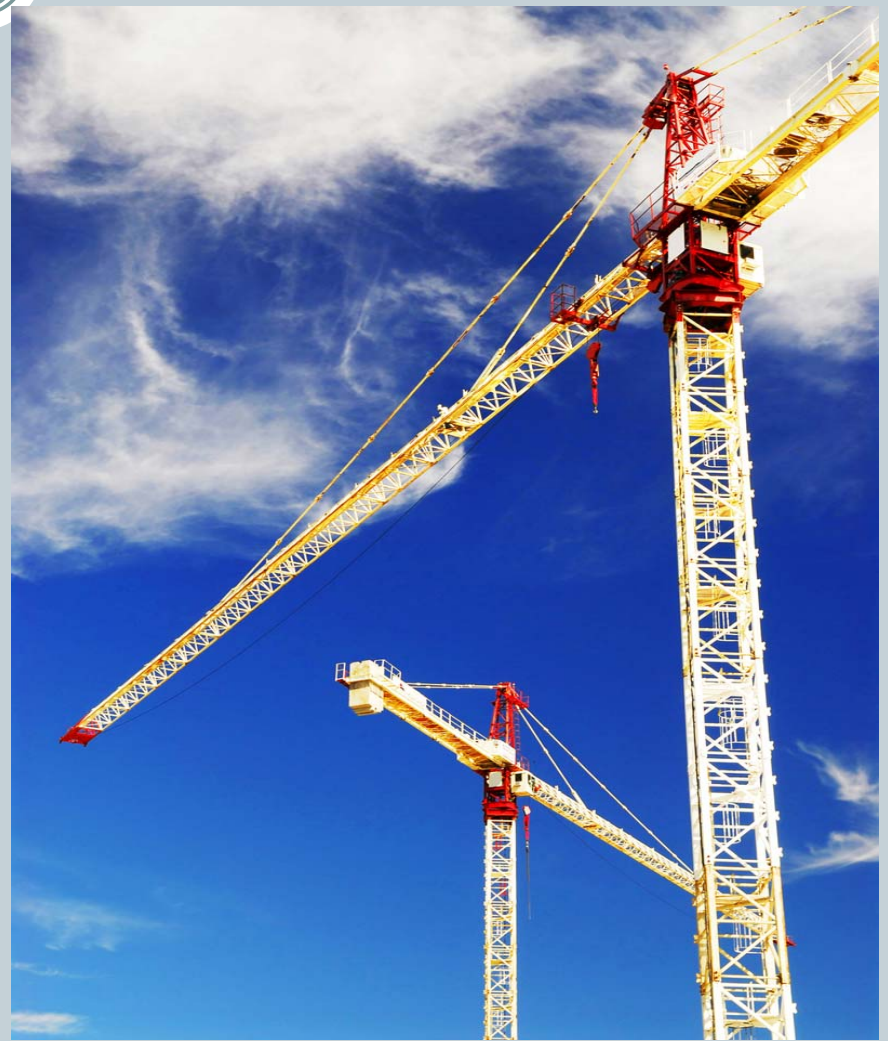
- States have 1 year to adopt equivalent codes/ certify 80% of the urban population have it in place
- “In compliance” means 90% of buildings
- States have 2 years to be in compliance (or show significant progress)
- Non-compliance leads to increasing ineligibility for federal funding



# “Recovery Act” (ARRA)

## State Requirements:

- Support for adoption of the 2009 IECC and Standard 90.1-2007
- Plans to achieve 90% compliance in new and renovated buildings in 8 years



# Future for Cool Roofs in Code



## **RESIDENTIAL Code / IECC 2012**

- **Committee Hearings in Baltimore, MD - October 24 through November 11, 2009**
- **Final Action Hearing in Charlotte, NC – October 28 through November 1, 2010**

# Future for Cool Roofs in Code



## US DOE proposal for 2012 IECC

- 402.3 Solar Properties of Opaque Surfaces (prescriptive).

