ALLIANCE TO SAVE ENERGY

Using less. Doing more.

The Importance of Updating Energy Building Codes for Clean Power Plan Compliance

Kelly Speakes-Backman

Senior VP of Policy and Research

The Alliance to Save Energy

Presentation Overview

- Introduction
- How Building Codes Save Energy
- Brief Overview of EE in the Clean Power Plan (CPP)
- Building Codes as a CPP Compliance Option

What is the Alliance to Save Energy?

Structure:

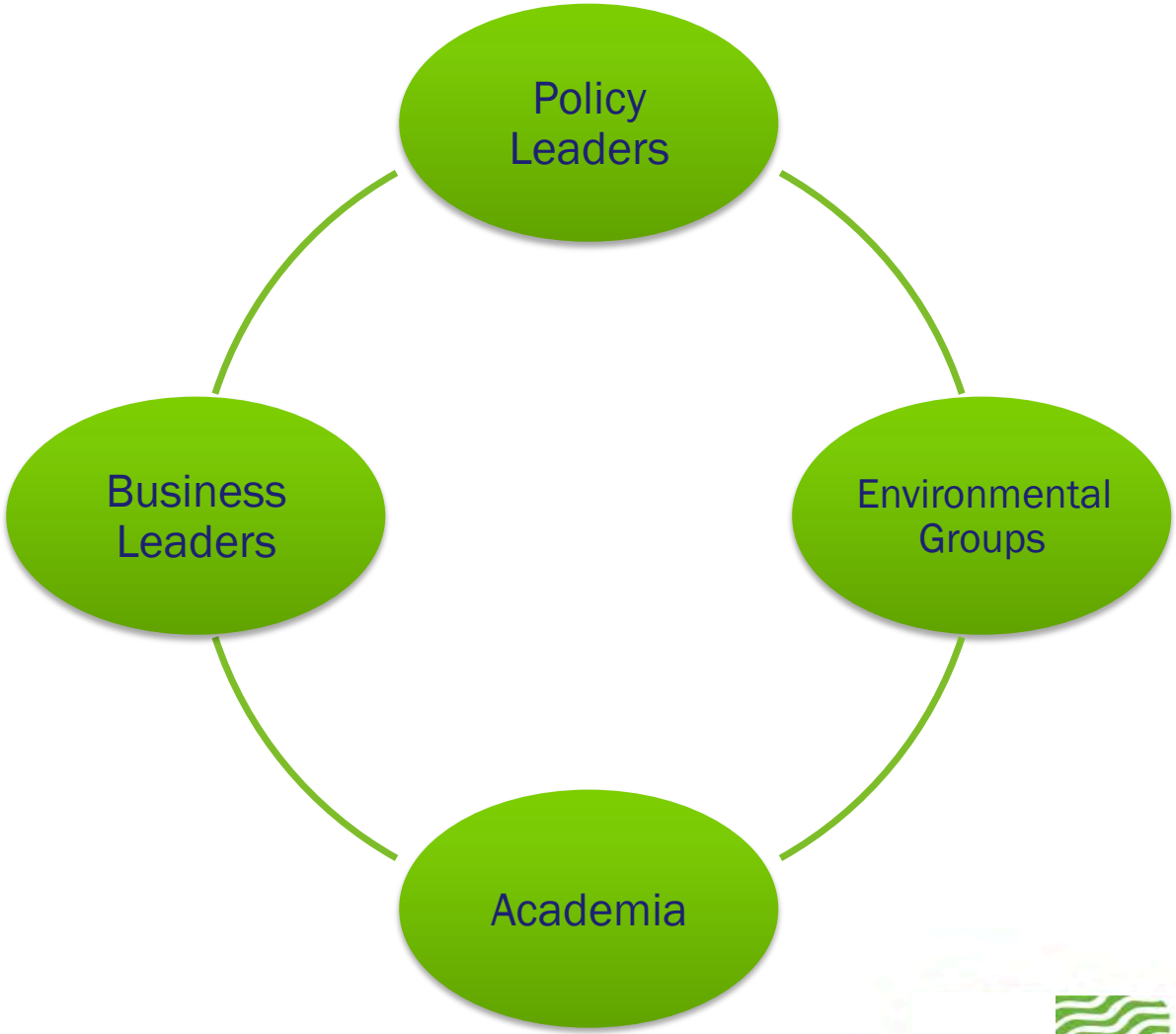
- Nonprofit organization headquartered in U.S.
- International reach

Mission:

- To promote energy efficiency worldwide to achieve a healthier economy, a cleaner environment, and greater energy security.

Organization:

- Staff of 40+ professionals
- 38 years of experience
- $7 million annual budget
- Recognized as a premier energy efficiency organization



ALLIANCE TO SAVE ENERGY
Using less. Doing more.

Alliance to Save Energy

Board of Directors

Honorary Chair

Sen. Jeanne Shaheen
(D-N.H.)

Corporate Co-Chair

Jane Palmieri
The Dow Chemical Company

First Honorary Vice Chairs

Sen. Chris Coons
(D-Del.)

