
U.S. DEPARTMENT OF
ENERGY
Office of
ENERGY EFFICIENCY &
RENEWABLE ENERGY
WELCOME
2024 NATIONAL ENERGY CODES CONFERENCE

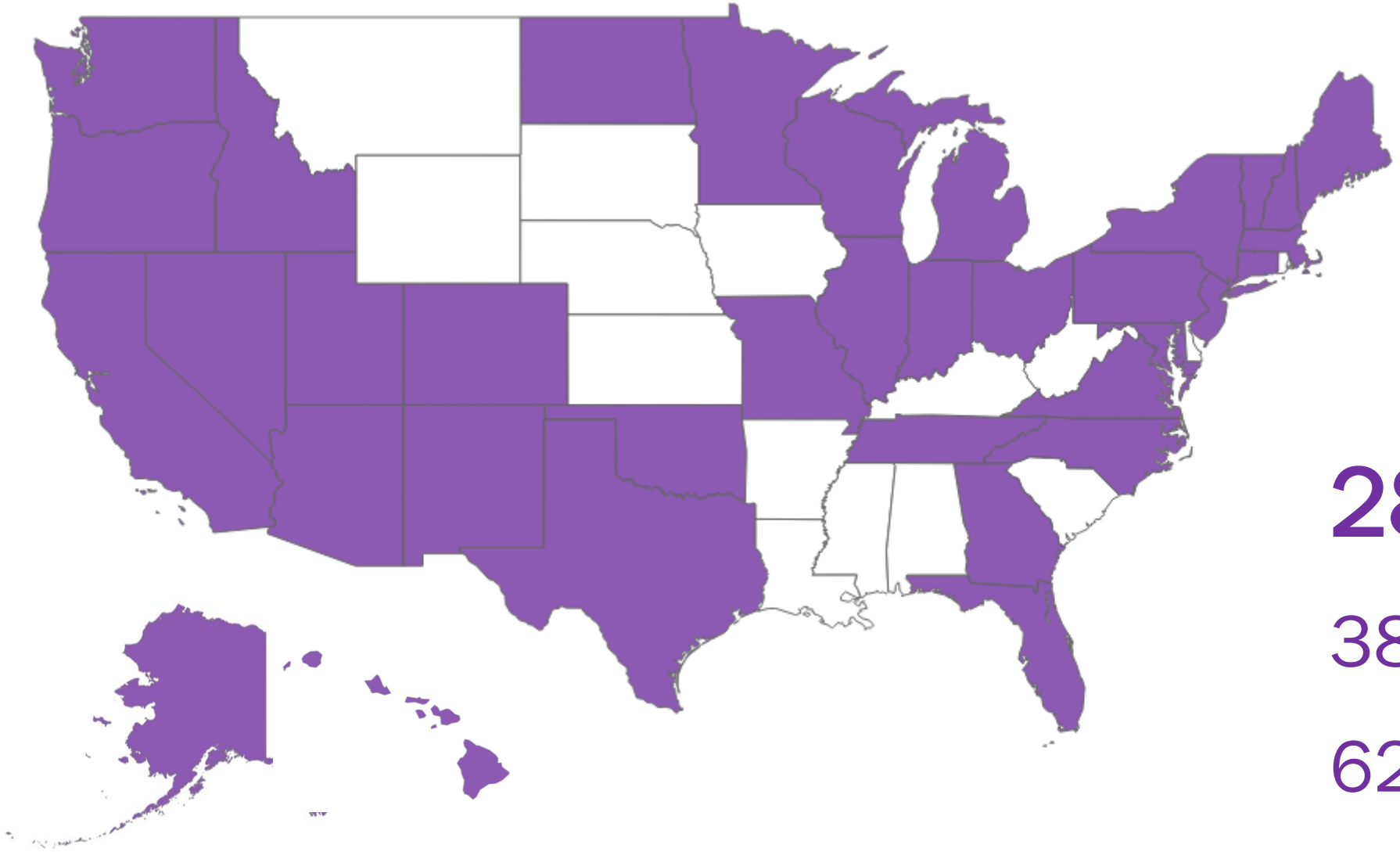
2024 National Energy Codes Conference

SACRAMENTO | MAY 6-8

U.S. DEPARTMENT OF ENERGY | Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

BUILDING TECHNOLOGIES OFFICE

Who’s at the NECC in ‘24?