Requires roofs in southern climate zones (1, 2, and 3) with a slope  $\leq 2:12$  to have materials with a solar absorptance  $< 0.75$ , as tested in accordance with ASTM E1918 or C1549.

For unrated roofing materials, solar absorptance values shall be taken from Table 402.3(1).

# Future for Cool Roofs in Code

## US DOE proposal for 2012 IECC

Adds Table 402.3(1)

### **DEFAULT ROOF SOLAR ABSORPTANCE VALUES**

<b>ROOF MATERIAL</b>	<b>SOLAR ABSORPTANCE</b>
White Composition Shingles	0.80
White Tile (including concrete)	0.60
White Metal	0.50
All Others	0.92

# Future for Cool Roofs in Code

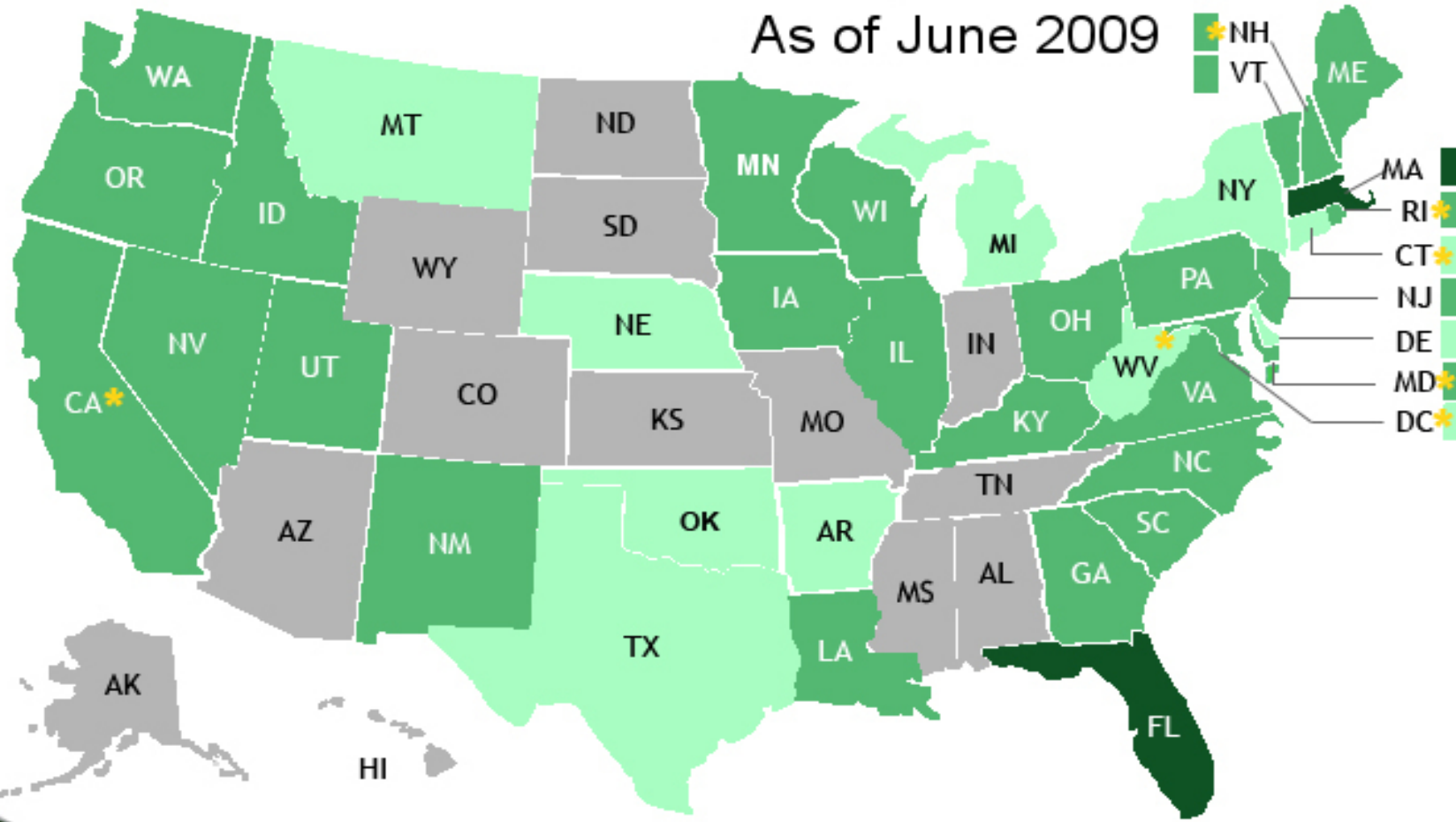
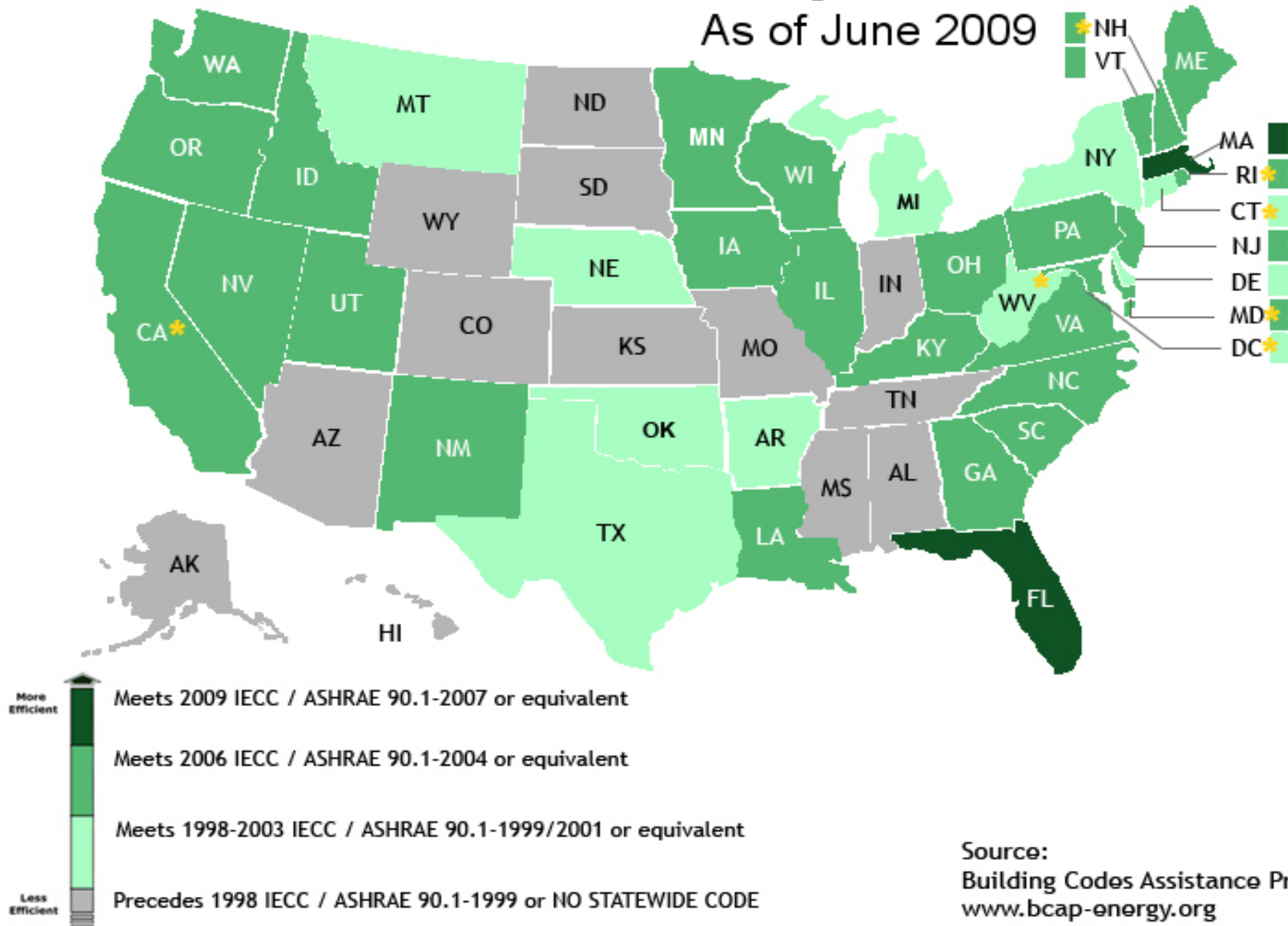