Sen. Rob Portman
(R-Ohio)

Honorary Vice Chairs

Rep. Michael Burgess
(R-Texas)

Sen. Susan Collins
(R-Maine)

Rep. Steve Israel
(D-N.Y.)

Rep. Adam Kinzinger
(R-Ill.)

Sen. Ed Markey
(D-Mass.)

Rep. David McKinley
(R-W.Va.)

Sen. Lisa Murkowski
(R-Alaska)

Rep. Paul Tonko
(D-N.Y.)

Sen. Mark Warner
(D-Va.)

Rep. Peter Welch
(D-Vt.)

Sen. Ron Wyden
(D-Ore.)

ALLIANCE TO SAVE ENERGY
Using less. Doing more.

Alliance to Save Energy

Board of Directors

President

Kateri Callahan
Alliance to Save Energy

First Vice Chair

William Von Hoene
Exelon

Secretary

Frank Murray
NYSERDA (Fmr)

Treasurer

Carolyn Green
EnerGreen Capital Management

Helen Burt
PG&E Company

Paul Camuti
Ingersoll Rand

Ralph Cavanagh
Natural Resources Defense Council

Kemel Dawkins
Michigan State (Fmr)

Jeff Eckel
Hannon Armstrong

Anthony Eggert
ClimateWorks

Jeffrey Hohn
3M

Dave Hopping
Siemens Industry Inc.

Thomas R.Kuhn
Edison Electric Institute

Mark Lantrip
Southern Company

Randy Leslie
Johnson Controls, Inc.

Terry McCallister
Washington Gas

Dave McCurdy
American Gas Association

Rose McKinney-James
McKinney-James & Associates

Greg Merritt
Cree, Inc.

Kevin Payne
Southern California Edison

Robert Pratt
GreenerU

Gil Quiniones
New York Power Authority

John Rhodes
NYSERDA

Curt Rich
North Amer. Insulation Manufacturers Assoc.

Kevin Self
Schneider Electric

Bill Sisson
United Technologies

Cathy Snyder
Lockheed Martin

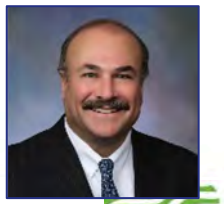
Terence Sobolewski
National Grid

Fred Stephan
Johns Manville

Susan Story
American Water

Dave Szczupak
Whirlpool

Susan Tierney
Analysis Group



Clint Vince
Dentons LLP

ALLIANCE TO SAVE ENERGY

Using less. Doing more.

