



# Building Energy Codes Technical Assistance

NASEO Bldg. Committee August 23, 2023

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## Agenda

- Core TA Overview
- Expanded TA Overview
- Updates on BIL/RECI Awarded Projects
- Discussion



# 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.

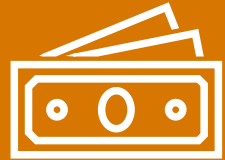
## Directive

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



# From 2010-2040, model energy codes are projected to save



**\$138 billion**  
energy cost  
savings



**900 MMT**  
of  
CO<sup>2</sup> emissions



**13.5 quads**  
primary energy

These savings equate to the annual emissions of



**195 million** passenger  
vehicles

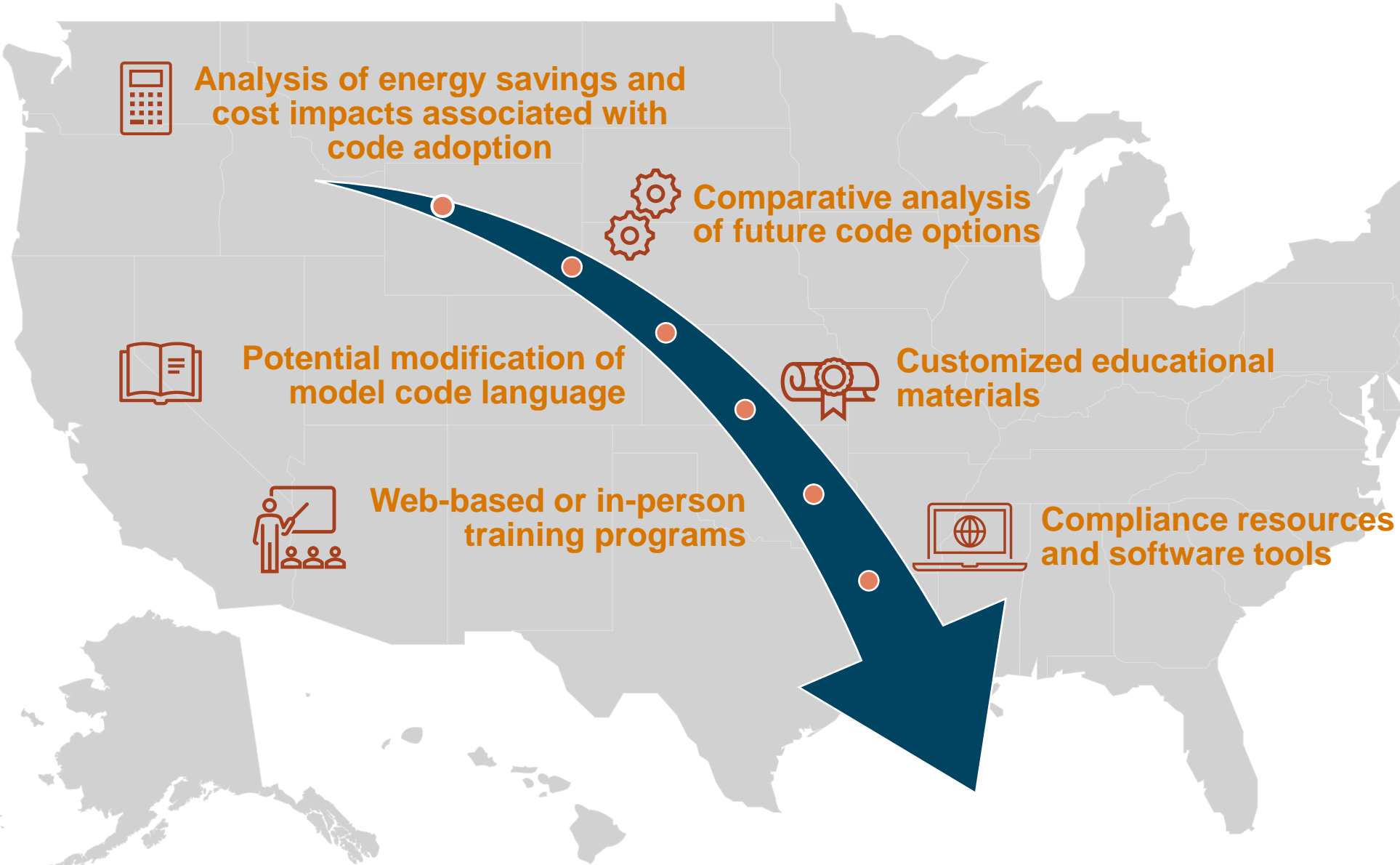


**227 coal**  
power plants



**108 million**  
homes

# Core Technical Assistance



## Stakeholders



State & Local Governments