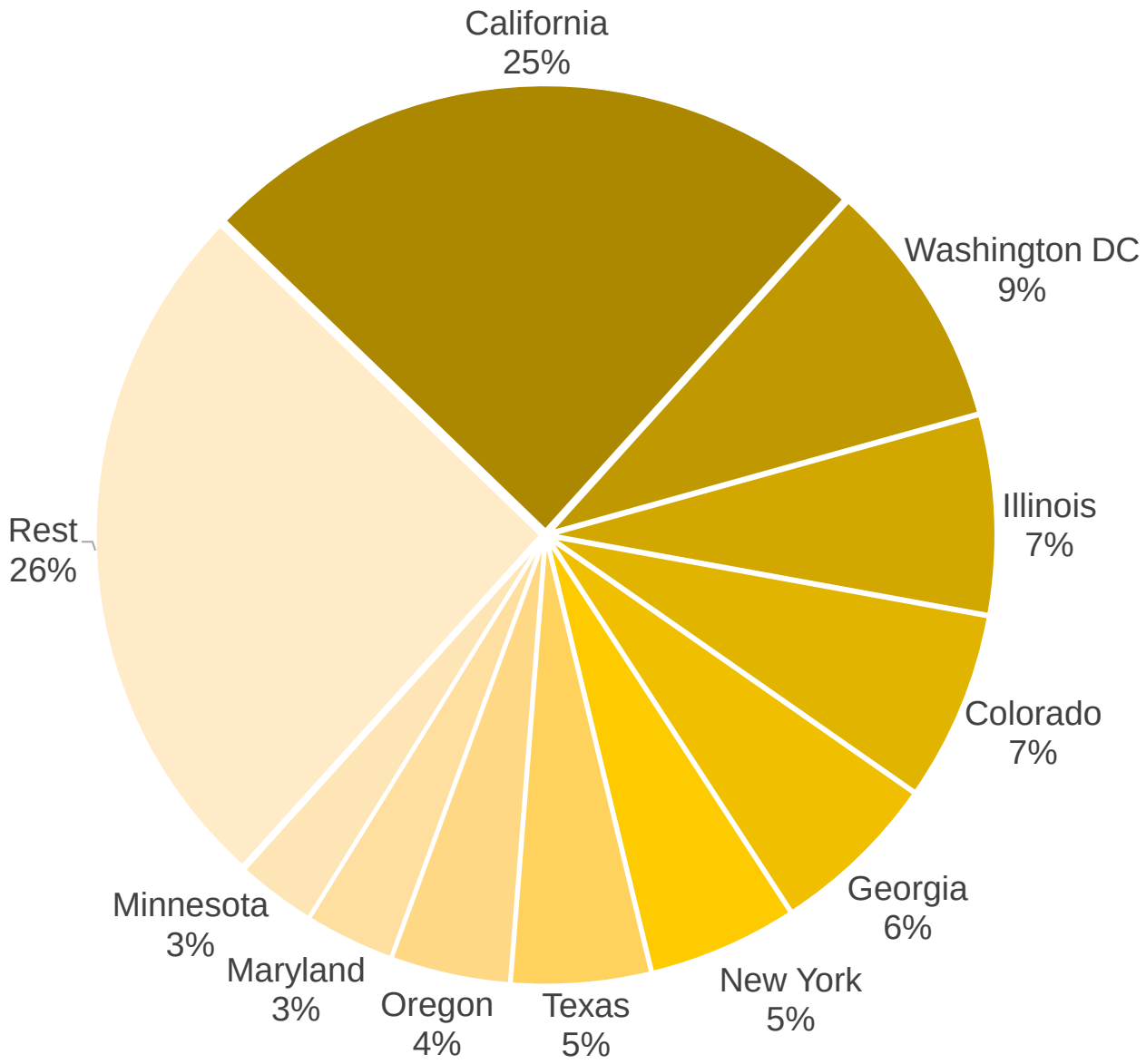


283 attendees

38 states

62% first time

Top 10 states at 2024 NECC



- NGO
- Federal Government
- State Government
- Local Government
- Manufacturer
- Designer
- Academia
- National Lab
- Utility
- Association
- Building Official
- Builder
- Consultant

REMINDERS + FAQ

Digital program: https://www.energycodes.gov/2024-national-energy-codes-conference

Wi-fi is available in the lobby and in meeting rooms

Name: 2024 National Energy Codes Conference

Password: Energycodes2024

See the conference registration table for:

- *Lightning Round* session signups
- Professional development credits

Today's lunch: Jeffrey A. Johnson Award and our new Early Career Award!

Presentations will be made available at www.energycodes.gov

YESTERDAY | Pre-Conference Events

Monday, May 6

LOBBY LEVEL

SIXTEENTH FLOOR

TIME	TOPIC
12:15–3:00 pm	**Tour** (for those who are confirmed)**: SMUD East Campus Operations Center**
12:30–5:00 pm	**Energy Codes 101 | BPS 101 | REScheck Basics | COMcheck Basics** FRESNO/GRANADA/HERMOSA
5:00–6:00 pm	**Welcome Reception** SIERRA BALLROOM

Navigating the Agenda

Plenary session

Traditional presentation sessions (lobby level)

Discussion sessions (16th floor mostly)

Day 1 Tuesday, May 7

LOBBY LEVEL
SIXTEENTH FLOOR

TIME	TOPIC		
8:00–9:00 am	**Registration & Breakfast** NORTH LOBBY		
9:00–9:30 am	**Welcome & Opening Remarks** CALIFORNIA/BALBOA/CALAVERAS		
9:30–10:00 am	**Keynote: Andrew McAllister, California Energy Commission** CALIFORNIA/BALBOA/CALAVERAS		
10:00–10:30 am	**Break**		
10:30–11:30	**Federal Funding and Assistance Opportunities for Building Energy Codes** CALIFORNIA/BALBOA/CALAVERAS		
11:30– 1:00 pm	**Networking Lunch and Awards** CALIFORNIA/BALBOA/CALAVERAS		
1:00–2:30 pm	**Grid Edge Modernization and the Energy Code:** How Codes Can Support a Transition to a Clean and Resilient Grid HERMOSA/GRANADA/FRESNO	**Inclusive Energy Codes:** Bridging the Gap to Achieve Equity and Environmental Justice DIABLO/EL DORADO	**Efficiency Policy for Existing Buildings:** Driving Market Transformation (Discussion) SIERRA BALLROOM
2:30–3:00 pm	**Break**		
3:00–3:30 pm	**Lightning Round** CALIFORNIA/BALBOA/CALAVERAS		
3:30–5:00 pm	**Building a Green Workforce:** Training for Tomorrow's Energy Code Compliance HERMOSA/GRANADA/FRESNO	**Using Tools and Data Analysis to Inform Building Policy Adoption and Implementation** DIABLO/EL DORADO	**Reaching for the Sun:** Lessons Learned from California (Discussion) SIERRA BALLROOM

www.energycodes.gov/2024-national-energy-codes-conference

Continuing Education

Thanks to the following continuing education providers…

AIA

ICC INTERNATIONAL CODE COUNCIL®

RESNET® RESIDENTIAL ENERGY SERVICES NETWORK

We hope you enjoy this year's event!