Working With and Across All Sectors of the Economy

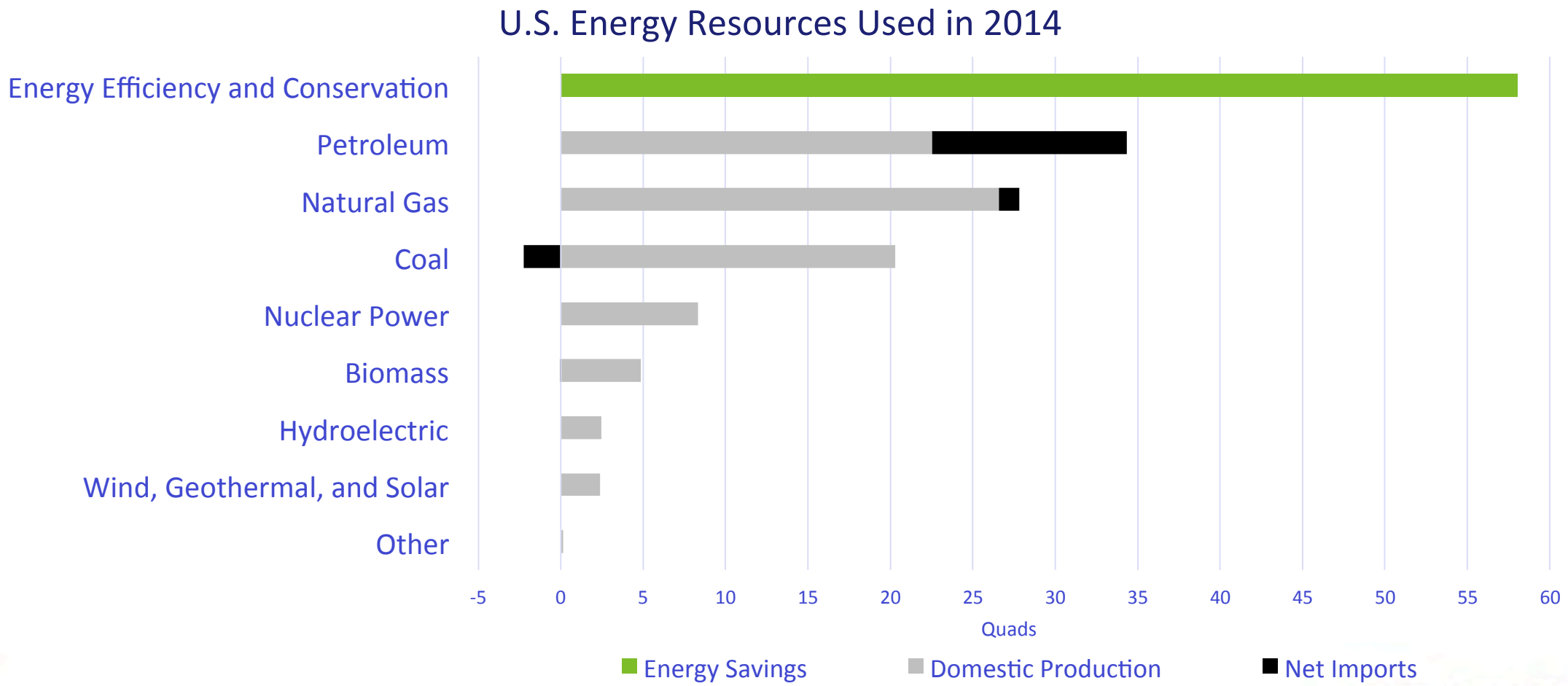
Business ▪ Government ▪ Public Interest

ALLIANCE TO SAVE ENERGY

Using less. Doing more.

Energy Efficiency: America's Greatest Resource

A Quiet History of Huge Success!

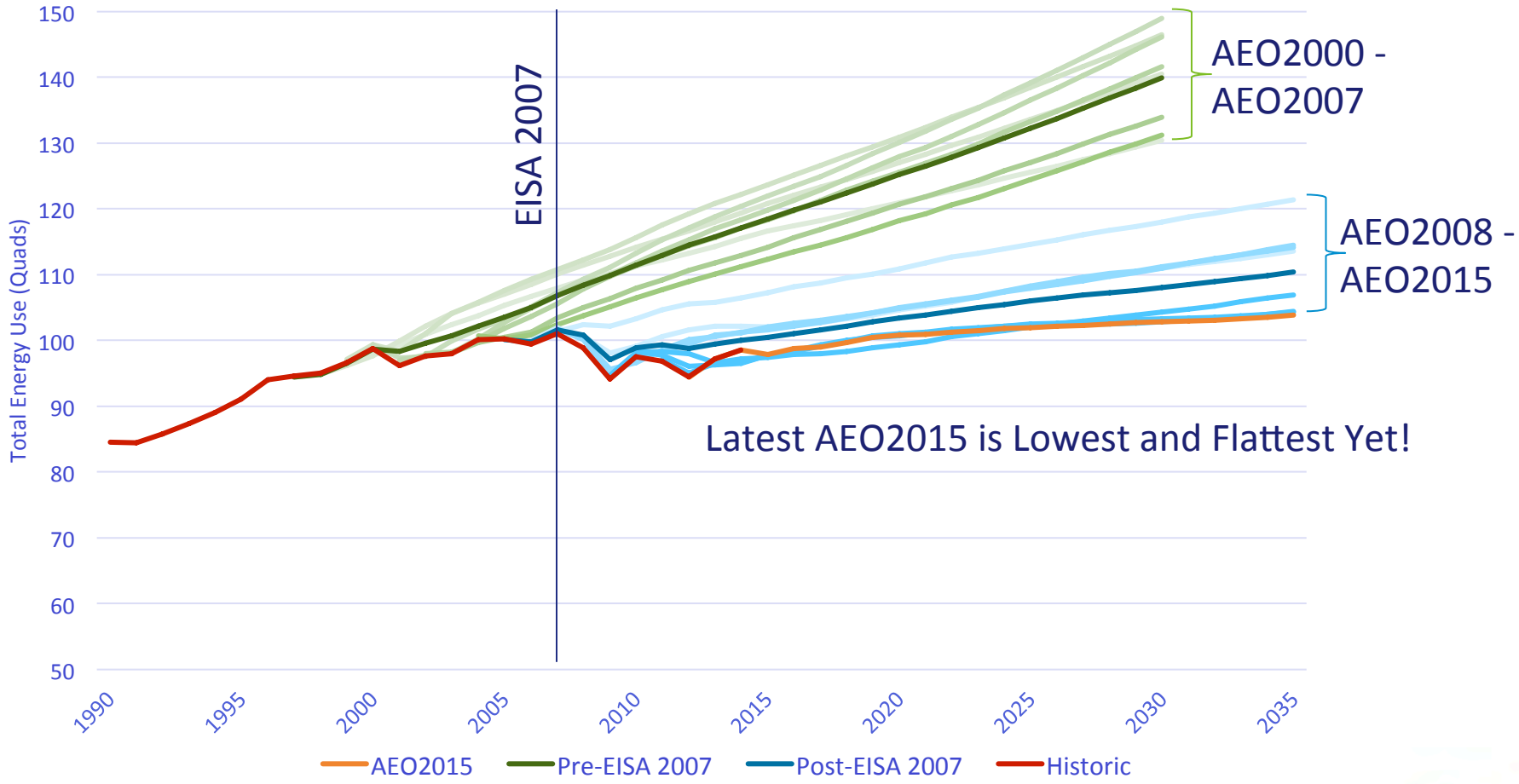


Production and Net Imports: EIA 2014 Data
EEC Estimate: ACEEE

ALLIANCE TO SAVE ENERGY
Using less. Doing more.