Energy Efficiency Organizations



Code Development Bodies

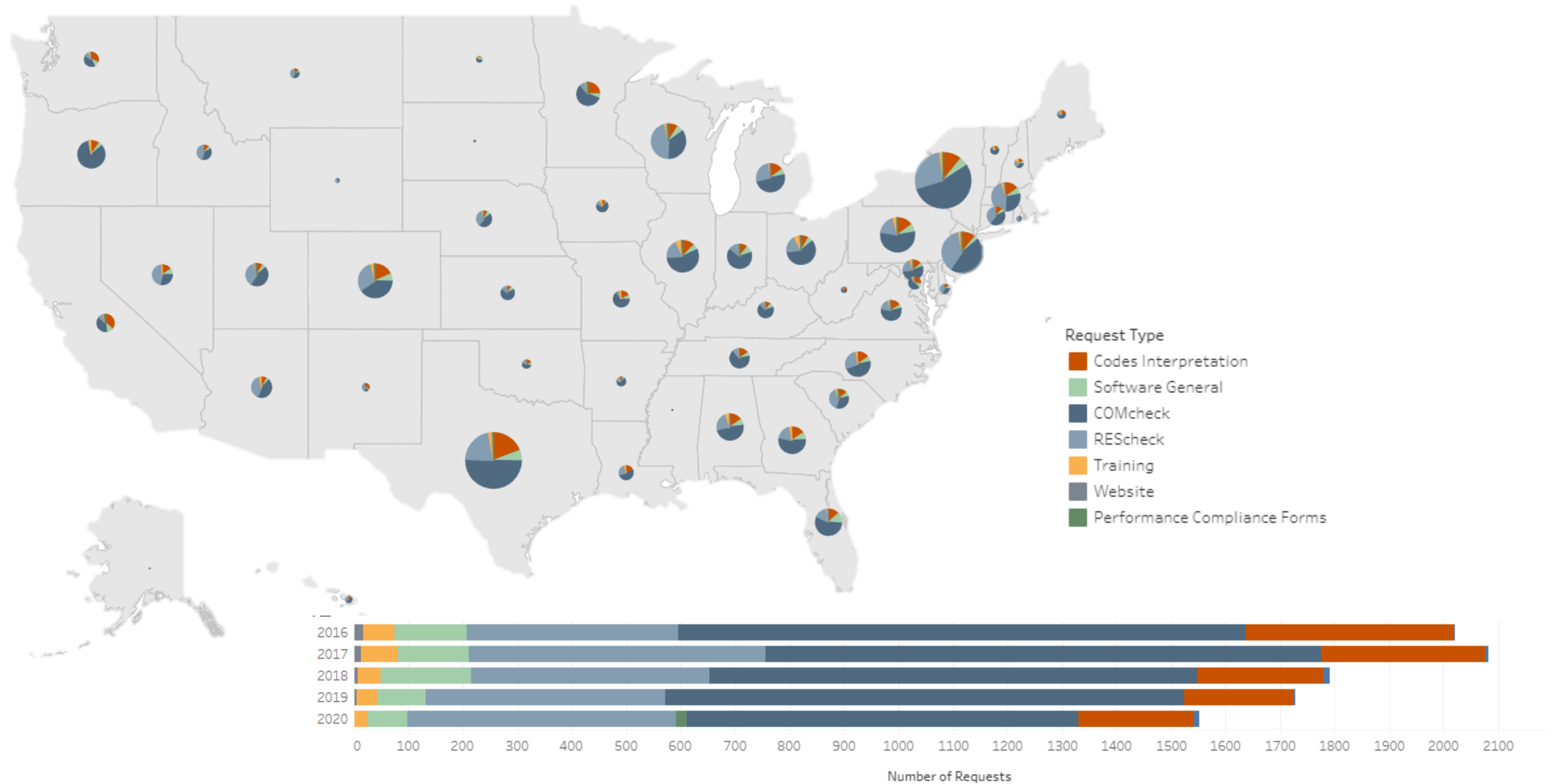


Building Design and Construction

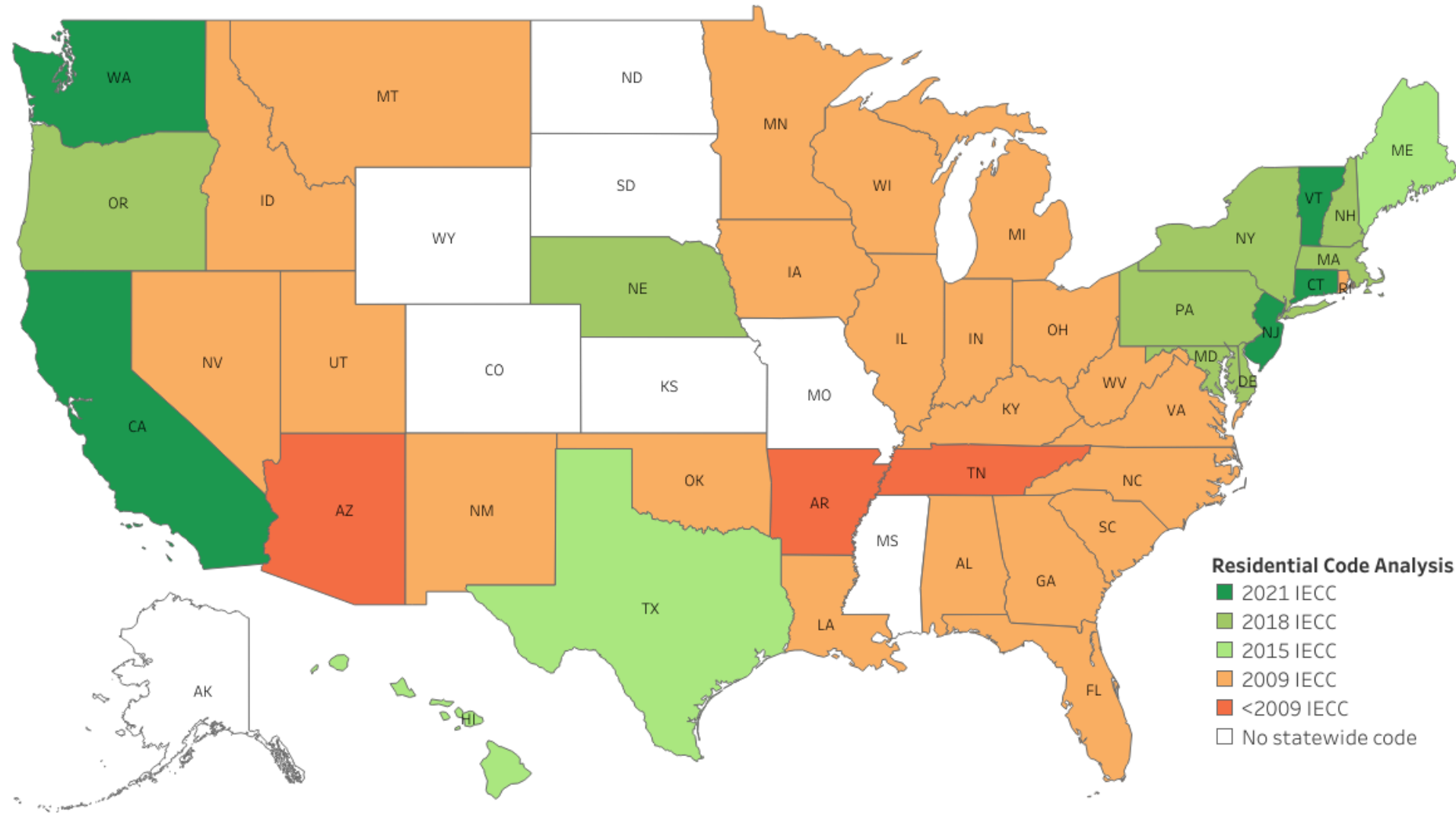


Code Enforcement

# Help Desk Requests by State and Type



# Residential: Current Energy Code Status - IECC

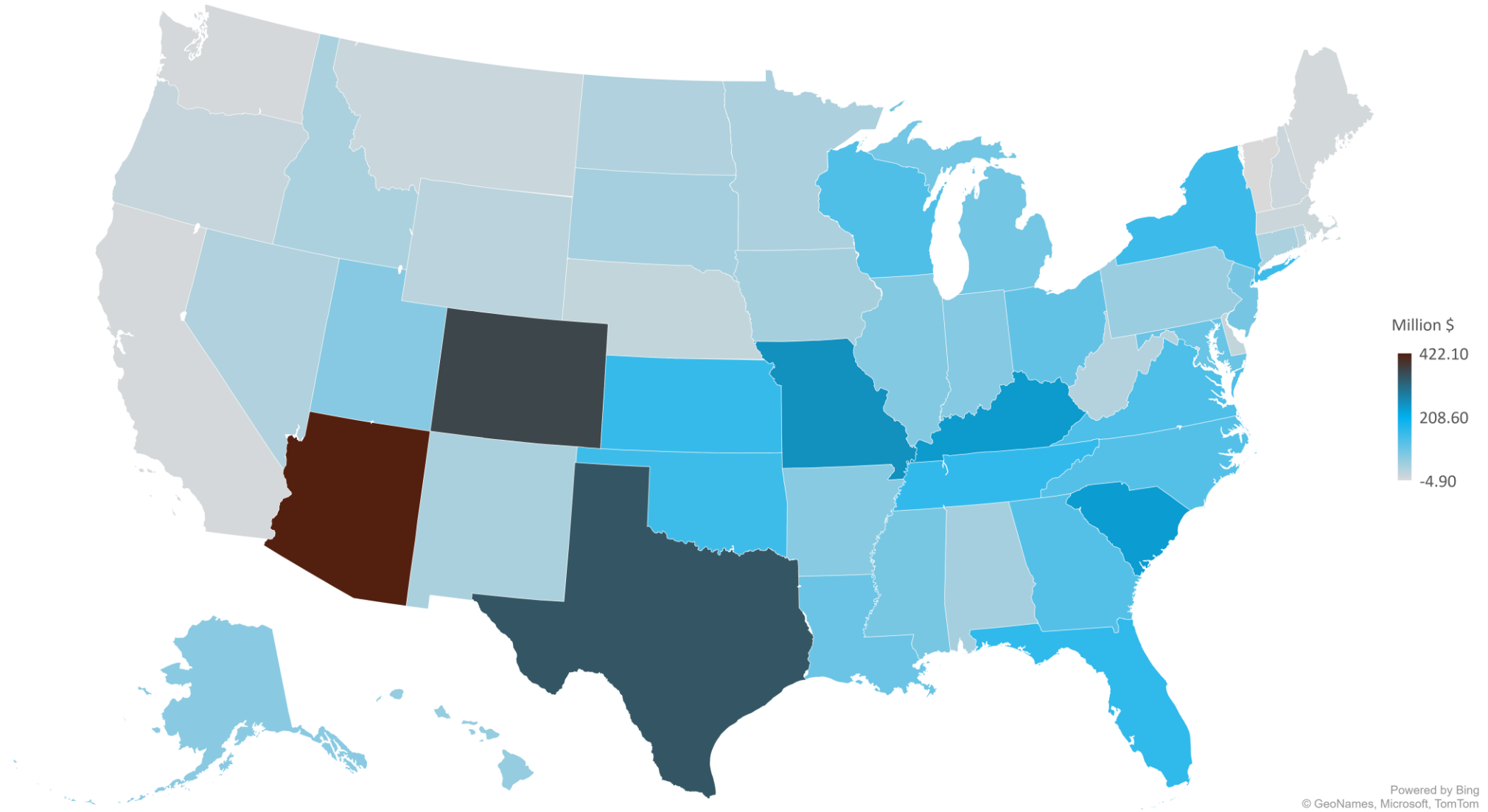


Updated as of 03/30/23

Many states amend their energy codes or remain on outdated codes and can benefit from federal support for successfully updating and implementing their codes.

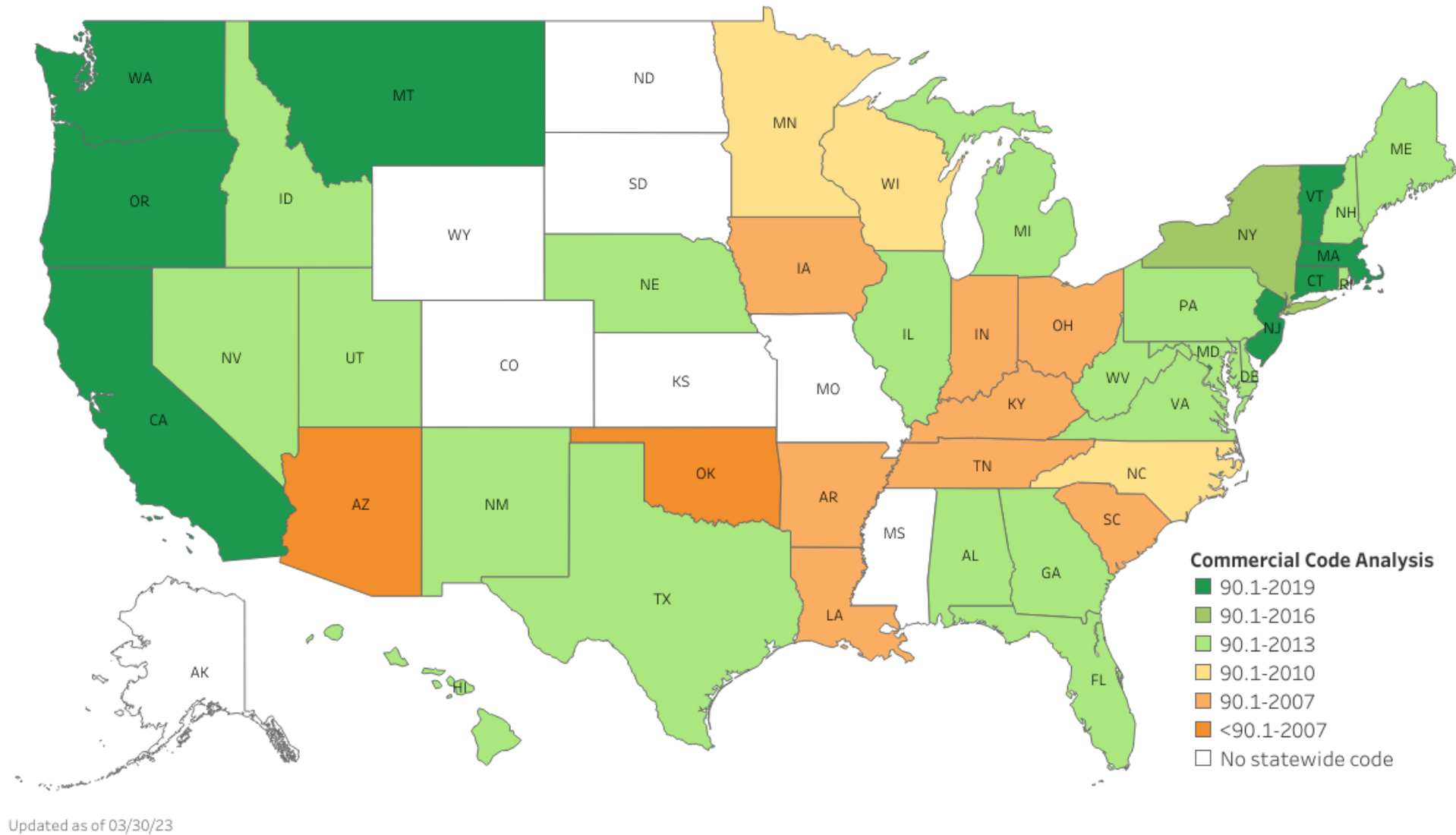
# Statewide Impacts: Latest Model Codes

**Energy Cost Impact of adoption 2021 IECC-R**  
*30 yr. Cumulative Savings*





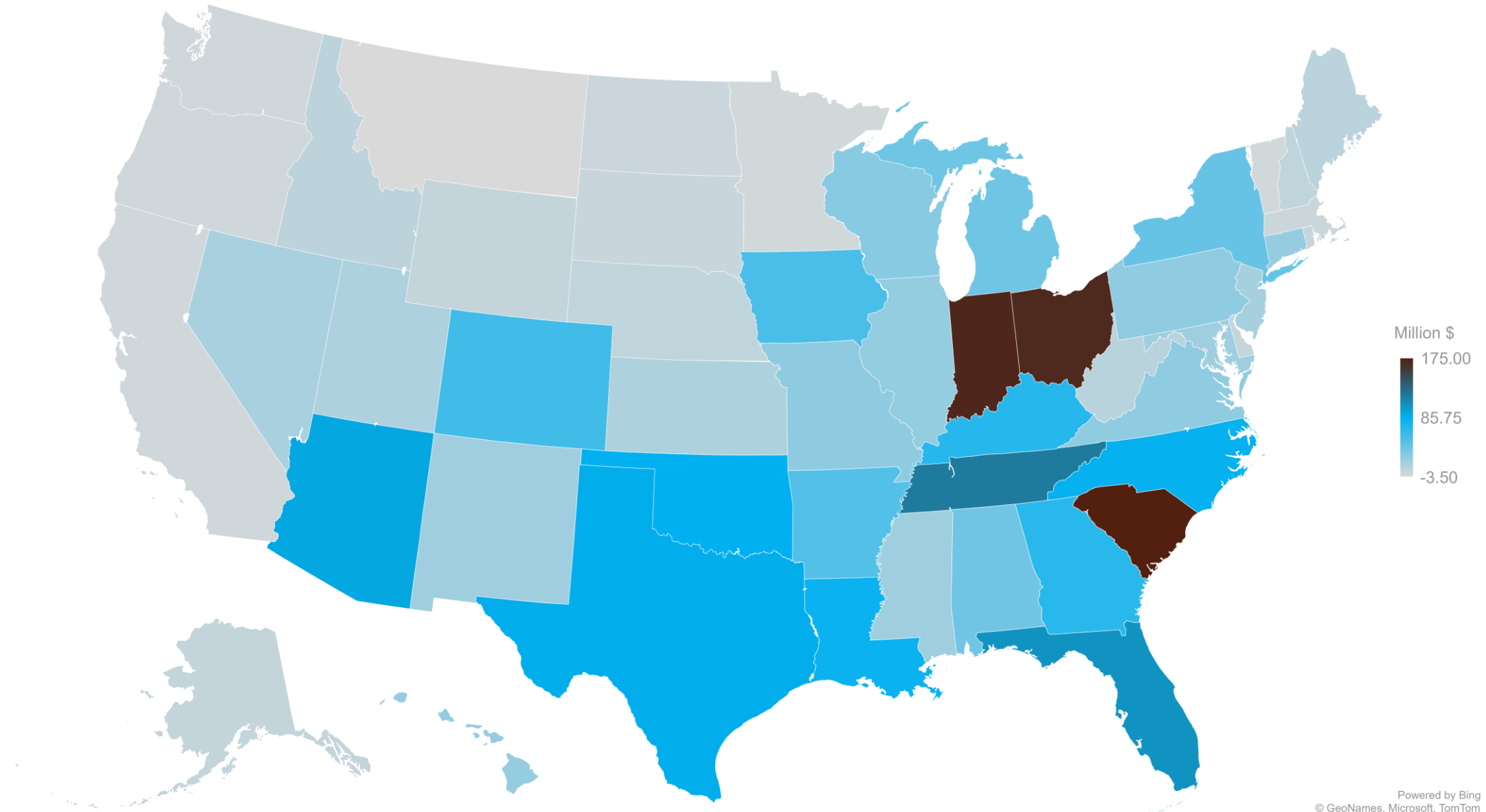
# Commercial: Current Energy Code Status – ASHRAE Standard 90.1



More states adopt the latest model codes—IECC or Standard 90.1--  
as published and unamended for commercial buildings.

