U.S. DEPARTMENT OF ENERGY

Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

Cost-Effective Codes Implementation for Efficiency & Resilience

Section 40511 of the Infrastructure Investment & Jobs Act

Request for Information + Public Workshop

April 27, 2022

Infrastructure Investment and Jobs Act (IIJA)

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

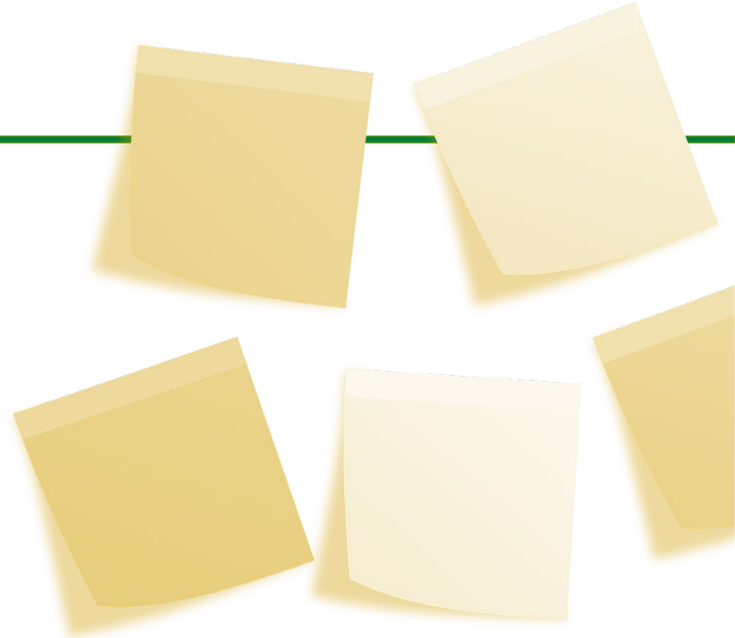
Highlights:

- $225 million for implementation activities supporting updated energy codes
- Encourages “partnerships” comprised of states and other key stakeholders
- Intended to support code updates—not limited to only the latest codes (currently the 2021 IECC and Standard 90.1-2019)
- Amplifies technical assistance supporting code implementation, and builds on many traditional activities, while scaling these efforts significantly
- DOE is engaging stakeholders and the general public to seek feedback on priorities and activities which should be targeted under the program

> We’re requesting input from you all through today’s workshop and RFI!

TIME (EDT)	TOPIC
1:00 PM	Welcome & Opening Remarks (25 min)
1:25	Adoption (30 min)
1:55	Workforce Development (30 min)
2:25	Implementation and Compliance (30 min)
2:55	Break (10 min)
3:05	Innovative Approaches (30 min)
3:35	Energy and Environmental Justice (EEJ) (25 min)
4:00	Partnerships (25 min)
4:25	Overarching Questions (25 min)
4:50	Wrap up & Closing Remarks (10 min)

What's the format of today's workshop?



How we'll approach today's workshop:

1. **We'll provide an overview of Section 40511 of the IIJA**
   - Definitions, including eligible entities, partnerships, criteria
   - How the initiative might be structured
   - Sample activities and adjacent topics
2. **We'll reference recent and related work**
   - The IIJA references many familiar activities supporting code implementation—adoption, compliance and innovative solutions—and we'll flag several examples
   - We'll also summarize feedback from past events (e.g., NECC and Future of Codes Workshop)
3. **We'll highlight key questions**
   - Example: What constitutes a code "update"?

> Several key questions will be highlighted today and are contained in the RFI

What topics will we emphasize today?

Through the RFI and today's workshop:

1. State and Local Code Adoption
2. Workforce Development
3. Implementation and Compliance
4. Innovative Approaches
5. Equity, Energy and Environmental Justice
6. Partnerships

> We'll dive into each of these through individual sessions and presentations

> We'll also highlight several questions that affect all topics and which are fundamental to the overall initiative

Who will you hear from today?

Ashley Armstrong, Acting Director
U.S. Department of Energy

Jeremy Williams, *Specialist*
U.S. Department of Energy

Harry Bergmann, *Analyst*
U.S. Department of Energy

Chris Perry, *Engineer*
U.S. Department of Energy

Rosemarie Bartlett, *Project Manager*
Pacific Northwest National Laboratory

Ian Blanding, *Research Analyst*
Pacific Northwest National Laboratory

Vrushali Mendon, *Research Engineer*
Pacific Northwest National Laboratory

How can you participate?