## **US DOE proposal for 2012 IECC - COMMERCIAL**

Doe submitted a proposed change that is derived from the SSPC (Standing Standard Project Committee) 90.1

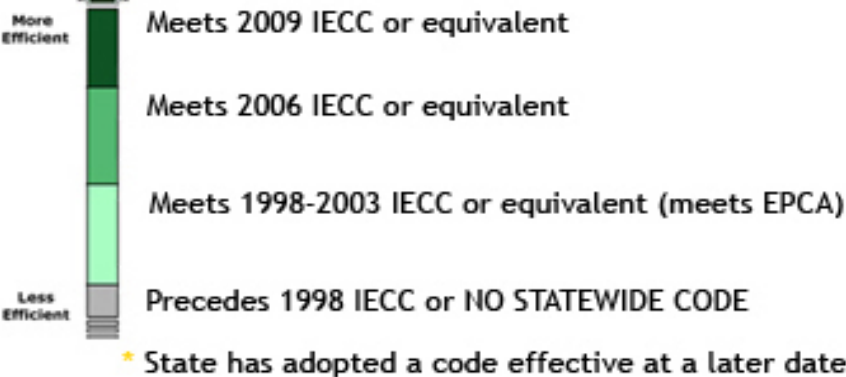
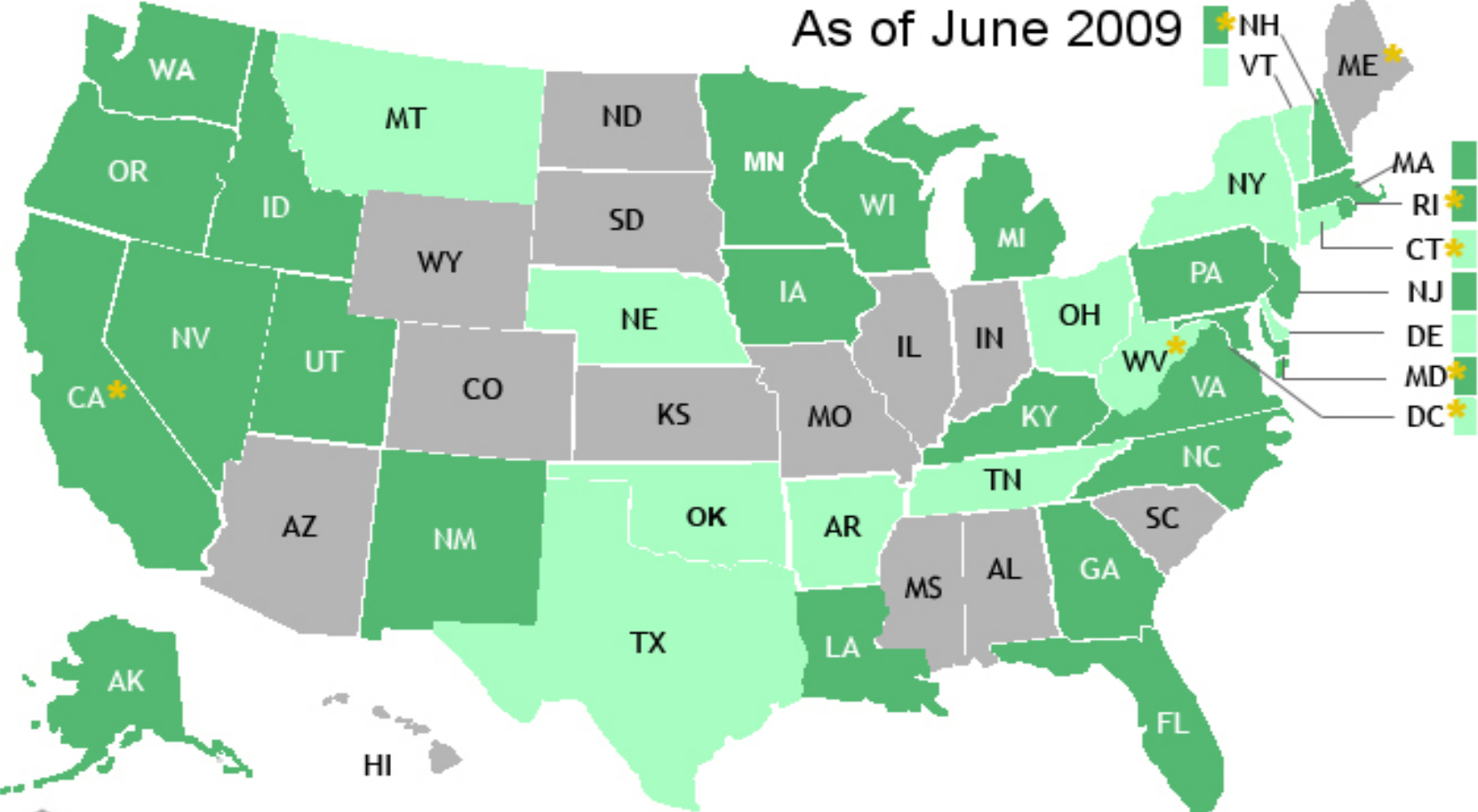
# Commercial State Energy Code Status