# Statewide Impacts: Latest Model Codes

Energy Cost Impact of adoption ASHRAE 90.1-2019  
*30 yr. Cumulative Savings*



# Objectives of BECP TA

## Developing framework to enable DOE to more effectively target its TA activities

- Enable decarbonization faster and at scale
- **Bolstering visibility** around TA resources and services
  - Reach states and jurisdictions with older codes who have not historically taken advantage of TA
  - Increase visibility of TA as a resource to all states and jurisdictions
- **Aligning TA** with others working in these areas including NGOs, universities, for-profits, etc.
  - Empower further coordination among stakeholders
  - Help states and jurisdictions leverage BIL and IRA funding to maximize impact
- **Growing TA capacity and expertise** through coordinated proactive TA Network and Online Training Platform

# Direct Engagement to Customize TA

- **Consider benefits** to increased impact of resilience and community health
- **Review barriers** to adoption and implementation
- **Leverage** active and future work, incentives, and partners



# Core and Expanded TA Tools and Resources

## Core Technical Assistance

Responsive to Requests for Support

### Code Development and Adoption

- Standard analysis of savings and cost impact
- Comparative analysis of model code options
- Potential modification of model code language

### Compliance Tools and Resources

- REScheck and COMcheck
- Code Compliance Studies
- Courses for IECC and ASHRAE changes
- Overviews of specific code and policy topics

### Stretch Codes/Zero Codes/Advanced Policies

- Model code language
- Supporting technical information and impact analysis

## Expanded Technical Assistance

Proactive Engagement and Plan for Support

### Code Development and Adoption

- Specific adoption tools and code language
- Tailored economic and impact analysis
- Stakeholder engagement to address place-based concerns on design and compliance

### Compliance Tools and Resources

- Specific implementation tools and trainings
- Customized compliance study support to address equity, local building trends, and policy changes
- Customized trainings on local code and policy changes and construction practices

### Stretch Codes/Zero Codes/Advanced Policies

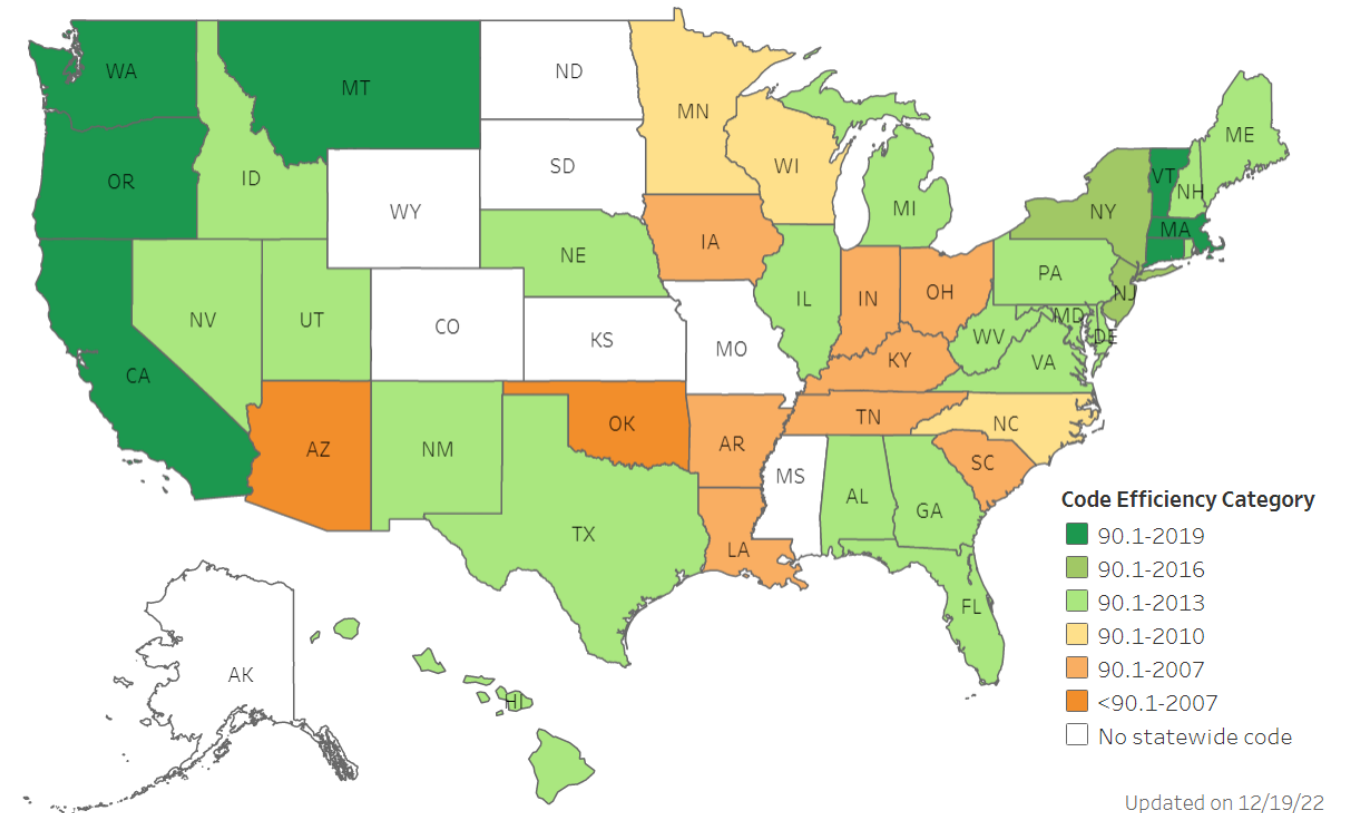
- Customized code development support
- Analysis to meet climate policy goals

# State and Local Code Tracking

## Core activities:

- Accepting state certifications and evaluating equivalency (relative to the model codes)
- Tailoring TA based on state needs (e.g. construction volume, code update, training gaps)
- Understanding regional and national trends

State Commercial Energy Code Efficiency  
(based on model code equivalency)

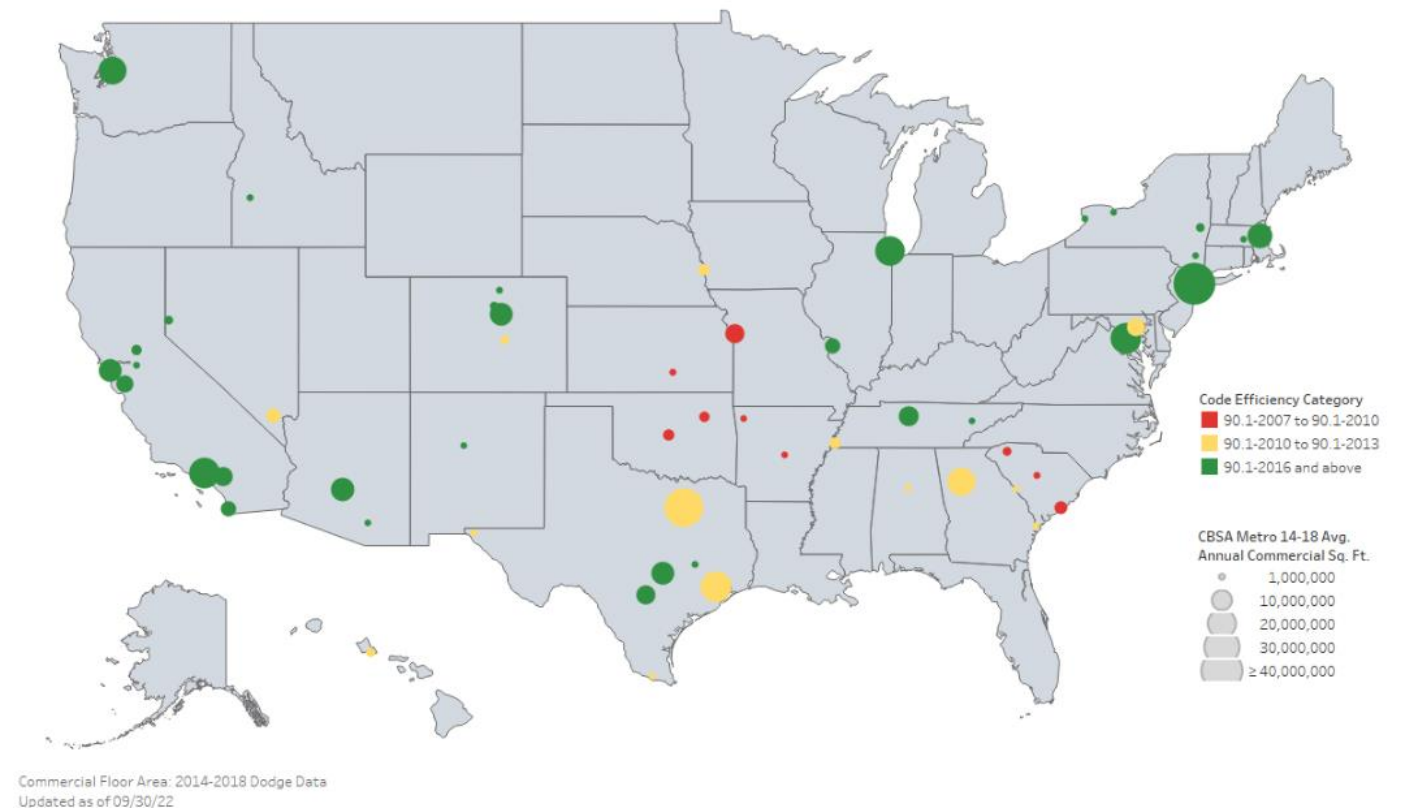


# State and Local Code Tracking

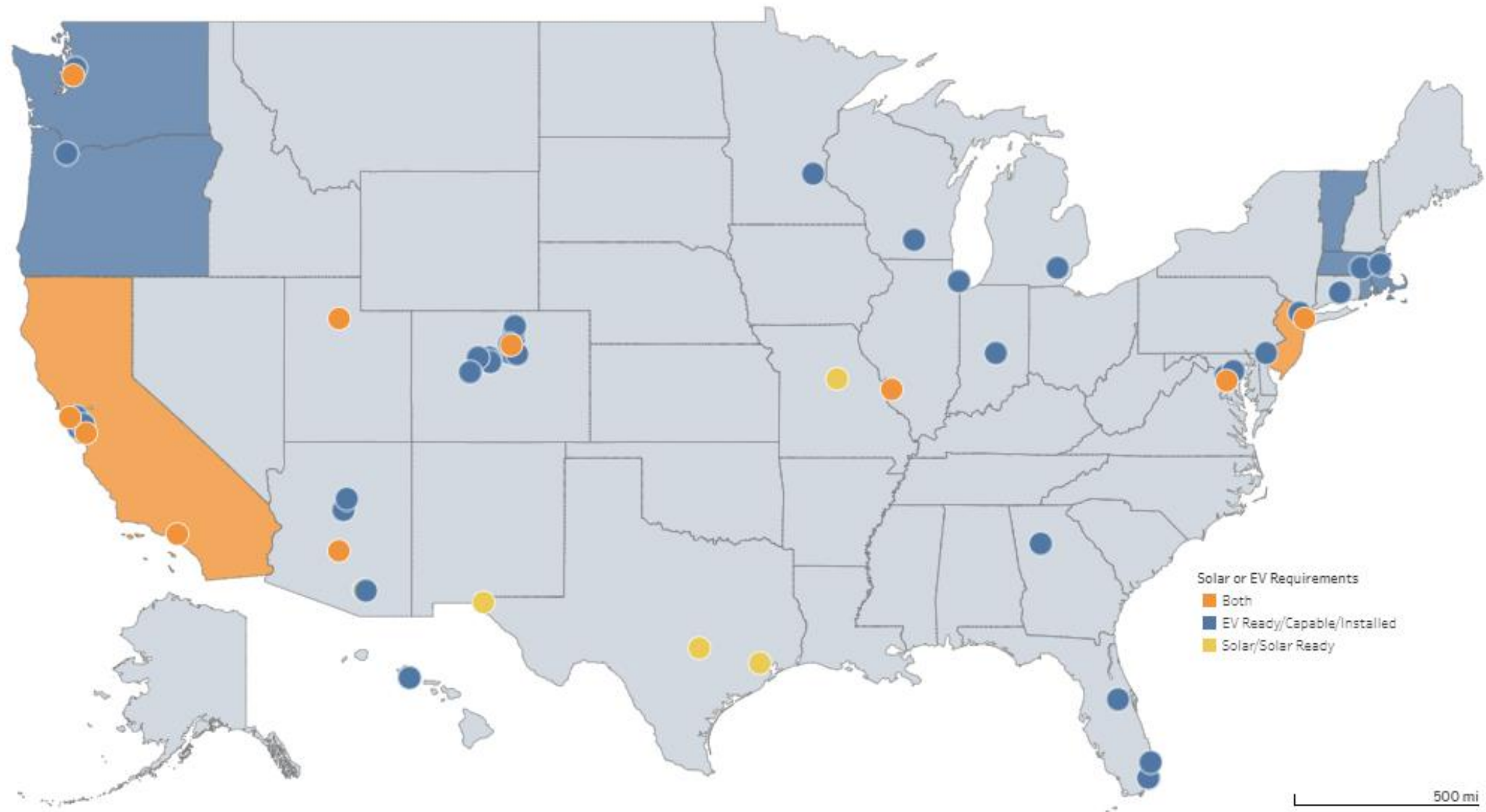
## Expanded activities:

- Expanding tracking/analysis to the local level
- Tailoring TA based on localized needs (e.g., codes updates vs. stretch codes vs. compliance)
- Providing information to state and local jurisdictions on what others are doing and where

## City Commercial Energy Code Efficiency (with authority to adopt)



# EV and Solar Building Requirements



1. Data sources include the Southwest Energy Efficiency Project and Great Plains Institute. Data to support this map is under continuous maintenance. If you know of additional states and cities that should be included, please email [becp@pnnl.gov](mailto:becp@pnnl.gov).

Updated as of 06/30/23



## Stretch Codes

DOE and PNNL are developing a series of technical briefs which can be incorporated as “**plug-ins**” to **building energy codes**. Many of these align with **existing EERE programs and initiatives**.



EV charging



Simplified HVAC  
system  
performance



Energy credits



Electric  
readiness



Grid-interactive  
efficient buildings

Plug-ins are available for adoption by state and local governments, as well as for incorporation into future model codes (editions of the IECC and Standard 90.1).