Here's how you can provide input today…

1. **Mentimeter**: We'll be using this tool to raise key questions—you'll have the ability to respond to these through a variety of interactive formats
2. **Chat**: Ask questions or comment via the "Questions" feature of GoToWebinar—we'll address those and share with the group as we go
3. **Talk**: Type "Speak" as the first word of your comment, plus a summary of what you'd like to say—also via the "Questions" feature and we'll call on you

> Don't forget about the RFI for more detailed written comments—you can submit those via RECI_RFI@ee.doe.gov through the May 20 deadline!

Workshop Logistics

Attendees are muted unless unmuted by the organizer

We’re not recording, but all ideas will be captured and considered

We will use both an online engagement platform (Mentimeter) and open mic to solicit feedback during the workshop

If you wish to be unmuted, type “SPEAK” into the Question pane along with a short summary of your questions/comment

> Please limit to 60 seconds to allow all attendees to be heard…

Login to Mentimeter now so you don’t miss out later!

(CODE)

Enter this code here: https://www.mentimeter.com/

“ENTER CODE HERE” at top of the webpage

OR

Navigate directly to: https://www.menti.com/gdbyik3f1h

Mentimeter

U.S. DEPARTMENT OF ENERGY

Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

Overview: Section 40511 of the IIJA

Cost-Effective Codes Implementation for Efficiency & Resilience

Section 40511: Eligible Entities

ELIGIBLE ENTITY.—The term ‘eligible entity’ means— ‘‘(A) a relevant State agency, as determined by the Secretary, such as a State building code agency, State energy office, or Tribal energy office; and ‘‘(B) a partnership.

(A) State agencies

- To be determined by the Secretary of Energy
- Examples: State energy offices, Tribal energy offices

(B) Partnership

- More on this momentarily…

> What state agencies are most relevant to the initiative?

- Energy, code administration, resilience, safety, others?

Section 40511: Partnerships

PARTNERSHIP.—The term ‘partnership’ means a partnership between an eligible entity described in paragraph (1)(A) and 1 or more of the following entities: ‘‘(A) Local building code agencies. ‘‘(B) Codes and standards developers. ‘‘(C) Associations of builders and design and construction professionals. ‘‘(D) Local and utility energy efficiency programs. ‘‘(E) Consumer, energy efficiency, and environmental advocates. ‘‘(F) Other entities, as determined by the Secretary.

Partnership between:

- Local building code agencies
- Codes and standards developers
- Associations of builders, design and construction professionals
- Local and utility energy efficiency programs
- Consumer, energy efficiency, and environmental advocates
- Other entities as determined by the Secretary of Energy

> What “other entities” should be considered or emphasized?

> What can (and should) constitute an effective partnership

Section 40511: Code Updates

UPDATED BUILDING ENERGY CODE.—An update to a building energy code under this section, including an amendment that results in increased efficiency compared to the previously adopted building energy code, shall include any update made available after the existing building energy code, even if it is not the most recent updated code available.

Updates:

- Increase energy efficiency compared to the previously/currently adopted code
- Can be any update more recent than the existing/currently adopted code
- Are not constrained to the most recent code editions (e.g., 2021 IECC and 90.1-2019)

> How should DOE evaluate and prioritize the impact of a proposed update?

> How should DOE balance recent vs. planned vs. aspirational updates?

Section 40511: Criteria and Priorities

CRITERIA; PRIORITY.—In awarding grants under subsection (b), the Secretary shall—

1. Consider:
   - Impact: Prospective energy savings and plans to measure the savings
   - Long-term sustainability of measures and savings
   - Prospective benefits, and plans to assess benefits, including resilience and peak load reduction, occupant safety and health, and environmental performance
   - Demonstrated capacity to carry out the proposed project
   - Need for assistance
2. Prioritize *partnerships*

> What methods are appropriate for measuring and determining savings impacts?

> How should DOE evaluate the sustainability and long-term effects of a project?

> Are there additional benefits that should be considered/prioritized?

> How should DOE evaluate capacity to carry out the project and need for assistance?

Section 40511: Sample Activities

Examples specified in the IIJA:

- Create or enable state or regional partnerships to provide training and materials
- Collect and disseminate data on construction and code implementation
- Develop and implement a plan for effective implementation, including measuring compliance
- Address implementation needs in rural, urban, suburban areas
- Implement updates in energy codes

> What types of partnerships can help DOE maximize its technical assistance activities supporting building energy codes?