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Building Energy Codes Program

2024 National Energy Codes Conference

Building Energy Codes Program

Mission

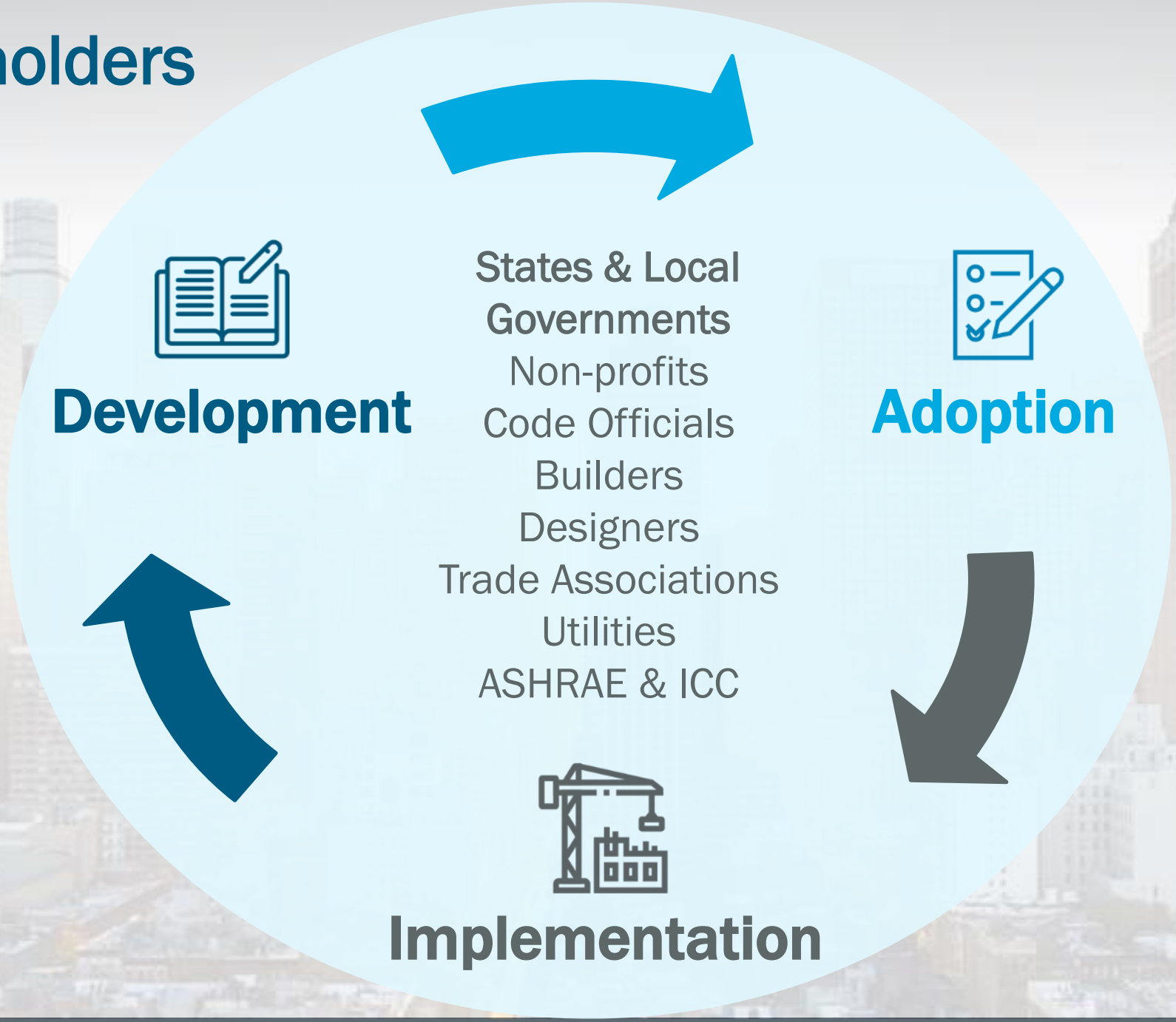
To support building energy code development, adoption, implementation and enforcement processes to achieve the maximum practicable, cost-effective improvements in energy efficiency and decarbonization while providing safe, healthy buildings for occupants.

Directive

The Building Energy Codes Program is directed to:

- Participate in industry processes to develop model building energy codes
- Issue determinations as to whether updated codes result in energy savings
- Promulgate standards for federal buildings
- Provide technical assistance to states to implement their energy codes