# New York City Performance Pilot

## Testing Approaches to Align Code with Legislation

**LL32:** In 2025, buildings  $\geq 25,000$  sqft must comply with performance-based code

**LL97:** Annual GHG limit for buildings  $\geq 25,000$  sqft

## Four Approaches:

1. HVAC Total System Performance Ratio (TPSR)
2. Appendix G with modified BPFs for cost, carbon, site energy
3. Simplified Performance Rating Method (S-PRM)
4. Building Performance Standards

Phase 1 – August-October 2021

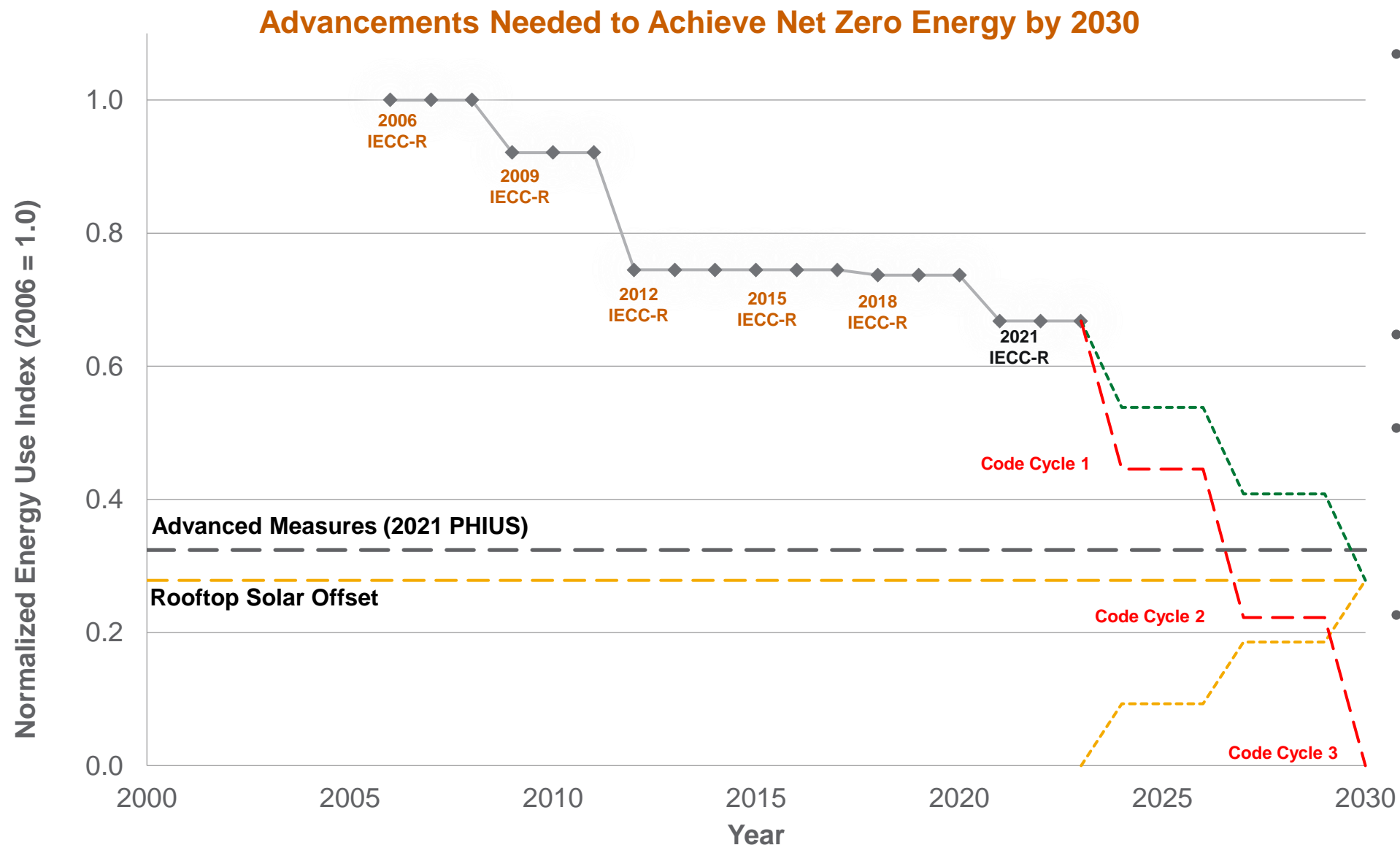
Phase 2 – July-September 2023



# Direct Support for Zero Energy and Emissions TA

- Perform zero energy and emissions target analysis at state and/or local levels
- Gap assessment of baseline and end goal target and development of stepped approach
  - Includes floor area weighting factors, eGrid region data, climate zones, 2030 market potential, and sample analysis for building stock
- Application of market ready advanced measures and assessment of rooftop and offsite solar offset potential to develop code for first step
  - EE backstop and Emissions metric assessment to zero
  - Residential prescriptive and performance paths
  - Commercial performance only (TSPR and Whole Bldg)
- Support for outreach and work with regional stakeholders and representatives

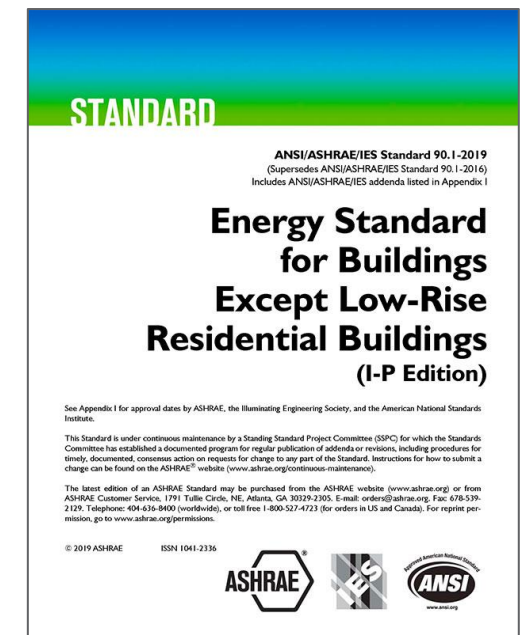
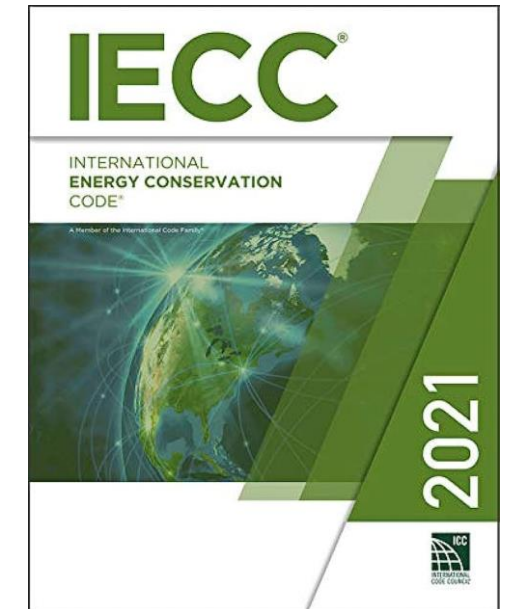
# Residential Model Code Example



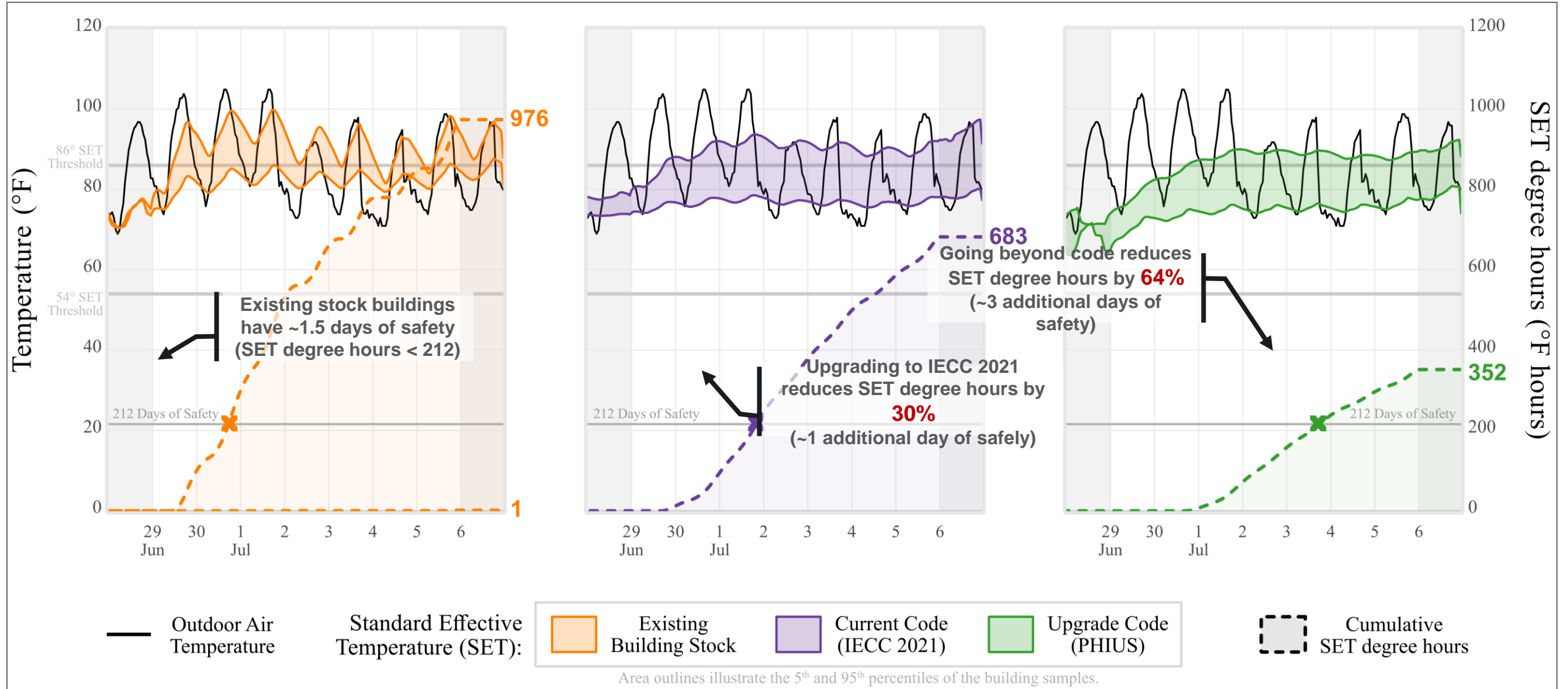
- ***ZE Efficiency Gap Study*** identifies level of improvement possible from:
  - Technologically feasible advanced measures
  - Rooftop solar offset
- Efficiency gap between current code and advanced measures
- Remaining gap
  - Improvements in unregulated loads
  - Off-site renewables
- ***ZE Targets Study*** demonstrates stepwise improvements to reach ZE by 2030 in one to three code cycles

# Energy Codes Health, Resilience, Environment, and Savings

- **The 2021 IECC and ASHRAE 90.1 – a path to resilient/healthy buildings**
- **2021 IECC and 90.1-2019**
- Represent ~30% improvement in energy efficiency for residential and commercial buildings compared to the 2009 IECC/90.1-2007
- **Latest Code Cycle**
- Residential - 9.4% more efficient, 8.7% less GHG than 2018 IECC
- Commercial – 4.7% more efficient, 4.2% less GHG than 90.1-2016
- **By 2030**
- Residential and commercial codes are estimated to save over \$6 billion in annual energy cost savings