> What additional activities should be considered?

What outcomes are targeted under this initiative?

The RFI emphasizes several desired outcomes:

1. Develop the next-generation workforce
2. Facilitate energy code updates
3. Advance new and innovative polices and tools
4. Increase equity in code-related policies and planning
5. Improve energy code compliance

> See the official RFI and full list of questions at:
> https://www.energycodes.gov/RECI-codes-workshop

ASHLEY ARMSTRONG

Building Technologies Office

U.S. Department of Energy

Ashley.Armstrong@ee.doe.gov

JEREMY WILLIAMS

Building Technologies Office

U.S. Department of Energy

Jeremy.Williams@ee.doe.gov

CHRIS PERRY

Building Technologies Office

U.S. Department of Energy

Christopher.Perry@ee.doe.gov

HARRY BERGMANN

Building Technologies Office

U.S. Department of Energy

Harry.Bergmann@ee.doe.gov

U.S. DEPARTMENT OF ENERGY

Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

Building Energy Code Updates and Adoption

Section 40511 of the Infrastructure Investment & Jobs Act

Ian Blanding, Pacific Northwest National Laboratory

April 27, 2022

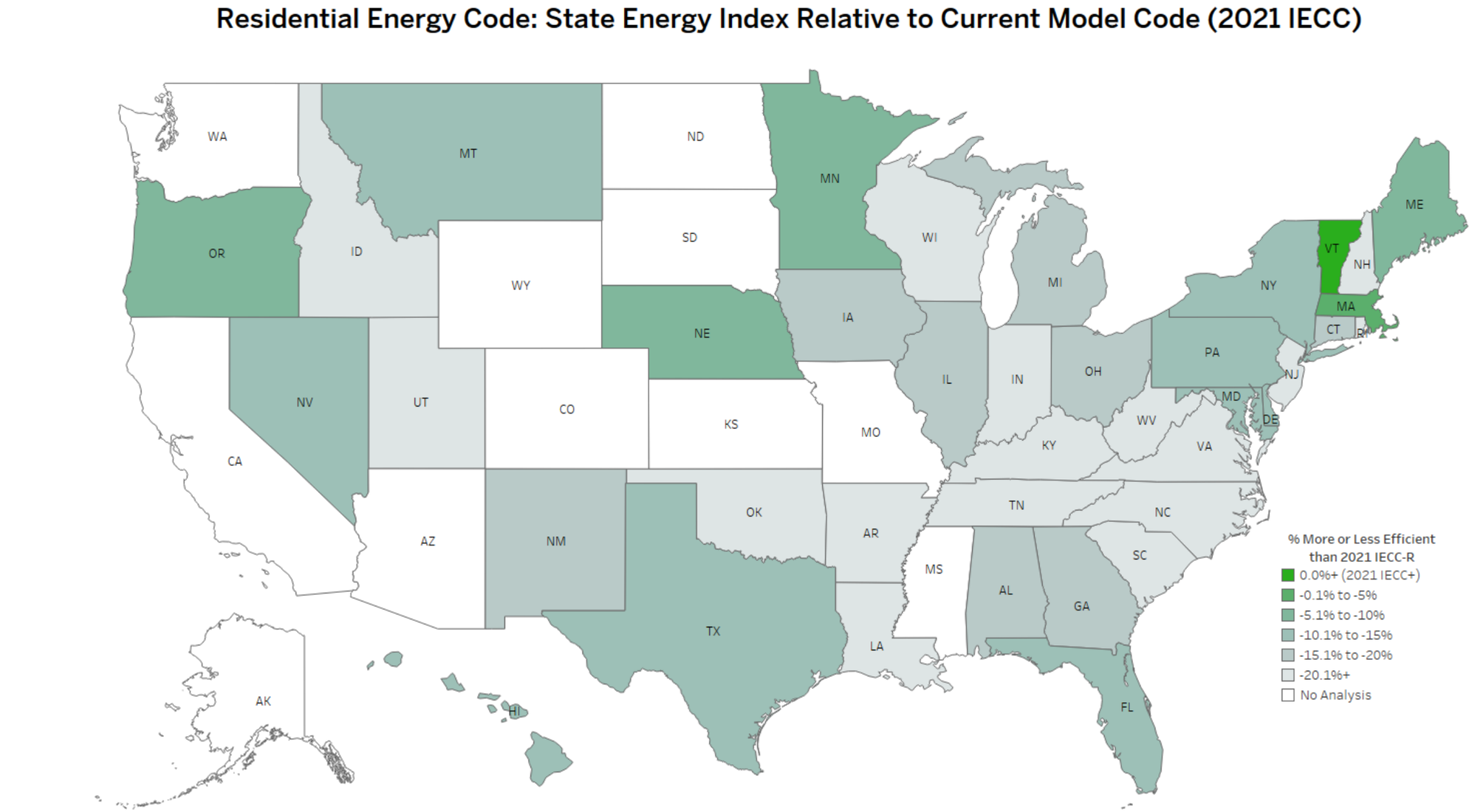
What does the IIJA say related to code updates?