Key Stakeholders

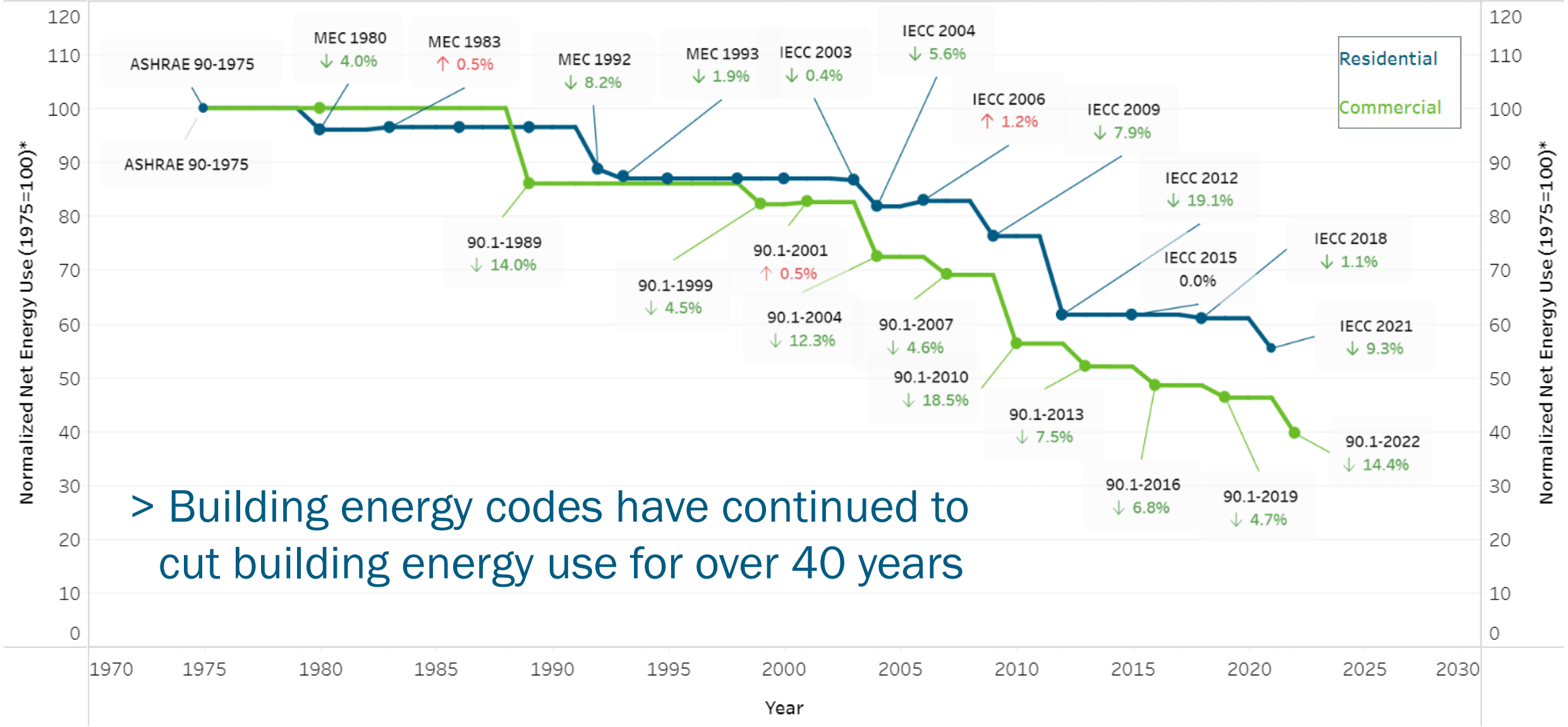


U.S. DEPARTMENT OF ENERGY

Estimated Improvement in Residential & Commercial Energy Codes

(1975 - 2022)

Pacific Northwest NATIONAL LABORATORY

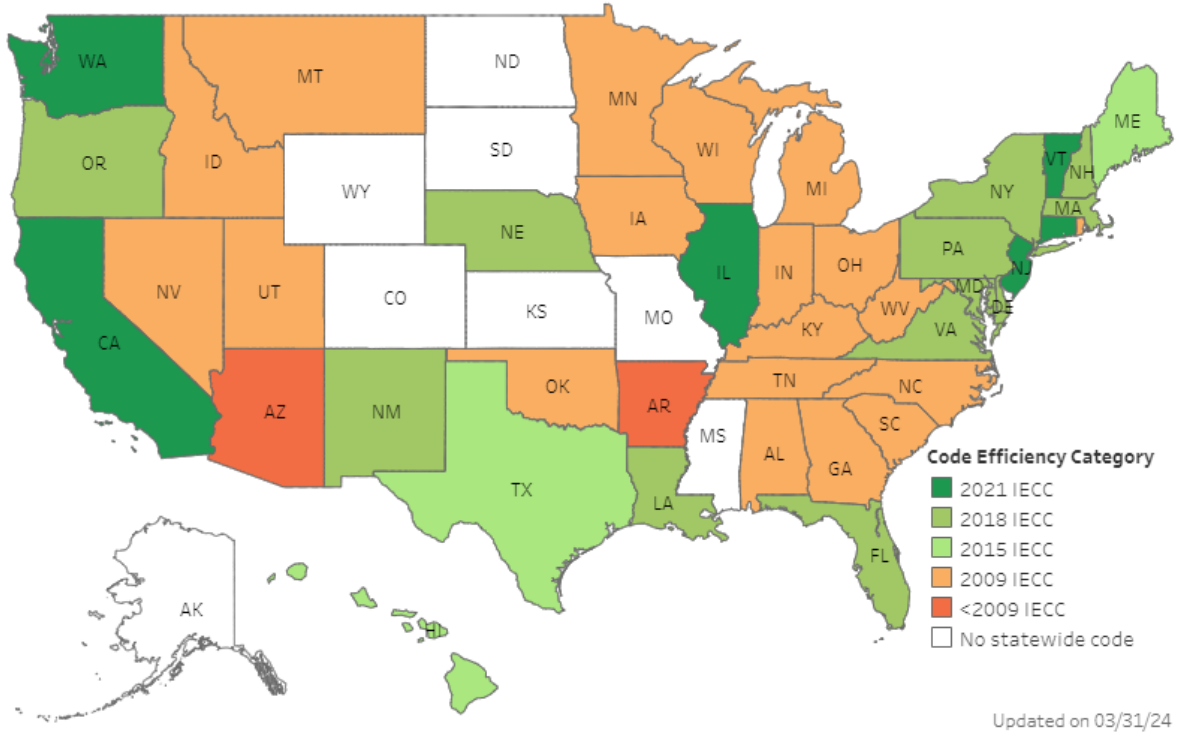


> Building energy codes have continued to cut building energy use for over 40 years