As of June 2009



# Residential State Energy Code Status

As of June 2009



Source:  
Building Codes Assistance Project  
[www.bcap-energy.org](http://www.bcap-energy.org)

# State Level – **Primary Code Adoption**

## **Possible Barriers:**

- Irregular or no update process
- Home-rule
- Contradictory information on benefits and costs
- Confusing/ contradictory adoption language

# Keys to Adoption

- ✓ Available training and resources
- ✓ Building sector familiar with products
- ✓ Code Officials familiar with products
- ✓ Information on cost and benefits (remember life-cycle cost)



# Building Codes Assistance Project

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Home > Strengthen Your Code > Policy Action Tool

## Energy Code Reform

The building market demonstrates that efficient designs can significantly improve the energy performance of a building by reducing peak energy demand, air pollution, and greenhouse gas emissions. The nation is recognizing that well-designed, implemented, and enforced building energy codes serve as logical starting points for policies that capture greater energy savings.

This tool provides policy guidance and sample legislation, many of which are already on the books in some states and cities, to assist States and local jurisdictions in incorporating and enhancing current model energy codes into local laws. Below we have categorized energy code policy actions into four different levels. Click on the level to get a description of the reform options and examples of policy action from different states.

### Level I Policy Action - First-time code adoption or update outdated codes

States and local jurisdictions should have a recently developed code to ensure their energy requirements reflect current technology and design that offer increased energy efficiency.

### Level II Policy Action - Pursue "beyond code" efforts

Stakeholders should implement "beyond code" strategies to lock in even greater energy savings.

### Level III Policy Action - Improve the National Model Energy Codes

Stakeholders should participate in the code development process by sharing their experience to improve the national model energy codes.

### Level IV Policy Action - Enact Innovative Legislation

Some states and cities make progress on improving the energy efficiency of buildings through the use of ground-breaking code legislation.