U.S. Energy Consumption Projections:

Robust Public Policy is Decreasing Energy Use Over Time



All data from EIA Annual Energy Outlook (AEO).
AEO2000-2005 extrapolated to 2030.

ALLIANCE TO SAVE ENERGY
Using less. Doing more.

Putting Energy Efficiency Gains into “Dollars and Sense”

REDUCING	SAVING	AVOIDING
energy use by **58 Quads** annually	the U.S. economy **$800 billion** in avoided energy costs each year	roughly **2.5 billion tons** of CO2 annually

Building Codes 101

What are Building Codes?

- Building Codes are a set of rules that specify the minimum standards for constructed objects such as buildings and non-building structures
- Updated every 3 years to accommodate new technologies and new hazards
- Developed by consensus, by experts
- Incorporate hundreds of standards:
  - Electrical
  - Mechanical
  - Structural
  - Installation
  - Safety
  - Fire
  - Building Use
  - **Energy**

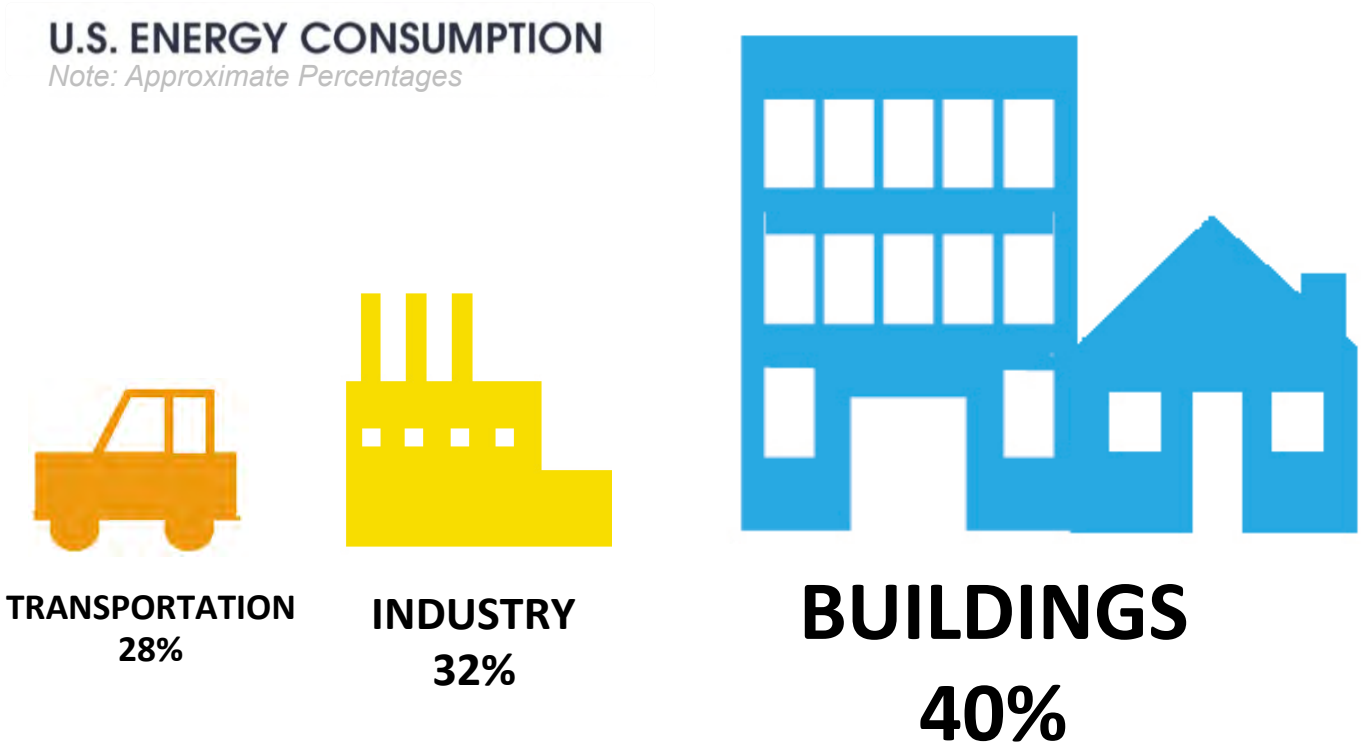
What are Energy Codes?

- Energy Codes are the minimum standards for energy efficiency in new and renovated residential and commercial buildings.
- Baseline energy performance of a building
- Part of overall building codes adopted by state and local governments
- Energy codes establish a foundation for energy and green programs:
  - ENERGY STAR, LEED, ASHRAE Standard 189, Building America/federal tax incentive, and Net-zero energy buildings.

Why Do Building Codes Matter?