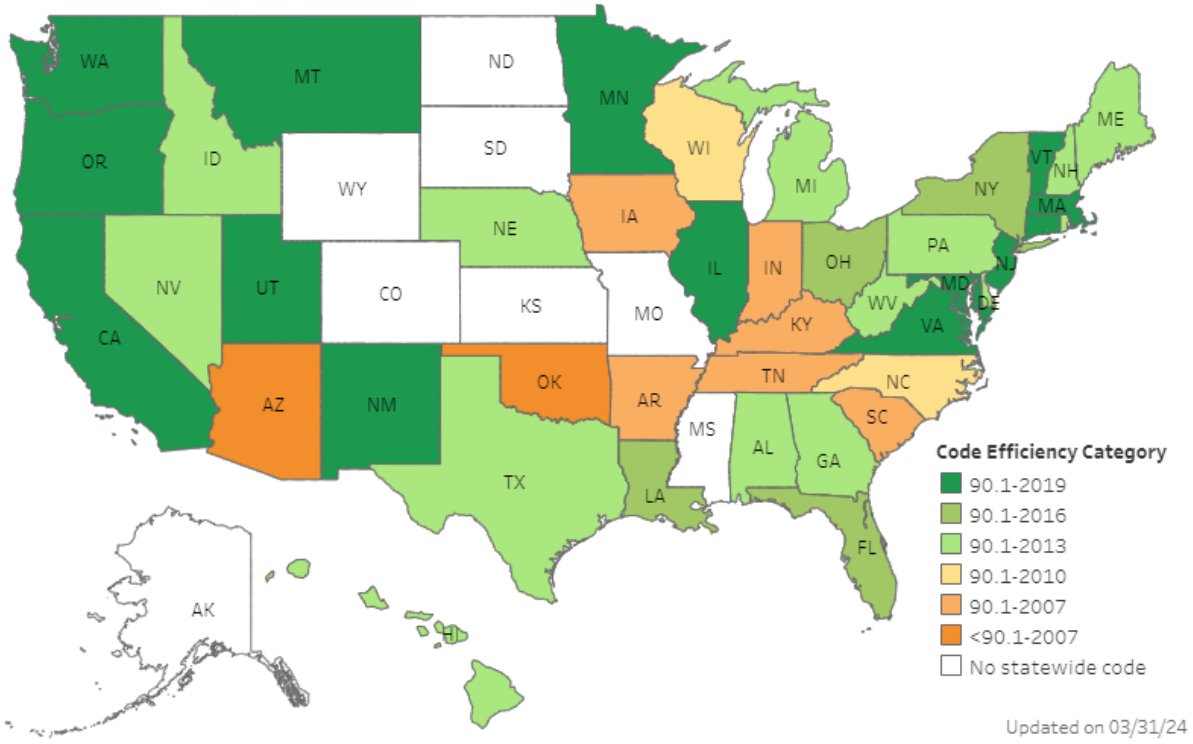
*Net energy use includes the contribution of renewable energy generation

Many states and local governments are updating energy codes from outdated standards to the latest model energy code.

Residential (IECC)



Commercial (Standard 90.1)



Model energy codes are projected to save (2010-2040):

$182 billion
energy cost savings

810 MMT
of CO_2 emissions

16.1 quads
primary energy

These savings equate to the annual emissions of:

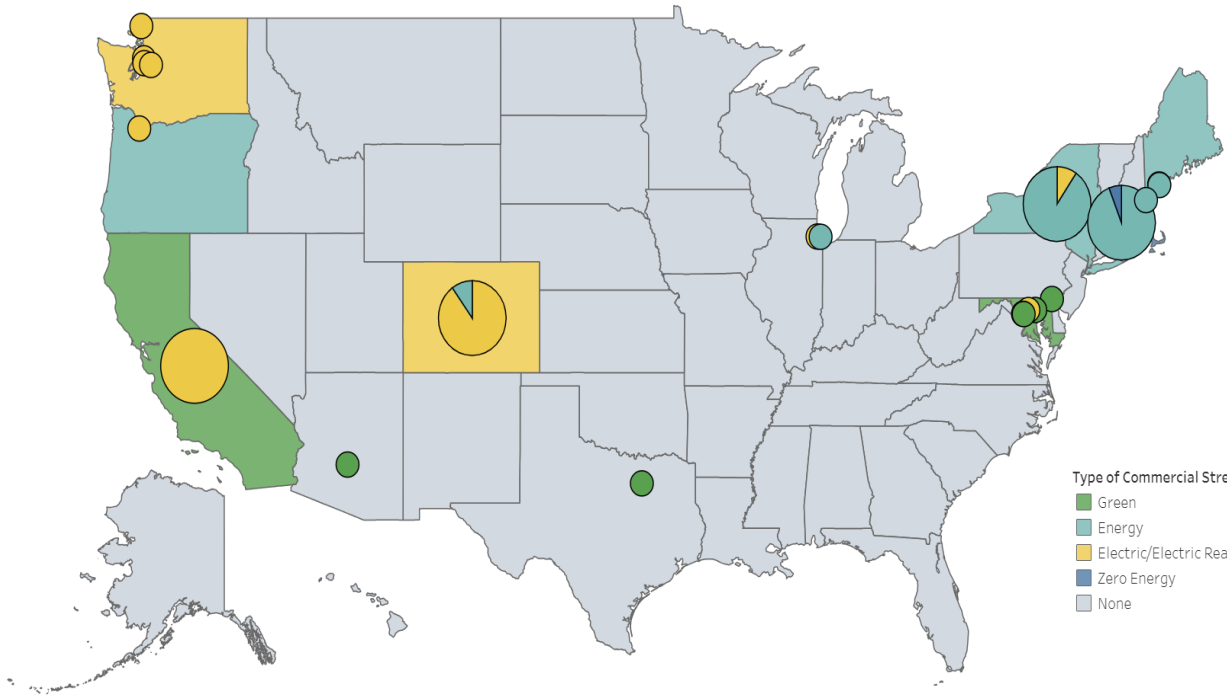
187 million passenger vehicles

225 coal power plants

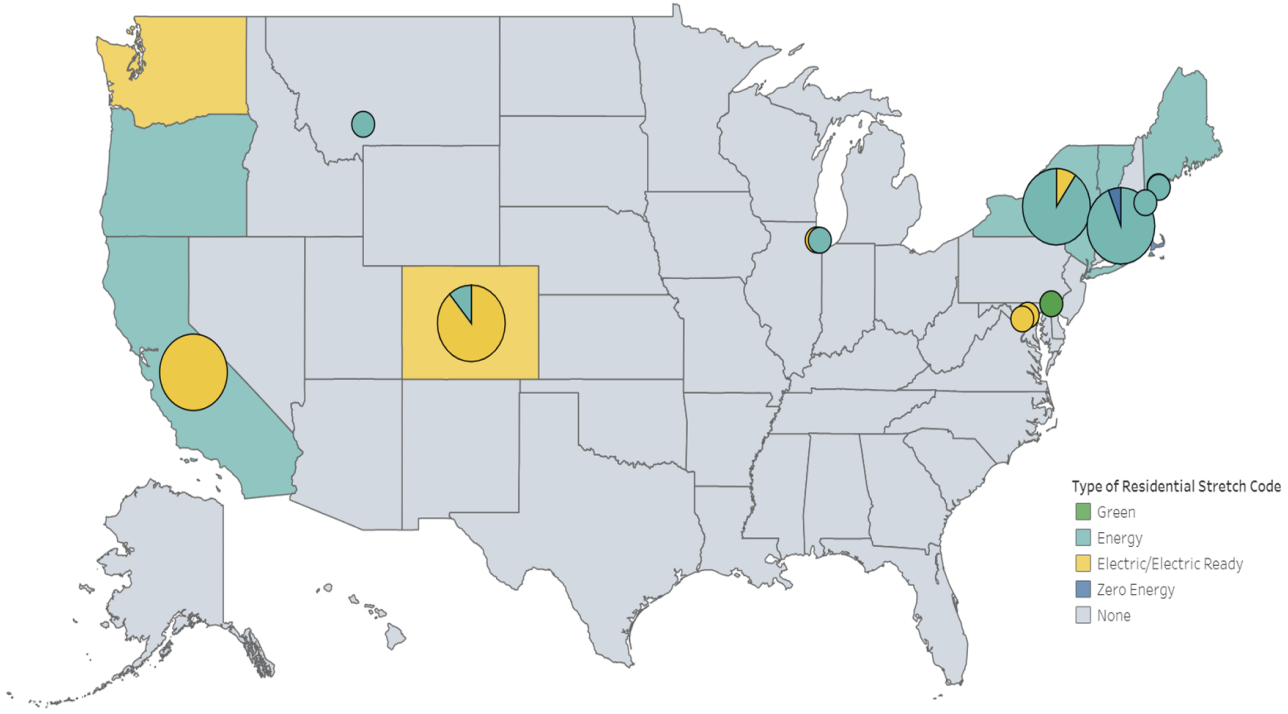
106 million homes

Stretch Codes

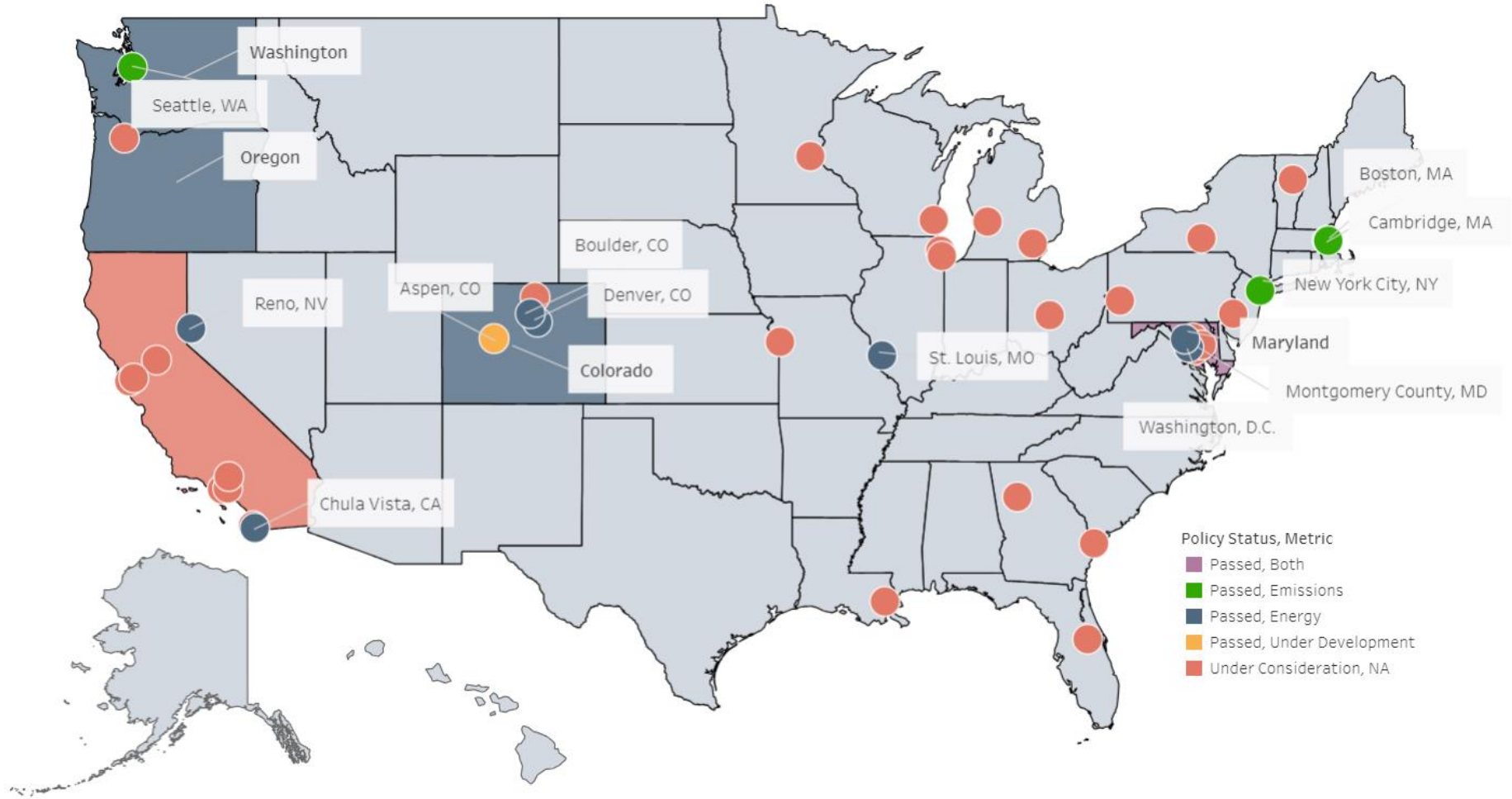
Commercial (Standard 90.1)