# Energy Codes Improve Energy Resilience



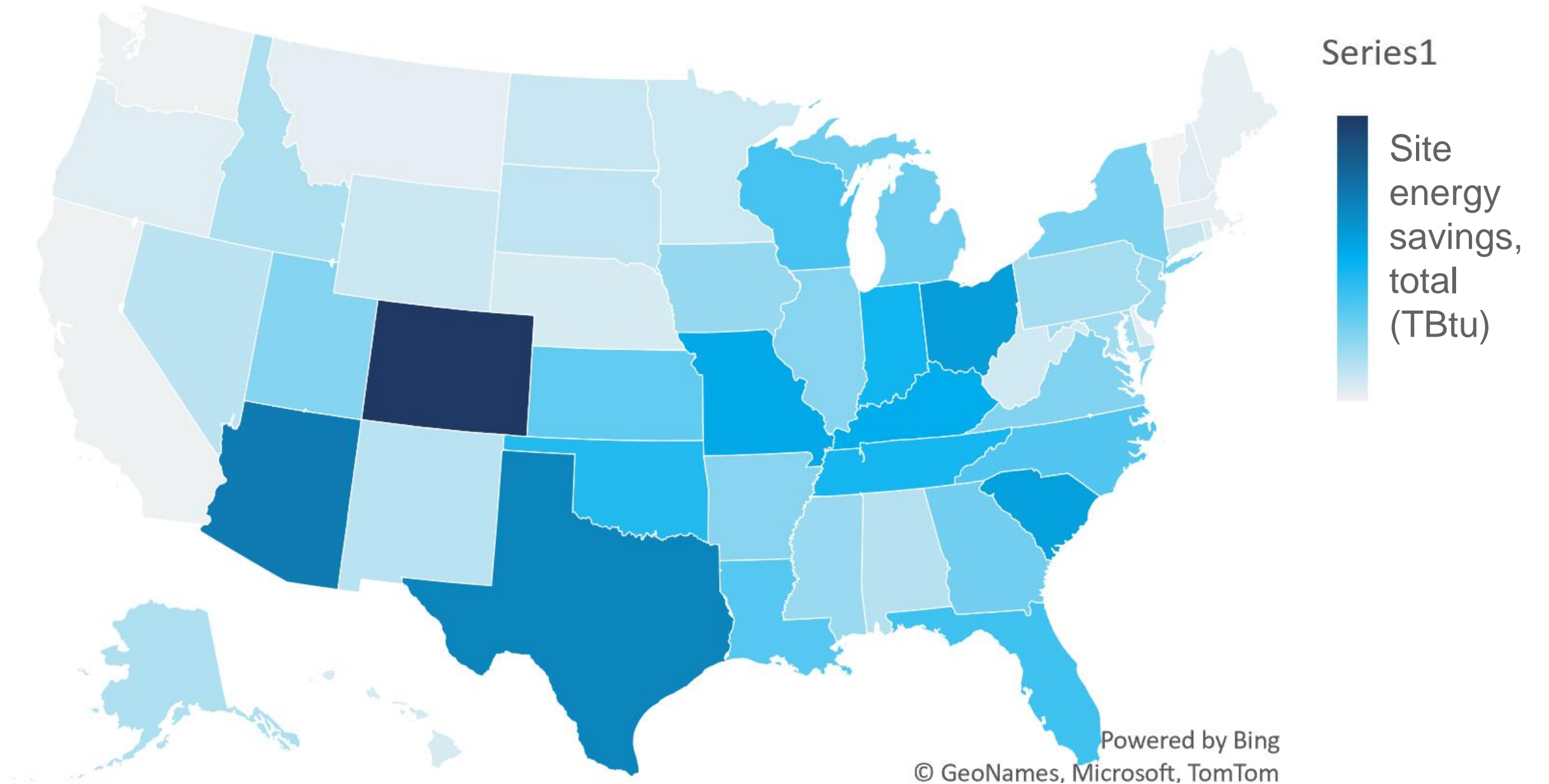
As building envelope improves, residents remain safe for longer periods of time.

# Codes to Support Resiliency

1. Energy Storage/Readiness
2. Demand Responsive Controls and Grid Integration
3. Cool Roofs
4. Energy and Heat Recovery Ventilation
5. Renewable/Readiness
6. Micro Grids
7. Thermal Storage
8. Zero Energy

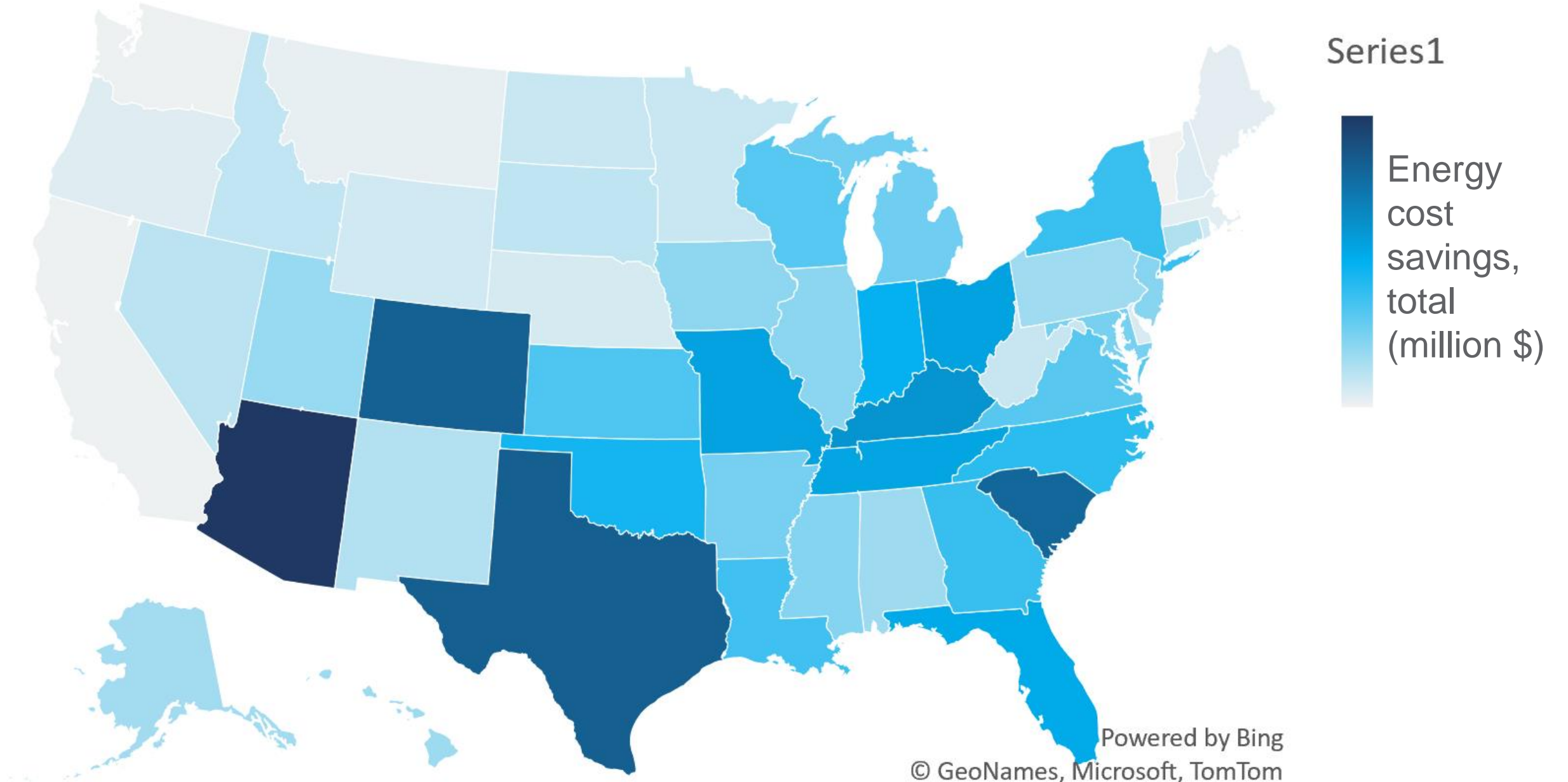


# Energy Impact of Model Code

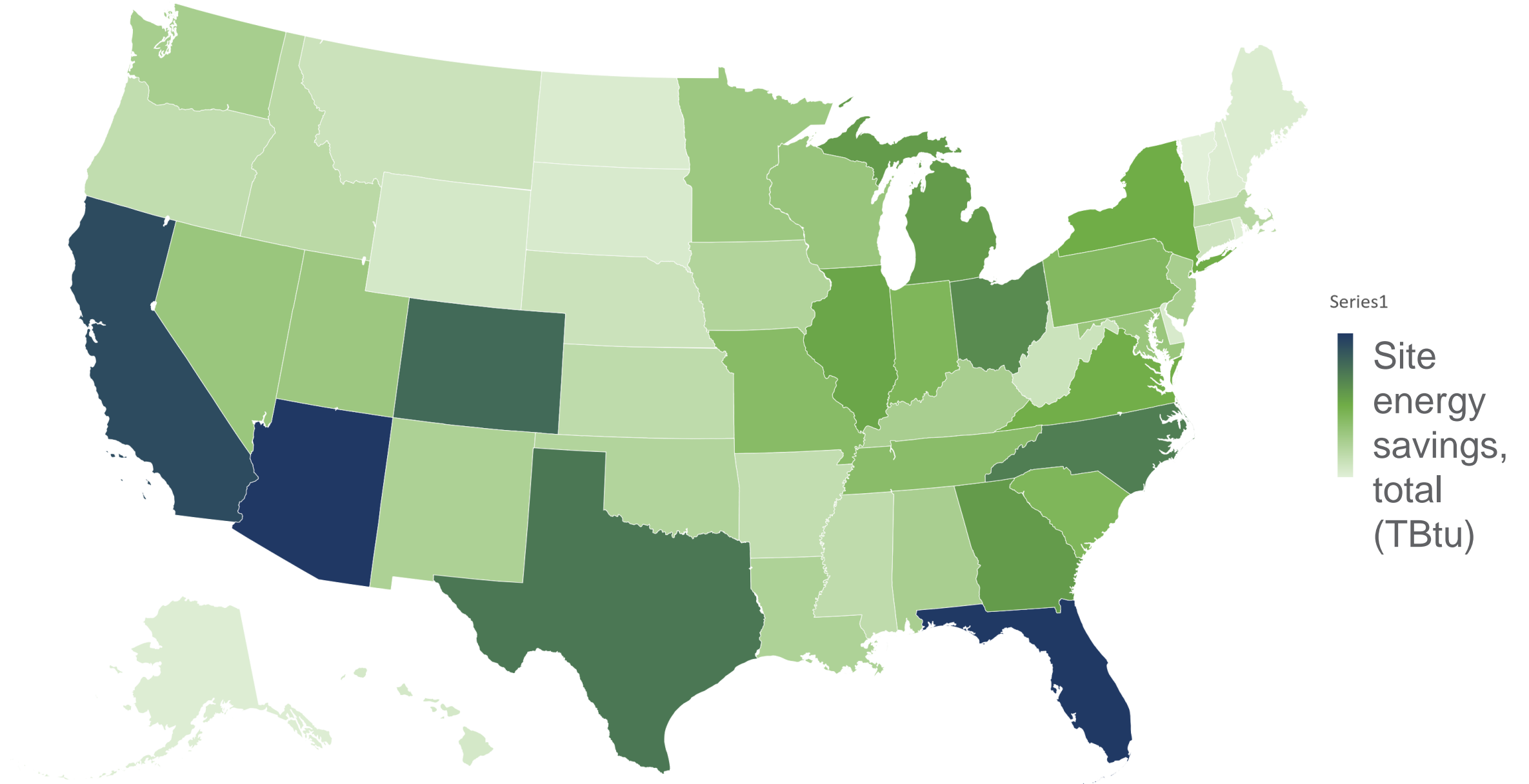




# Cost Impact of Model Code



# Energy Impact of Net Zero Code

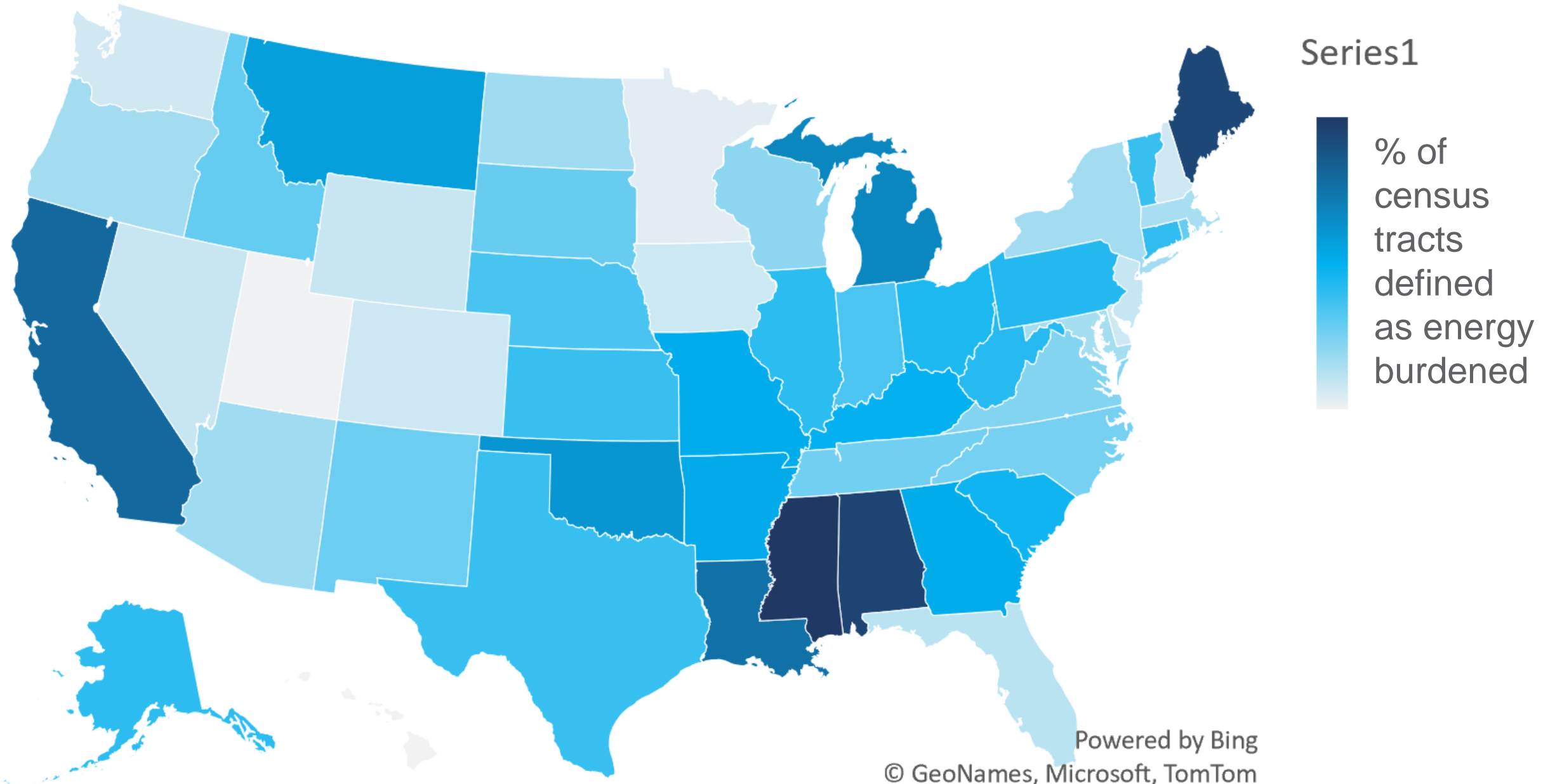


# J40 and Equity Data Overview

## Using Climate and Economic Justice Screening Tool (CEJST)

- Defines disadvantaged communities as “those that are marginalized, underserved, and overburdened by pollution” (per [EO 14008](#)).
- For the purpose of informing how Federal agencies guide the benefits of certain programs, such as the Justice40 Initiative.
- Data is compiled and shared at census tract level. Federally Recognized Tribes, including Alaska Native Villages, are also considered disadvantaged communities.
- Uses a methodology and datasets relying on publicly-available, nationally-consistent data on income, education, environmental burdens, health, and other economic and environmental factors.