- 40% of U.S. energy is consumed by the building sector
- 70% of U.S. electricity demand from buildings
- 40% of CO_2 emissions attributable to buildings

- Buildings last for decades, so designing them well is critical to control future energy use

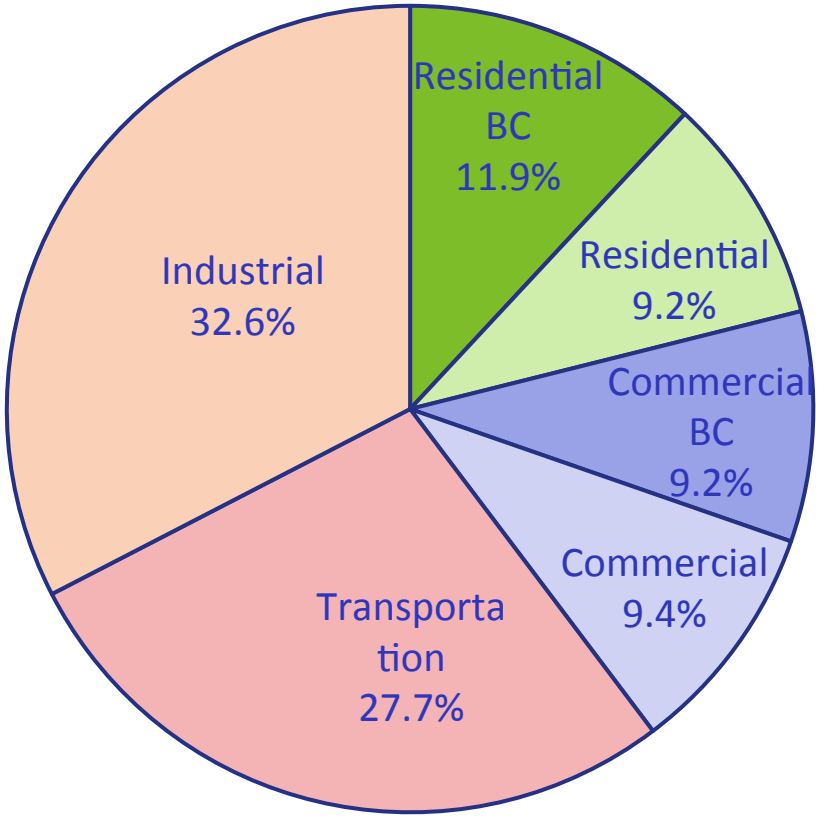


Source: Building Codes Assistance Project

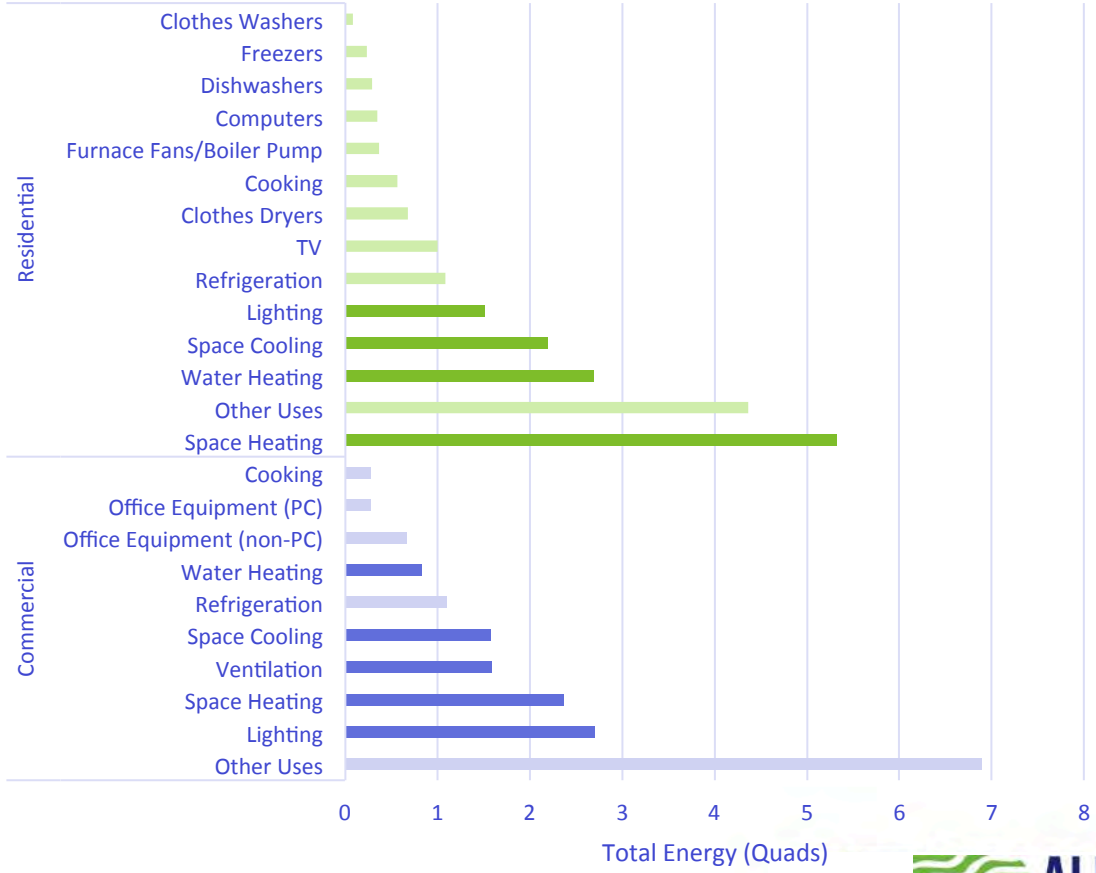
Energy Codes are Essential to Reducing Waste