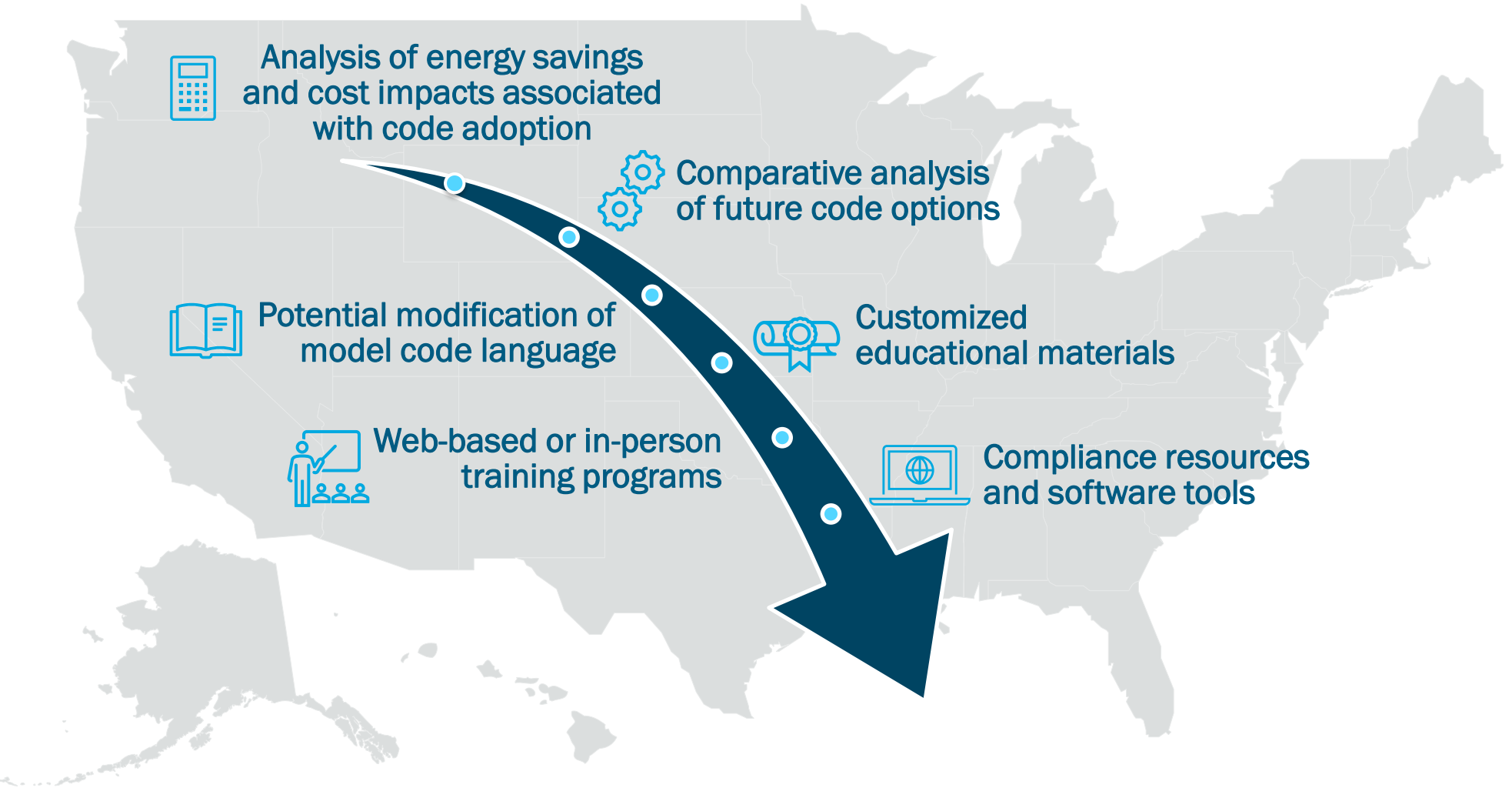
Residential (IECC)



Building Performance Standards



DOE offers a comprehensive collection of information, resources, and technical assistance to answer questions and address issues related to energy codes.



Stakeholders

- State & Local Governments
- Energy Efficiency Organizations
- Code Development Bodies
- Building Design And Construction Representatives
- The Code Enforcement Community

THANK YOU!

- Session leads
- Speakers
- And you!

Keynote Speaker

Tuesday, May 7
9:30–10:00 am

LOBBY LEVEL
CALIFORNIA/BALBOA/CALAVERAS

Andrew McAllister, Ph.D | California Energy Commission

Commissioner Andrew McAllister is serving his third term on the California Energy Commission. At the Energy Commission, he leads the policy area of energy efficiency, including the Building Energy Efficiency Standards, appliance efficiency, and load management and flexibility. More broadly, he is focused on enabling modern, data-rich analytical tools to support strong clean energy policy development and program implementation.