# Energy Burden (CEJST)



# Customize TA to State-specific Needs

## Benefits

Decarbonization

Equity

Resilience

Economic

Health & safety

## Barriers

Workforce skills

Construction costs

State adoption &  
enforcement capacity

Policy barriers

## Leverage

Electrification readiness

Building Performance Stds

Hazard event recovery

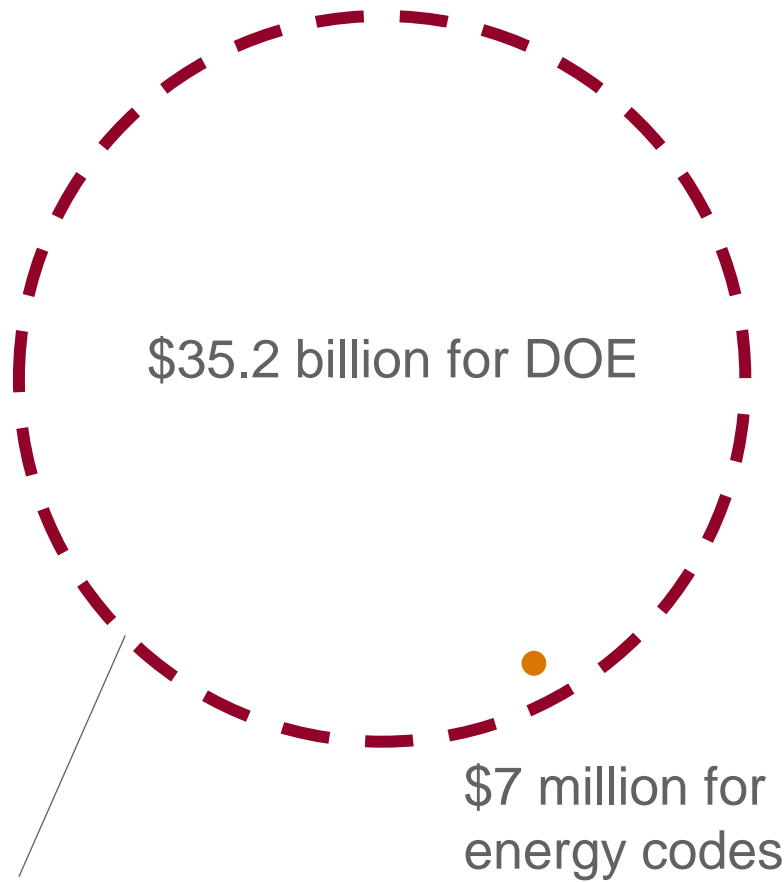
Incentives & other funding

Federal facilities in state

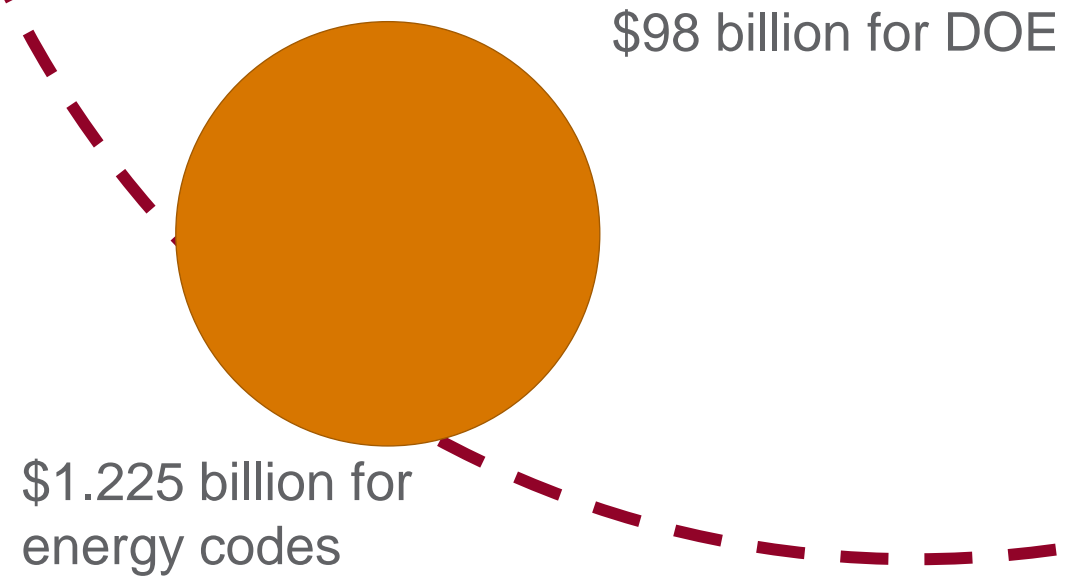
CCC and field study

# \$1.2 Billion in New Federal Funding

American Recovery and Reinvestment Act of 2009 (ARRA)



2021 Bipartisan Infrastructure Law (BIL)  
+  
Inflation Reduction Act of 2022 (IRA)



# Bipartisan Infrastructure Law (BIL) Overview

## Section 40511: Cost-effective Codes Implementation for Efficiency & Resilience

- Provides **\$225M in technical assistance** supporting updated building energy codes for energy efficiency and resilience
- Initial **Resilient and Efficient Codes Implementation (RECI)** funding awards announced July 12, 2023
  - \$90 million for activities supporting updated energy codes
  - 27 awards, ranging from \$1 million to \$10 million
  - Key activities include workforce development, community engagement, research and data collection, energy, equity and environmental justice, and increased support for compliance and enforcement.

# Inflation Reduction Act (IRA) Overview

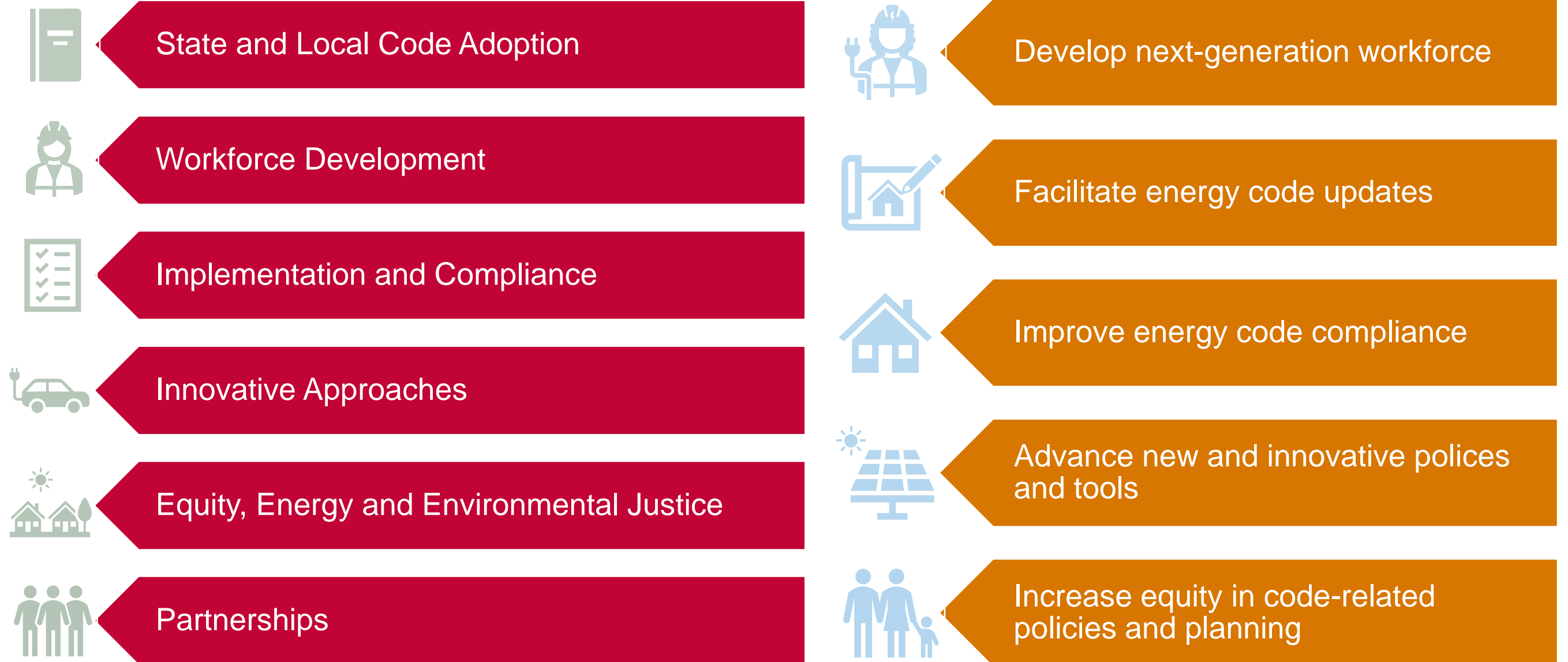
## Section 50131 Technical Assistance for Latest and Zero Building Energy Code Adoption

- Provides **\$330 million** to adopt the latest building energy codes, 2021 International Energy Conservation Code (IECC) for residential buildings and the ANSI/ASHRAE/IES Standard 90.1–2019 for commercial buildings or other codes and standards that achieve equivalent or greater energy savings; and
- Provides **\$670 million** to adopt a building energy code that meets or exceeds the zero energy provisions in the 2021 IECC code or other codes and standards with equivalent or greater energy savings.

>Request for Information & Notice of Intent – Released 3/31/2023



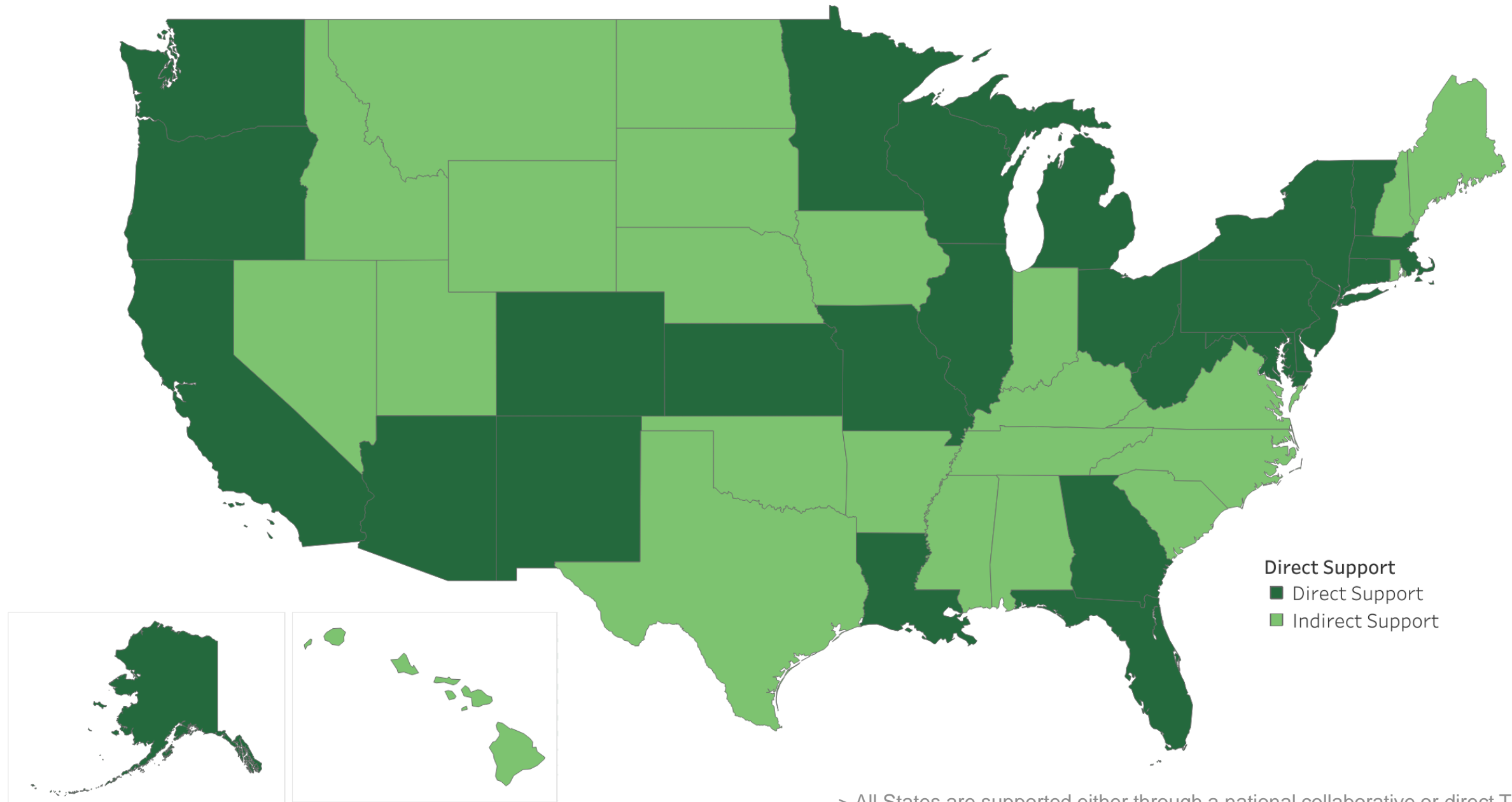
# Areas of Interest and Targeted Outcomes