56% of Residential and 50% of Commercial Energy Use is Covered by Energy Codes

2015 Total Energy by Sector



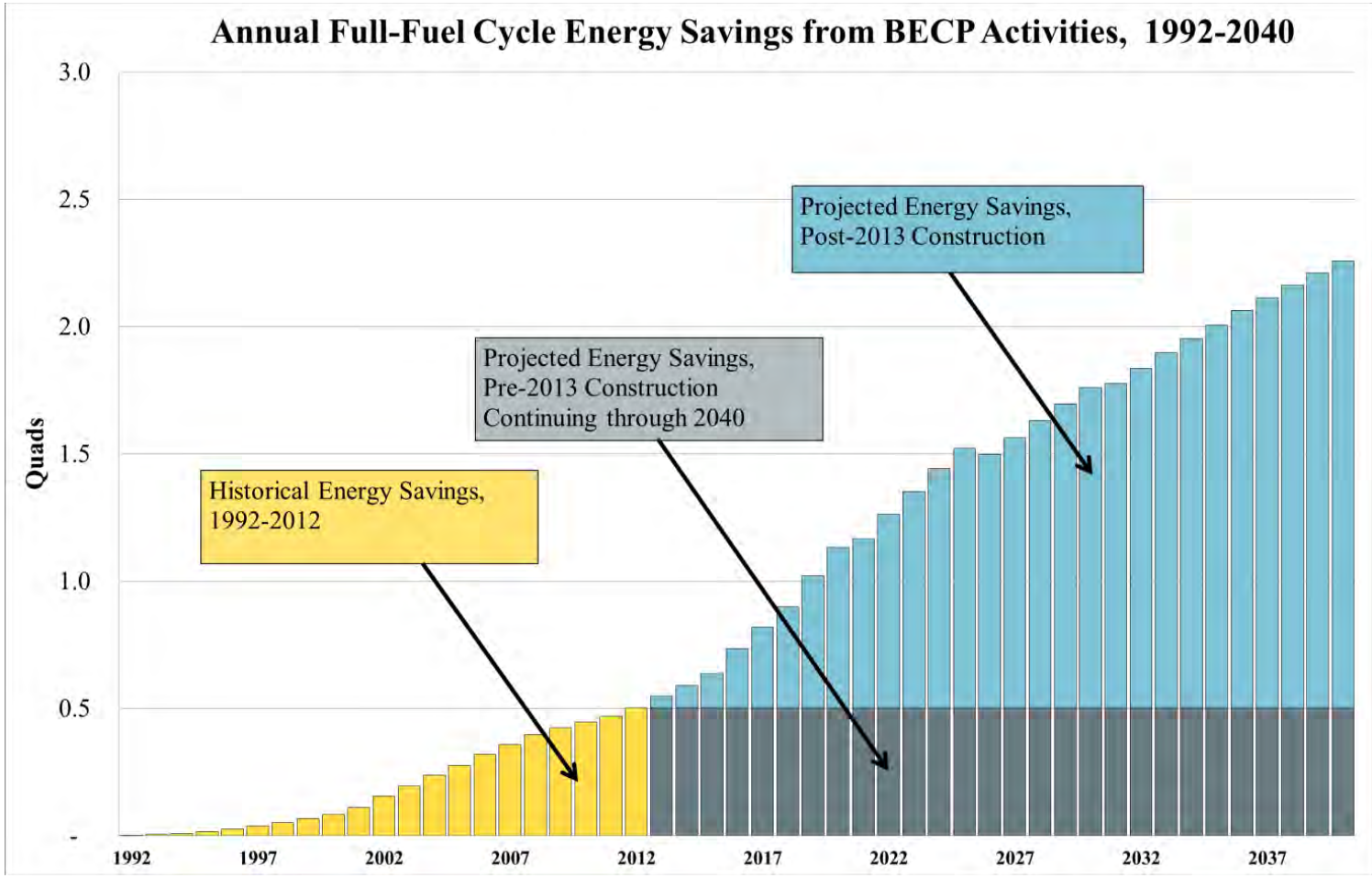
2015 Res. and Com. Total Energy by End Use



Source: EIA Annual Energy Outlook 2015 Reference Scenario data for 2015, adapted from Energy Efficient Codes Coalition

ALLIANCE TO SAVE ENERGY
Using less. Doing more.