(b) Establishment.--

``(1) In general.--The Secretary shall establish within the Building Technologies Office of the Department of Energy a program under which the Secretary shall award grants on a **competitive basis** to **eligible entities** to **enable sustained cost-effective implementation of updated building energy codes**.

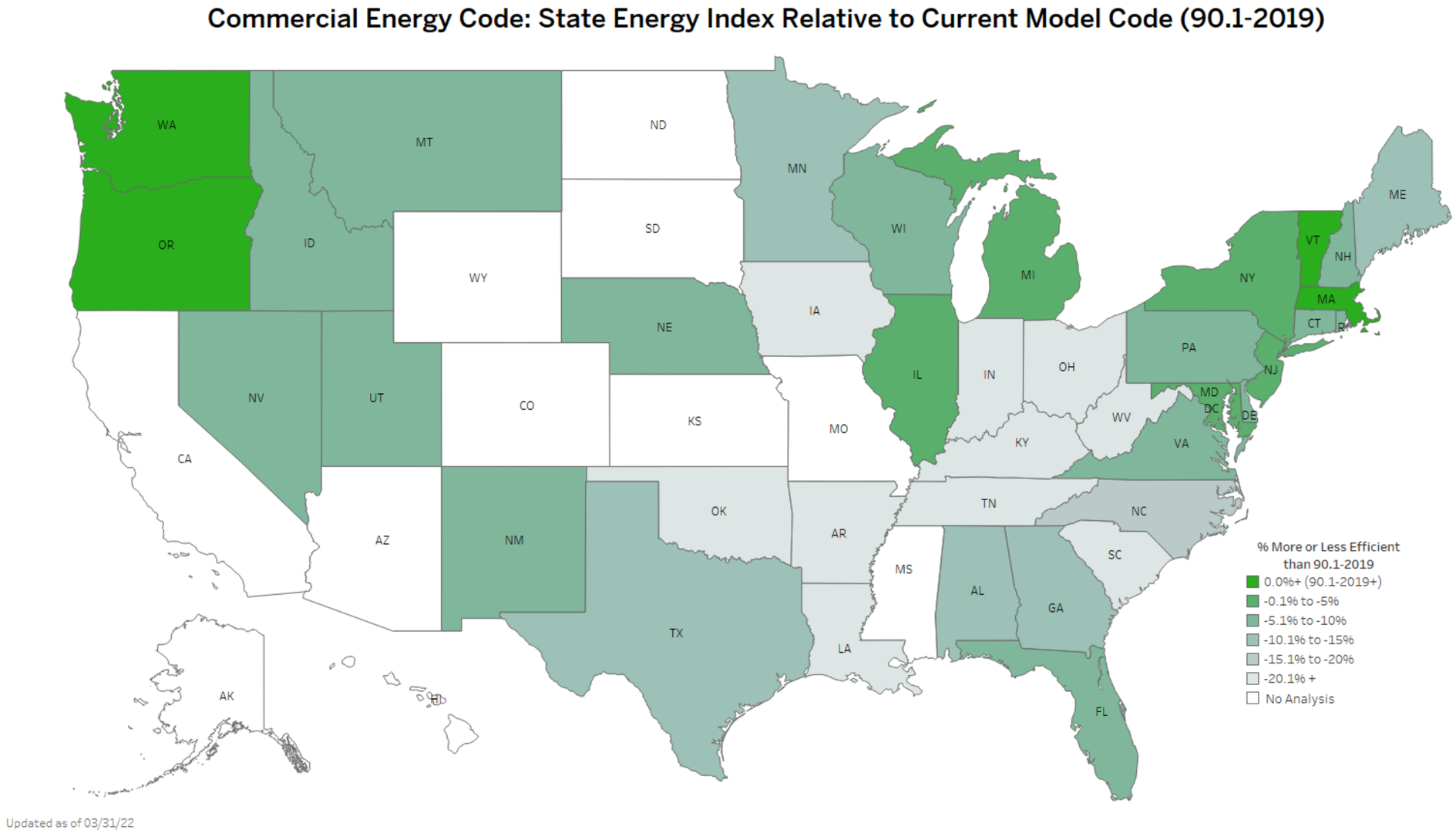
``(2) Updated building energy code.--An update to a building energy code under this section, including an **amendment that results in increased efficiency compared to the previously adopted building energy code**, shall include any update **made available after the existing building energy code**, even if it is not the most recent updated code available.