## Recent Code News

- [Maine passes bill for statewide energy code](#)  
04/23/2008 - 09:55
- [Maryland county adopts ENERGY STAR standards for new homes](#)  
04/23/2008 - 09:31
- [SAVE THE DATE! Energy Codes 2008](#)  
04/14/2008 - 12:45

[more](#)

## Upcoming events

- [Energy Codes 2008](#)  
(32 days)
- [Utah Commercial Overview](#)  
(39 days)
- [Utah Residential Overview](#)  
(40 days)

[more](#)

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# CODE BUILDER

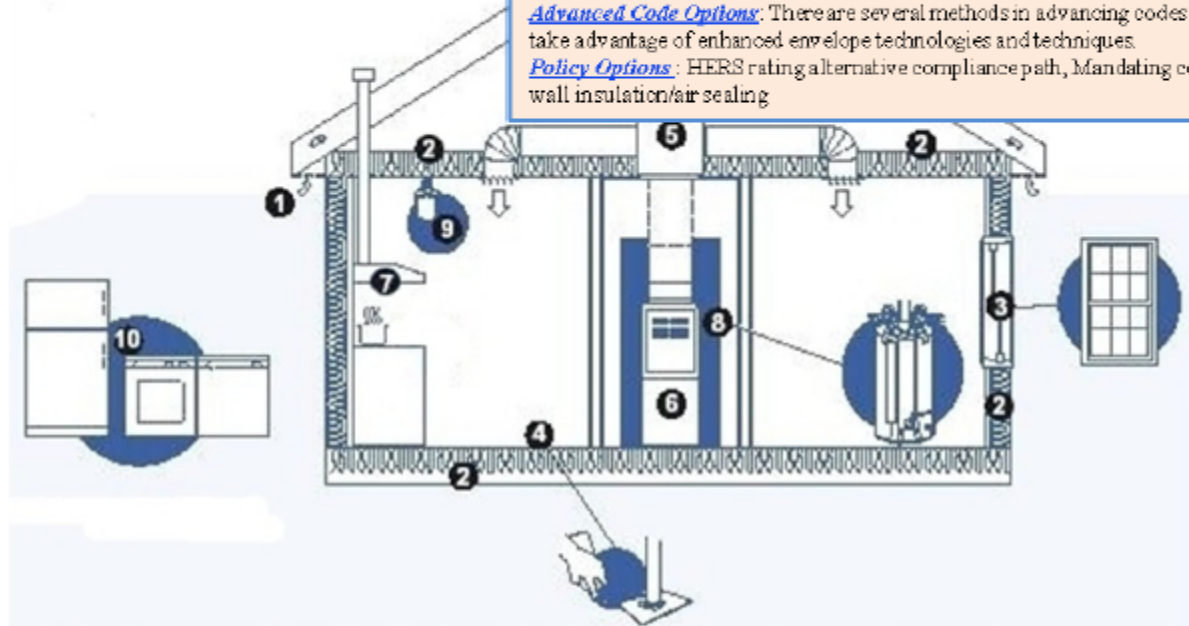
## ENVELOPE (Insulation)

**Issue:** Heating and cooling account for 50-70% of the energy used in the average American home. Inadequate insulation is a leading cause of energy waste in most homes.

**Overview:** Proper insulation is a key element for a more comfortable and energy efficient home. It is important to have a continuous boundary of insulation between the conditioned, indoor spaces and the unconditioned, outdoor spaces.

**Advanced Code Options:** There are several methods in advancing codes that can take advantage of enhanced envelope technologies and techniques.