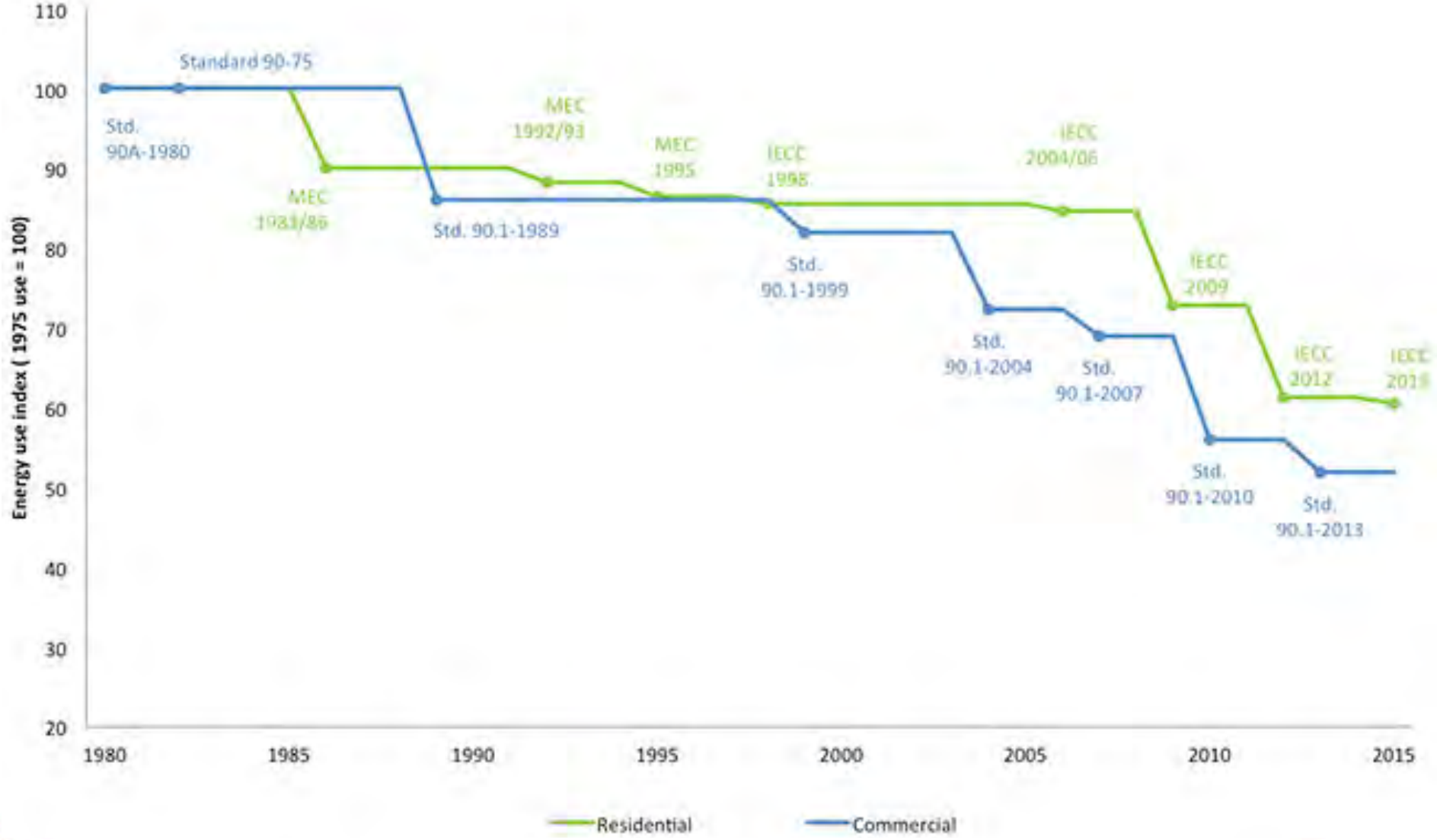
Energy Codes Save Both Energy and Money



Source: Building Codes Assistance Project

ALLIANCE TO SAVE ENERGY
Using less. Doing more.

Building Code Updates are Critical to Continued Savings



Source: ACEEE

ALLIANCE TO SAVE ENERGY

Using less. Doing more.

Why Focus on EE in CPP Compliance?

- Efficiency is the fastest, easiest and most cost effective way to reduce carbon pollution from power plants.
- The CPP has been informed by successful state actions already taking place,
- Companies can improve their productivity, and residents and families can save money through efficiency
- EE and DR will continue to play a crucial role in affordability and protecting reliability by easing congestion on the grid.
- The CPP is a win-win-win for ratepayers, private industry and the national economy.