# RECI Selections by Category

Code Adoption	Workforce	Implementation	Stretch Codes	BPS	EEJ	Partnerships
<ul style="list-style-type: none"> <li>• Slipstream, WI</li> <li>• Colorado Energy Office, CO</li> </ul>	<ul style="list-style-type: none"> <li>• Alaska Housing Finance Corp, AK</li> <li>• Pennsylvania Dept of Environmental Protection, PA</li> <li>• ASHRAE, Multiple</li> <li>• SEEA, LA</li> </ul>	<ul style="list-style-type: none"> <li>• NEEP, PA + DE</li> <li>• SEEA, GA</li> <li>• ICC, NY</li> <li>• Karpman, MN + FL</li> <li>• California Energy Commission, CA</li> <li>• Energy Futures Group, VT</li> </ul>	<ul style="list-style-type: none"> <li>• NBI, DC</li> <li>• MA DOER, MA</li> <li>• Ft Collins, CO</li> <li>• Center for Energy and Environment, MN</li> </ul>	<ul style="list-style-type: none"> <li>• Earth Advantage, OR</li> <li>• University of Cincinnati, OH</li> <li>• IMT, Multiple</li> <li>• Clearly Energy, Multiple</li> <li>• Elevate Energy, IL</li> <li>• Colorado Energy Office, CO</li> </ul>	<ul style="list-style-type: none"> <li>• SEEA, GA</li> <li>• Clean Energy Group, CT</li> </ul>	<ul style="list-style-type: none"> <li>• Metropolitan Energy Center, KS + MO</li> <li>• ACEEE, Multiple</li> <li>• NBI, AZ + NM</li> </ul>

# RECI Selections Geography



> All States are supported either through a national collaborative or direct TA programs

# State and Local Code Adoption

## Building a Strong Foundation for Wisconsin Code Adoption, Compliance, and Local Support SLIPSTREAM GROUP, INC.

2813-1520

### Project Summary

The project team will build on the momentum around adopting the most robust building codes through increased levels of statewide and local government engagement, technical assistance to key stakeholders, and the formation of a code compliance collaborative. We will leverage the experience of all partner organizations to create a consistent long-term structure that will advance energy codes and innovative building policies. We will address challenges through authentic engagement, technical guidance and trainings for the code adoption process, a code baseline study to understand compliance levels, and holistic and comprehensive engagement with municipalities to support statewide code adoption and local efforts. The three aspects of this project—code adoption engagement and support, code compliance improvements, and municipality support—will give Wisconsin the firm foundation needed to advance and meet its energy and policy goals.

### Key Personnel/Organizations

- Jeannette LeZaks – Slipstream Group, Inc.
- Branden Piper – Wisconsin Department of Safety and Professional Services (DSPS)
- Amy Barrilleaux – Clean Wisconsin
- Dan Ebert – Wisconsin Local Government Climate Coalition (WLGCC)
- Corie Anderson - Midwest Energy Efficiency Alliance (MEEA)
- Ben Rabe – New Buildings Institute (NBI)

### Key Milestones & Deliverables

BP1:	Engage stakeholder for code adoptions process; provide resources and technical assistance to the Wisconsin Advisory Council on Building Sustainability (WACBS) for the residential code update; develop research plan for code compliance study; create an advanced building policy roadmap for municipalities
BP2:	Provide resources and technical assistance to WACBS for the commercial code update; conduct compliance baseline study, implement a municipal support program
BP3:	Convene the Code Compliance Collaborative; provide continued technical support for municipalities

	Budget Period 1 (18 months)	Budget Period 2	Budget Period 3
T1	Engage stakeholders for code adoption		
T2		Tech assistance: residential code updates	
T3		Develop code compliance study research plan	
T4			
T5		Tech assistance: comm code updates	
T6	Conduct compliance study		
T7	Develop municipal support program		
T8		Convene Code Compliance Collaborative	
T9		Provided ongoing municipal support	
T10	Project management		

**We will building a strong foundation in Wisconsin through the creation of a consistent long-term structure that will advance energy codes and innovative building policies statewide.**

### Project Impact

This project will improve the code adoption process and the successful adoption of the most recent model codes. Our approach commits resources to make the code adoption process more transparent and the implications of code updates more understandable for stakeholders. We estimate first-year energy savings of 0.107 TBtu and \$2.04 million in energy cost savings from the full adoption and improved compliance of the 2021 IECC for residential and commercial buildings. This adds a first-year estimated reduction of 0.011 MMT of CO<sub>2</sub>.

# Workforce Development

Control # 2813-1582

## Maximizing Workforce for Energy Efficient Buildings and Building Construction in PA

**Applicant: Pennsylvania Department of Environmental Protection - Energy Programs Office**  
Principal Investigator: Heather Cowley, Energy Program Specialist

**Key Partners:**  
PA Department of Education  
Centre Region Codes Administration  
Clean Energy Center – Pennsylvania College of Technology  
Green Building United  
Keystone Energy Efficiency Alliance  
PA Housing Research Center  
PENNBOC  
Philadelphia Energy Authority

**Overall Goal: Ensuring resilient and efficient buildings for Commonwealth generations to come.**

Summary of Main Tasks and Outcomes:

- Inventorying and mapping of curriculum and programs for building technical training programs at career and technical high schools and centers.
- Ensuring career and technical high schools and centers are instructing students in building science and codes, by providing improved lessons and curriculum, instructor professional development and tools for ensuring energy code compliance.
- Inventorying and mapping of building technical training programs at community & technical colleges
- Evaluating the business case to stand up a Building Code Officials' associate degree in PA

### Impacts from RECI Calculator:

	Commercial		Residential		Total	
	First year	5-yr cumulative	First year	5-yr cumulative	First year	5-yr cumulative
Site Energy Savings (TBtu)	0.016	0.209	0.010	0.139	0.026	0.348
Energy Cost Savings (million \$)	0.216	2.547	0.186	2.430	0.402	4.976
CO <sub>2</sub> Reduction (MMT)	0.001	0.016	0.001	0.012	0.002	0.028

MAP of PA CTE & CTCs



**Other Impacts:** 4000+ career and technical high school and center students educated annually on building science & energy codes  
112 career and technical high schools and centers supplied with energy code compliance tools  
250+ instructors trained on energy code compliance tools  
6+ programs of study with updated curriculum requirements  
59 of 67 counties with impacted schools and colleges

# Implementation and Compliance

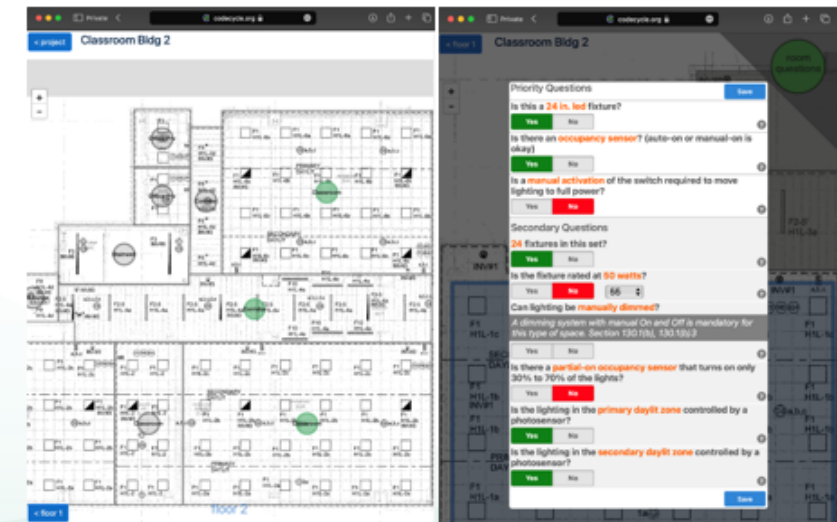


Project Title: **Digital Infrastructure to Support Energy Code Compliance and Implementation**  
 Prime recipient and Principal Investigator: **California Energy Commission**  
 Key Personnel: **Cheng Moua, P.E., [cheng.moua@energy.ca.gov](mailto:cheng.moua@energy.ca.gov)**

- Project seeks to improve energy code compliance and enforcement by digitizing and automating the energy code permitting process from plan checking through inspections by:
  1. Expanding existing CodeCycle software which currently covers nonresidential lighting to cover all of the nonresidential requirements including mechanical, building envelope, and process loads
  2. Incorporate acceptance testing into the CodeCycle software, which CA uses to ensure that installed equipment is operated as designed and in compliance with code
  3. Integrating CodeCycle Software with the CEC's Commission Compliance Document Repository that will facilitate the ability for compliance documentation and data to be collected by the CEC to allow oversight
  4. Testing and refining CodeCycle software by piloting the software to AHJs (cities and counties) throughout CA
- Project impacts and benefits include:
  1. Increased energy code compliance to ensure the intended savings and impacts of the energy code are realized including energy savings, cost savings, greenhouse gas emissions, and benefits to the building industry workforce
  2. Providing CA's over 500 AHJs with an enforcement tool at no cost that simplify, streamline, and automate the code compliance process – greatest benefits to AHJs that have resource constraints
  3. Developing software that can be readily expanded to other states that have adopted ASHRAE 90.1, IECC, or analogous standards
  4. Estimate 10% savings from compliance enforcement transparency and automation
- DOE Impact Calculator estimates energy savings of 3.7 Tbtu and \$117 million in energy cost savings over the 5-year period
  - Will be significantly more considering the life of the impacted buildings



CodeCycle Design Tool used by designers and engineers to pre-validate design decisions and forward submittals to AHJs



CodeCycle Inspection Interface used by AHJs to perform plan check and inspections

# Innovative Approaches - Codes

**Project Title:**

Control 2813-1510

**Prime Recipient:**



**Principal Investigator:**

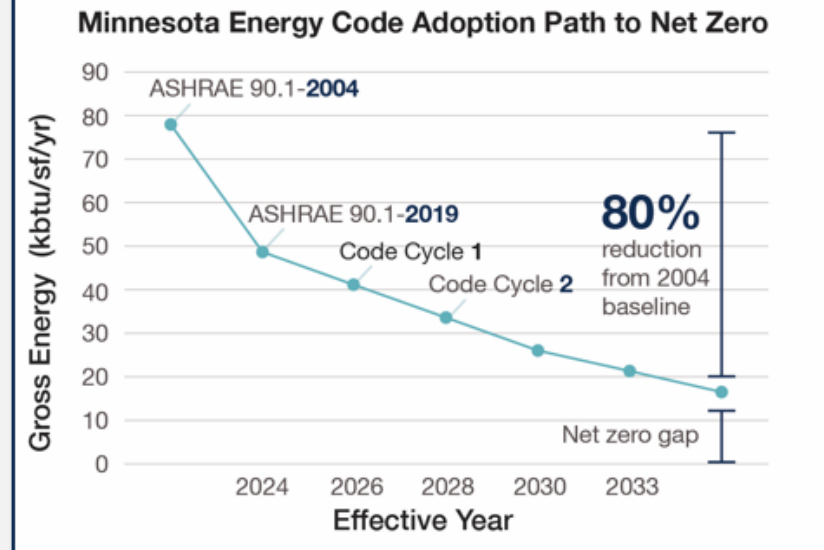


**Carl Nelson, CEE**  
Senior Director of Market Transformation

Minnesota Advanced Energy Codes Partnership,  
**A Path to Net Zero**

**Project Goals**

- 1) Establish and implement a path to net zero codes by 2036
- 2) Improve commercial code compliance outcomes
- 3) Develop the workforce for next generation buildings
- 4) Develop existing buildings strategies, including building performance standards
- 5) Provide benefits for Minnesotans, especially in disadvantaged communities



**Key Personnel:**

- Greg Metz**, MN Dept. of Labor and Industry, Plan Review Unit Manager
- Barbara Conti**, MN Dept. of Commerce, Energy Efficiency Planning Director
- Russ Landry**, PE, CEE, Senior Research Engineer
- Alex Chase**, 2050 Partners, Principal
- Sally Blair**, NORESO, Director of Sustainability Services
- Richard Graves**, U of MN, Center for Sustainable Building Research, Director

**Technical Summary**

The MN Advanced Energy Codes Partnership will perform research, administer trainings, pilot compliance improvement strategies and engage with key stakeholders and community representatives to achieve our project goals. The partnership will leverage the experience of our team to evaluate the needs of the state and perform activities to improve compliance and accelerate adoption to help the state achieve its target of net zero commercial energy codes by 2036.