**Policy Options:** HERS rating alternative compliance path, Mandating common wall insulation/air sealing



## ADVANCED CODE PROVISIONS FOR RESIDENTIAL BUILDINGS

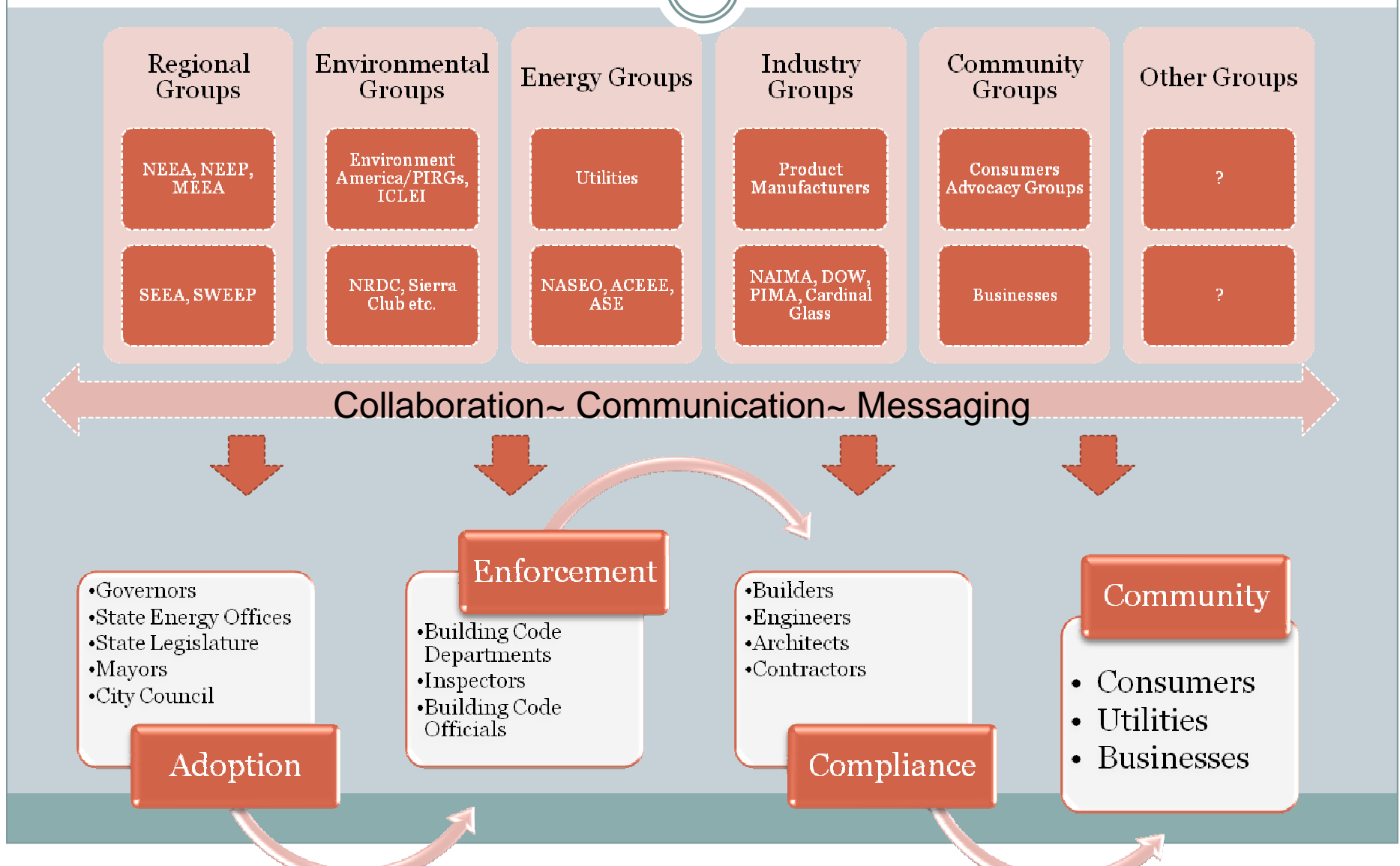
- 1. Attic Ventilation
- 2. Envelope
- 3. Fenestration
- 4. Air Sealing
- 5. Ducts
- 6. HVAC
- 7. Indoor Ventilation
- 8. Water Heating
- 9. Lighting
- 10. Appliances



**OCEAN**

Online Code Environment & Advocacy Network

# Online Code Environment & Advocacy Network -- OCEAN



# Contact Information



Aleisha Khan

Executive Director

Building Codes Assistance Project (BCAP)

[akhan@ase.org](mailto:akhan@ase.org)

202-530-2211

[www.bcap-energy.org](http://www.bcap-energy.org)