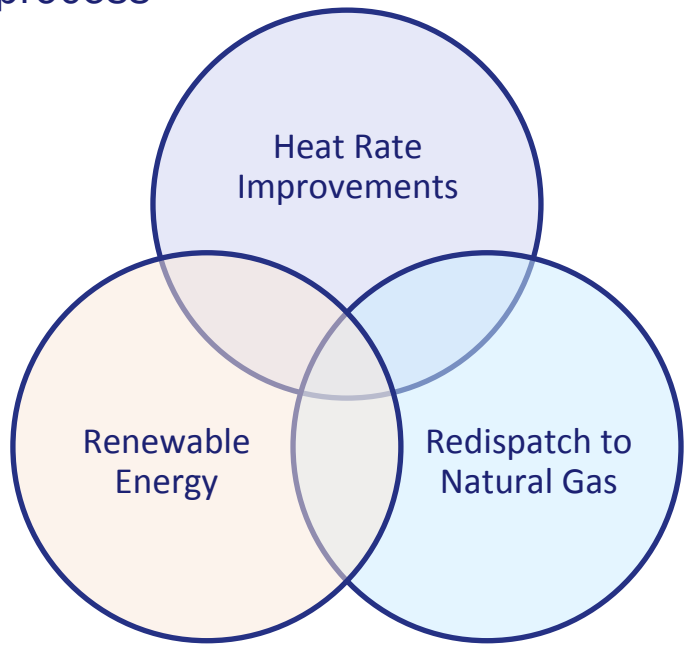
CPP Compliance Basics

- Each state may choose how to meet their goals
- States have three structural decisions before deciding on compliance mechanisms
  - Mass v. rate-based plans
  - Emissions standards approach (units only) or state measures plan (e.g., EE)
  - State plan, multi-state regional (e.g. RGGI) or trading-ready (hybrid approach)
- States don't have to use the building blocks
  - Can use EE to attain the goals
  - Rate, mass approaches allow for trading between EGUs, other emission reduction sources

CPP Goal setting ≠ CPP Compliance!

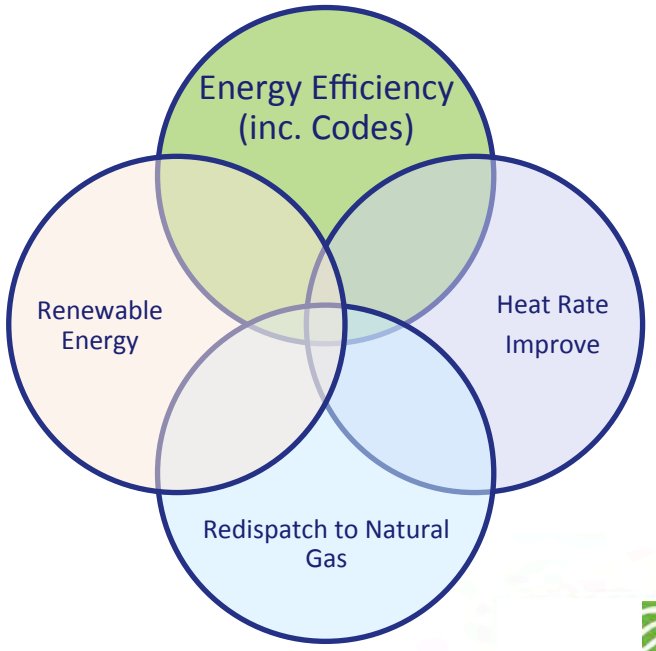
CPP Goal Setting

- EE was initially in Proposed Rule as a Building Block
- EE was removed from the BSER in the target setting process



CPP Compliance

- EE is specifically recognized as a compliance option in both mass and rate-based plans
- EE remains the easiest, fastest, least-cost way to comply



ALLIANCE TO SAVE ENERGY
Using less. Doing more.

State Compliance Options

Rate Based Compliance:

lb CO2/MWh allowed

- Emission Rate Credit (ERC) = zero-emission MWh
- EGUs subject to the CPP can use ERCs to lower their emission rate
- Owners of EGUs can invest in projects to create their ERCs or buy them
- Potential ERC sources
  - Efficiency upgrades at EGU
  - Renewables
  - Increased nuclear generation
  - Energy efficiency

Mass based Compliance:

Total tonnage of CO2 allowed

- States can distribute their allowances in any manner
- EGUs emitting CO2 must obtain enough allowances to match emissions
- States may assign EGU-specific mass caps
  - Reduces flexibility
  - May raise costs
- Potential distribution methods:
  - Allocation to historical emitters
  - Auction
  - Allocation to clean sources (EE), which can be sold to EGUs

Compliance: Focus on Building Codes

- EPA has proposed a presumptively approvable Model Trading Rule that specifies the minimum frequency for EM&V based on EE type:
  - For building codes, EM&V is required at 4-year intervals.

- EPA has proposed 2 major barriers to use of building codes for CPP compliance:
  - Demand-Side EE is not eligible to create ERCs under the proposed rate-based Federal Plan.
  - EPA's draft EM&V guidance foresees credit only for "adoption of new energy codes with greater EE requirements than codes that have already been determined by the federal government [DOE] to be cost effective."
  - The Alliance has called for the removal of both of these barriers in formal comments to EPA.