Status of Statewide Energy Codes

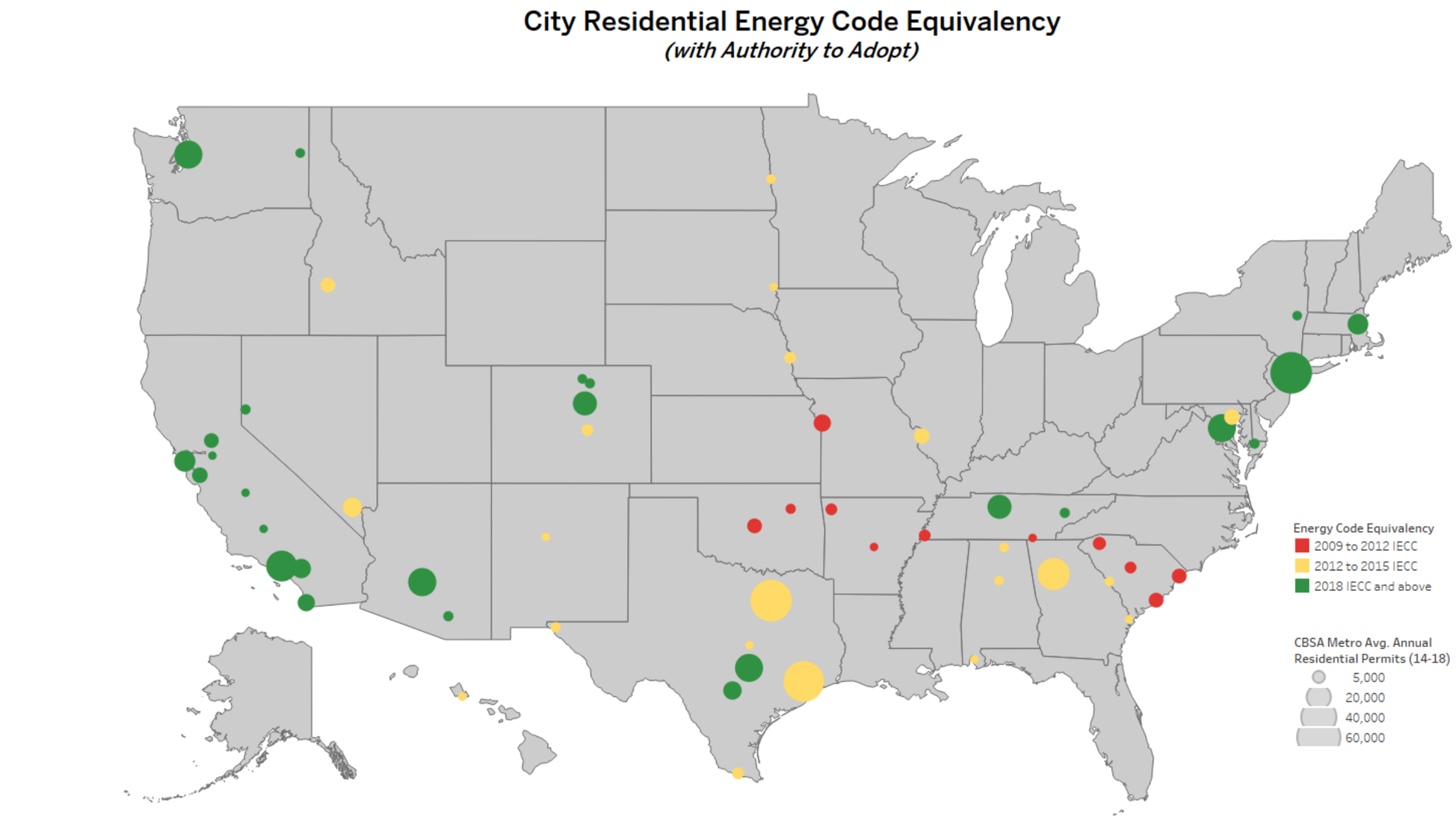


Updated as of 03/31/22

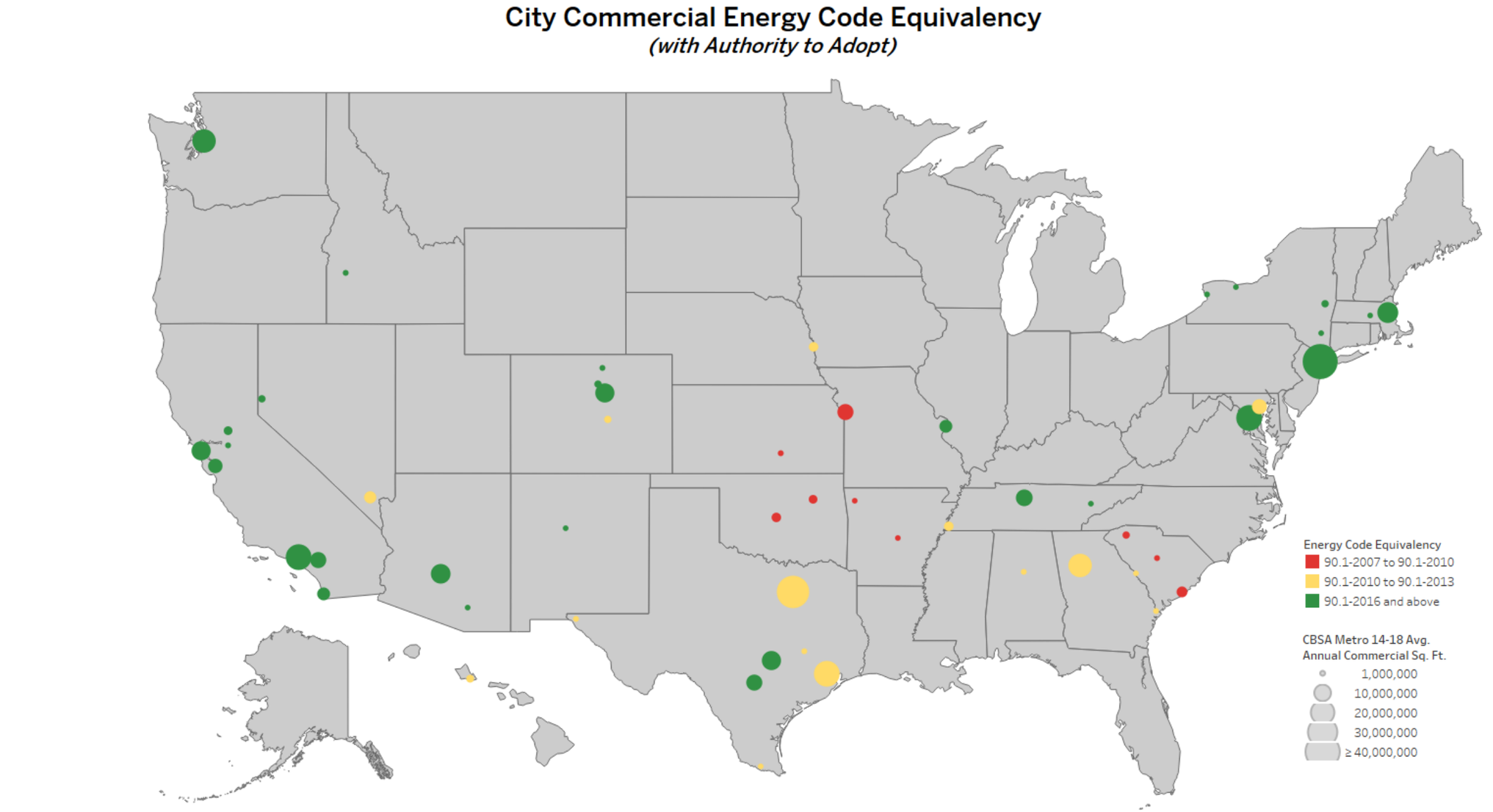
Status of Statewide Energy Codes



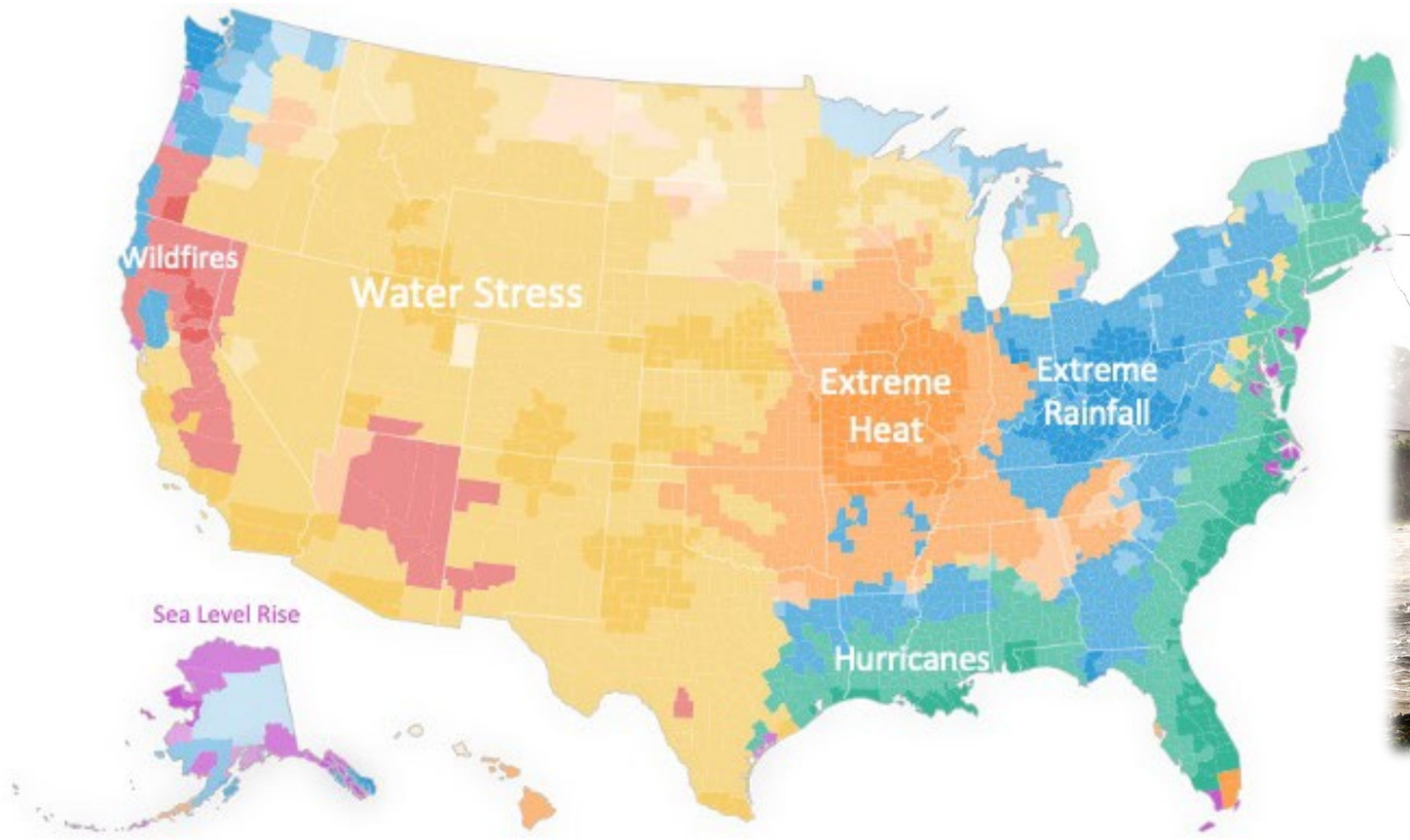
Status of Municipal Energy Codes



Status of Municipal Energy Codes