**Innovative Approach & Key Activities**

- 3<sup>rd</sup> party community code support program with focus on disadvantaged communities to improve compliance and pilot new tools
- User-centered design research to inform training and outreach.
- Technical support for commercial code development to ensure 32% improvement over baseline in Code Cycle 2 adoption.
- Technical support for Tribal Nations tailored to specific needs and goals.

**Estimated 5-year Impact:**

 <b>\$230 Million</b> Energy Cost Savings	 <b>1.23 Million</b> Metric Tons CO2 Reduction	 <b>12.24 TBtu</b> Site Energy Savings
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**Project Benefits**

- Improved compliance in new construction and major remodel
- Better performing buildings, particularly multi-family, resulting in improved comfort, lower energy bills and reduced emissions
- More training opportunities for code officials, design teams and other stakeholders

# Innovative Approaches - BPS

Control Number 2813-1537

## Supporting Equitable Building Performance

**Technical Point of Contact:** Amy Boyce, Director of Technical Strategy & Federal Engagement

**Project Summary:** The project team will connect staff from each jurisdiction with community-based organizations to co-create building performance policies and supporting programs that focus on decarbonizing the built environment through a community-led process.

**Proposed Project Goals:** Project objectives are as follows:  
1. Establish goals and analyze community needs; 2. Establish scopes of work and project timelines for each jurisdiction; 3. Conduct data collection and analysis activities; 4. Create policy and program language; and 5. Evaluate co-creation process, document learnings, and create reference materials

**Key Idea and Takeaways:** IMT will drive the creation and implementation of equitable Building Performance Standards (BPS) or similar policies in each of these cohorts:

- Build: Establish learning cohorts, completing readiness assessments, and co-creating climate equity priorities.
- Connect: Provide direct technical assistance on policy/program design and implementation.
- Accelerate: Focus on equitable outcomes and understanding the broader impacts of policy and program actions.

**Project Impact:** Through our work, cities and states will advance community-driven climate policy, resulting in greater community ownership of efficient and healthy building strategies; increase local economic opportunity, especially among frontline communities; and reduce emissions and strengthen community resilience by improving more buildings, faster. This work will seek to drive greater uptake of building performance policies, particularly at the state level. Impact values below are based on Building Performance Standards or similar policies being enacted in all participating jurisdictions.

Total 5 Year Cumulative Site Energy Savings (Tbtu): 311.7  
Total 5 Year Cumulative Energy Cost Savings (million \$): 8531.4  
Total 5 Year Cumulative CO2 Reduction (MMT): 34.7

**Project Overview:**

**Prime recipient:** Institute for Market Transformation  
**Principal investigator:** Amy Boyce, IMT

**Key Personnel:**

Amy Boyce, IMT  
Jenna Tatum, Building Electrification Institute  
Henry Love, Elevate  
Steve Gelb, Emerald Cities Collaborative  
William Cox, Greenlink Analytics  
Alison Lindburg, Midwest Energy Efficiency Alliance  
Ed Carley, National Association of State Energy Officials  
Sean Denniston, New Buildings Institute  
Cornelia Wu, Northwest Energy Efficiency Partnerships  
Jeremy Hays, Upright Consulting Services

**Key Personnel:**

Corrine Van-Hook Turner, People's Climate Innovation Center  
  
Bill Pennington, California  
Mark Stewart, Maryland  
Emily Salzberg, Washington  
  
Clare L. McLaughlin, Aspen, CO  
Lauren Mattrey, Boulder, CO  
Gavin Bowman, Chicago, IL  
Katherine Bailey, Fort Collins, CO  
Andrew P. Savastino, Kansas City, MO

**Key Personnel:**

Luke Hollenkamp, Minneapolis, MN  
Emily Curley, Montgomery County, MD  
Gregory Nichols, New Orleans, LA  
Ashley Van Stone, Orlando, FL  
Mason Vinh, Portland, OR  
Barry Hooper, San Francisco, CA  
Katarina Michalova, St. Louis, MO  
Katie Bergfeld, Washington, DC



# Equity, Energy, and Environmental Justice (EEEJ)

Summary Slide  
DE-FOA-0002813  
Control Number 2813 - 1570



## Project Overview

**Project Title:** Closing Equity Gaps to Advance Codes and Standards

**Technical Assistance Summary:** Measure and evaluate the impact of disinvestment on the equitable implementation of building performance standards in commercial buildings, and identify program strategies that bring existing buildings to equitable readiness and invest into disadvantaged communities

**Proposed Project Goals:** Create data analysis models and diagnostic tools to measure impact of building energy efficiency policies and create policies and programs that empower disadvantaged communities to benefit from energy efficiency

## Project Team

**Prime Recipient:** Southeast Energy Efficiency Alliance

**PI:** William D. Bryan, Ph.D.

### Senior/Key Personnel:

- Sydney Roberts, Ph.D.
- Margaret Kelley Riggins
- Ardelia Clarke, Ph.D.
- Wendy Hawthorne, P.E.
- Peter DeWitt, Ph.D.
- Chandra Farley
- John R. Seydel
- Michelle Midanier
- Alicia Brown
- Kristofor Anderson
- Kelly Cutts

### Subrecipients/Partners:

- National Renewable Energy Laboratory
- City of Atlanta, Georgia
- City of Savannah, Georgia
- Georgia Environmental Finance Authority

## Proposed Project Objectives

- Develop strategies that equitably implement building performance standards processes that improve energy efficiency and partner goals
- Identify pathways to guide federal funding and new investment into disinvested communities
- Creating a national replicable model for municipalities evaluating impact of disinvestment on the equitable implementation of building performance standards (BPS)

## Key Deliverables and Benefits

- Data analysis model analyzing the impact of disinvestment on the equitable implementation of BPS and identify opportunities for replicability
- Geospatial analysis of commercial and multi-family properties including sociodemographic trends, environmental justice indicators, and impacts
- Menu of strategies highlighting cost-effective upgrades bringing existing buildings to an equitable readiness level for BPS and code implementation

## Proposed Impacts

- With a ten percent overall efficiency gain from BPS applied to thirty percent of commercial square footage in Georgia over five years, estimated savings are:
  - 73 trillion British Thermal Units
  - \$1.6 billion in energy cost savings
  - 8.3 million metric tons of carbon dioxide reduced

# Partnerships



## NATIONAL ENERGY CODES COLLABORATIVE

*A National Energy Codes Sustained Implementation Network*

The American Council for an Energy-Efficient Economy (ACEEE)

Principal Investigator: Michael Waite, Ph.D., P.E.

*Partners and Key Personnel:* ACEEE {Michael Waite, Amber Wood, Jennifer Amann, Nora Wong Esram} Energy Solutions {Maureen Guttman} | NASEO {Ed Carley} | USDN {Brienne Fisher} | ASHRAE {Stephanie Reiniche, Emily Toto} | Colorado Energy Office {Adam Berry} | Louisiana State Energy Office {Edward O'Brien} Michigan Department of Environment, Great Lakes, and Energy – State Energy Program {Jake Wilkinson} New Jersey Board of Public Utilities, Division of Clean Energy {Stacy Ho Richardson, Rupa Deshmukh}



**CAPACITY BUILDING** | The Energy Code Implementation (ECI) Fellows Program embeds experienced practitioners in state agencies. The Core Collaborative Team works with Fellows and state agencies to develop state-specific ECI Roadmaps while providing technical assistance in code adoption, workforce development, implementation and compliance, and equity, energy and environmental justice. The ECI Fellow leads Roadmap implementation with Core Team support until the in-state program is self-sustaining.

**COLLABORATION** | Communication platforms, working groups and networks establish a trustworthy, reliable and sustainable forum that will be *the* place for states and localities to convene, share information and best practices, work together to advance effective energy codes, and meet our communities' needs.

**CONVENING** | National convenings, public-facing website, resource hub and engagement of existing state and regional collaboratives broadens impacts, grows membership from 4 diverse Charter Member states to at least 12 states, and increases participation to states and localities representing more than half the U.S.

**COMMUNITY** | Engages local community and labor groups to inform Community Benefits Roadmaps. Provides technical assistance and resources on intersections of energy efficiency, affordable housing, health, economic inclusion, local workforce investment, and other community-focused issues.

### ESTIMATED IMPACTS

(5-year cumulative)

- Proposed Goals Scenario --
- 160 TBtu Site Energy Savings
- \$2678 Million Energy Cost Savings
- 14.38 MMT CO<sub>2</sub> Reduction
- Ambitious Scenario --
- 197 TBtu Site Energy Savings
- \$3304 Million Energy Cost Savings
- 17.75 MMT CO<sub>2</sub> Reduction

**PROJECT GOALS** | At least 12 State Energy Code Implementation Roadmaps with Community Benefits Roadmaps being led locally by project-trained ECI Fellows | At least 8 states adopting stretch codes at least 10% better than the most recent model energy codes or committed to a path to adopt statewide codes at the same level by 2030 At least 16 Collaborative member states | At least 26 states participating in the Collaborative's convenings

# TA Network Primary Contacts

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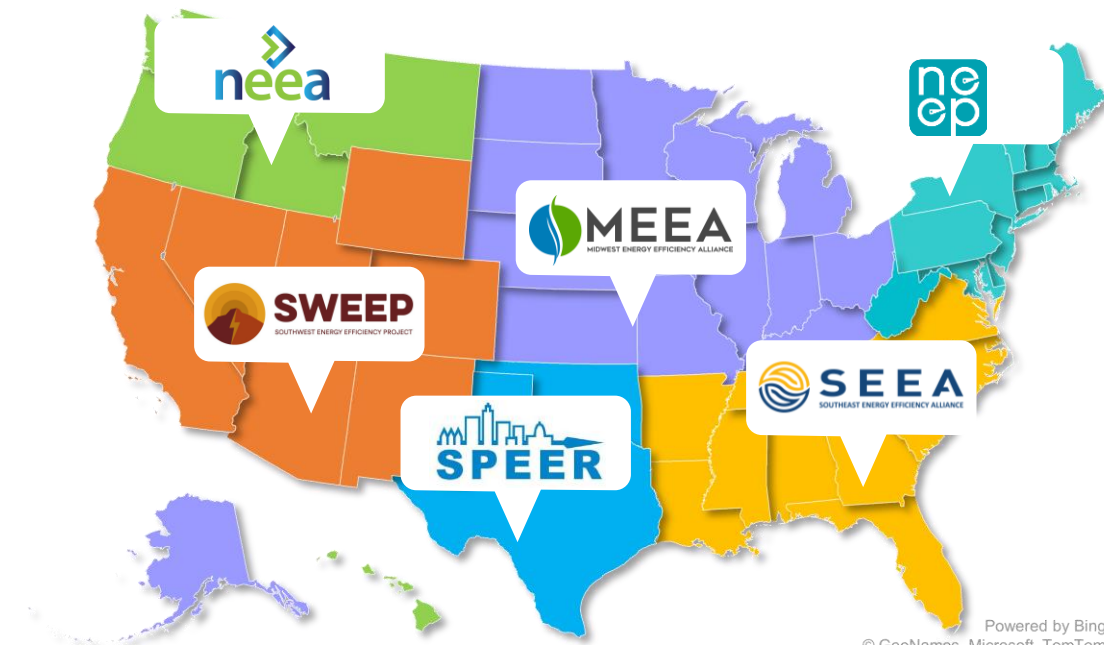
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Building Energy Codes Program

<https://www.energycodes.gov/>

BECP Help Desk

<https://www.energycodes.gov/technical-assistance/help-desk>



## Discussion

- What emerging opportunities do you see that DOE/PNNL should be focused on for supporting? (Direct support, funding, etc)
- What do you need to advance codes/policies within your state? Is this something DOE could support?
- What are barriers to getting TA? For any who have worked with PNNL before:
  - What's working well?
  - What's not working?
- What non-energy issues are important in your state? (i.e. insurance rates for home and business owners, resilience, equity)
- Do you find messaging non-energy issues around codes to be persuasive?
  - Why or why not?

**Thank you**