Day 2 | Wednesday, May 8 8:30–9:30 am **(California/Balboa/Calaveras)**

Federal Roundtable: Decarbonization, Affordability, and Everything in Between

Mandy Mahoney
U.S. Department of Energy

Carolyn Snyder
U.S. Department of Energy

Alexis Pelosi
U.S. Department of Housing and Urban Development

Jean Lupinacci
U.S. Environmental Protection Agency

Heather Clark
White House Climate Policy Office

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Advancing Buildings to Net Zero

Mandy Mahoney
Director
Building Technologies Office (BTO)
National Energy Codes Conference 2024

Buildings by the Numbers

90% Amount of time people spend in buildings

74% Amount of electricity consumed by buildings

$374 billion Amount spent on building energy costs annually

35% Amount of greenhouse gas emissions produced by buildings

34 million Number of households that have trouble meeting their energy needs

Numbers for the United States; references in "Decarbonizing the U.S. Economy by 2050: A National Blueprint for the Buildings Sector"

National Decarbonization Blueprint for the Buildings Sector Sets BTO's Vision and Mission

Reduce U.S. building emissions 65% by 2035 and 90% by 2050 vs. 2005 while enabling net-zero emissions economywide and centering equity and benefits to communities

CROSS-CUTTING GOALS

Equity – Advance energy justice and benefits to disadvantaged communities

Affordability – Reduce energy burden and technology costs so all can benefit

Resilience – Increase the ability of communities to withstand and recover from stresses

STRATEGIC OBJECTIVES

Increase building energy efficiency
Reduce on-site energy use intensity in buildings 35% by 2035 and 50% by 2050 vs. 2005

Accelerate on-site emissions reductions
Reduce on-site GHG emissions in buildings 25% by 2035 and 75% by 2050 vs. 2005

Transform the grid edge
Reduce electrical infrastructure costs by tripling demand flexibility potential by 2050 vs. 2020

Minimize embodied life cycle emissions
Reduce embodied emissions from building materials and construction 90% by 2050 vs. 2005

bit.ly/buildingsdecarb

BTO's Priorities

Priority	Description
More support for equitable decarbonization and electrification retrofits	Decarbonize buildings through effective retrofit packages with focus on existing facilities serving low-income communities
Increase envelope retrofit rate	Develop and promote easy and affordable building envelope retrofits to accelerate uptake
New paths to zero energy ready buildings	Prepare pathways for all new buildings to be zero-energy ready
Holistic support for heat pumps	Reduce cost/complexity, improve performance, and increase the deployment of heat pump technology
Focus grid edge work on key use cases	Increase the grid responsiveness and efficiency of buildings

How BTO Works

Emerging Technologies (ET)

Support R&D, validation, and integration of affordable and energy-saving technologies, strategies, analytical tools, and information services

Commercial Buildings Integration (CBI)

Develop and scale strategies and technologies to improve commercial buildings' energy efficiency

Residential Buildings Integration (RBI)

Develop and scale strategies and technologies to improve the energy efficiency, affordability, and comfort of our homes

Appliance and Equipment Standards

Set minimum energy conservation standards for more than 60 categories of appliances and equipment, as required by statute

Building Energy Codes Program

Support development and implementation of building energy codes as required by statute

How BTO Is Providing Holistic Support for Heat Pumps

Reduce cost/complexity, improve performance, and increase deployment of heat pump technology

ET

- BTO lead for cross office HVAC Strategy (heat pump focus)
- R&D on safety, vapor compression, non-vapor compression, and whole system integration
- Partner Intermediary Agreement for new stakeholders and approaches to make heat pump solutions easier

RBI

- HP/HPWH program incentive and impact assessment in NE, SE, MW to identify regional best practices
- Energy Skilled credentialing program that recognizes contractor training that includes HP and HPWH skills

CBI

- Accelerating adoption of HP rooftop units—Better Buildings Commercial Building Heat Pump Accelerator
- Thermal System Design Guide

Codes

- Incorporating heat pump technologies into model codes
- Developing stretch codes, which encourage electrification

Standards

- Test procedure development for broader range of HP products (e.g., window units) and capturing performance in colder climates

Photo Credit: Hot Water Solutions

The Clean Energy Federal Buildings Rule

Practicing what we preach:

- DOE is required by law to establish regulations that require new buildings and major renovations to reduce fossil fuel energy consumption
- BTO and Federal Energy Management Program collaboration
- Outcomes
  - Eliminate **on-site fossil fuel usage in new projects beginning in 2030**
  - Over next 30 years, reduce carbon emissions from federal buildings by **2 million metric tons** while also reducing infrastructure costs

Updated Codes for New Construction of HUD- and USDA-Financed Housing

- Congressional mandate for Department of Housing and Urban Development and Department of Agriculture, supported by BTO
  - Approximately 180,000 new homes annually, primarily occupied by low- and moderate-income owners and renters
  - Cannot negatively affect availability or affordability of covered housing
- Outcomes
  - Improve resident health and comfort
  - Increase resilience of single and multifamily homes
  - Reduce carbon emissions for new construction
  - Save residents **$963/year** in energy costs for single-family homes

Photo Credit: Paramark Real Estate Services

Funding for Updating Building Energy Codes

- Bipartisan Infrastructure Law and Inflation Reduction Act provide over **$1.2 billion** in federal funding to advance building energy codes
- BTO administering through Resilient and Efficient Codes Implementation (RECI) program
  - Full applications due June 6
- DOE Office of State and Community Programs
  - Competitive funding opportunity: Latest and Zero Building Energy Codes, open for concept paper submissions, next deadline is May 31
  - Formula funding opportunity: Opt-in for states and territories

Affordable Home Energy Shot

Deliver equitable solutions to households with the highest energy burdens

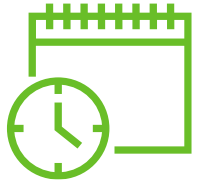
High energy burdens
1 in 4 households face high energy burdens (> 6% of income spent on energy).

Energy affordability challenges
1 in 5 households were unable to pay an energy bill in full in 2022.

Adverse pollution & health impacts
Black children are nearly **twice as likely** to have asthma compared to the national average.

50% lower upfront cost

20% lower energy bills



Within a decade

- Building envelope
- Efficient electrification
- Smart controls

AFFORDABLE HOME ENERGY SHOT™ VIRTUAL SUMMIT

June 5
10:30 a.m. to 4:30 p.m. ET

- ✓ Equity-driven solutions
- ✓ Stakeholder perspectives
- ✓ Cost reduction strategies
- ✓ Technology R&D needs

bit.ly/AHES-summit

ENERGY earthshots U.S. DEPARTMENT OF ENERGY | Affordable Home Energy™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KEYNOTE
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