The Nexus of Building Energy Codes and Resilience

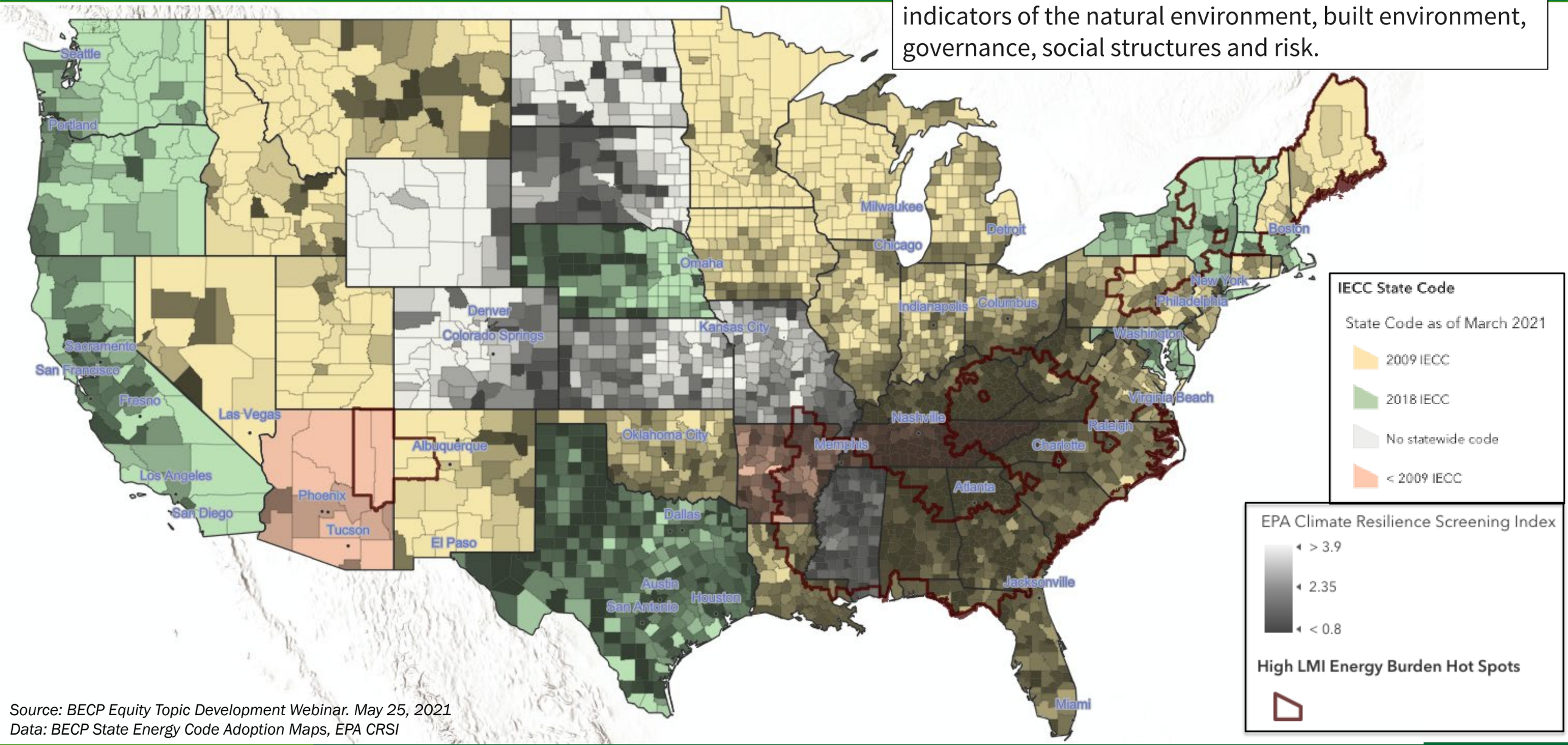


Resilient energy codes can help building occupants absorb, adapt, and recover from adverse events.

www.nytimes.com/interactive/2020/09/18/opinion/wildfire-hurricane-climate.html; www.nationalgeographic.org/encyclopedia/saffir-simpson-hurricane-wind-scale/

Climate Risk and Energy Vulnerability

EPA Climate Resilience Screening Index (CSRI) represents both the vulnerability of a county to multiple climate events and the potential recoverability. CSRI captures indicators of the natural environment, built environment, governance, social structures and risk.



Source: BECP Equity Topic Development Webinar. May 25, 2021
Data: BECP State Energy Code Adoption Maps, EPA CRSI

1. What words or phrases best capture what "resilience" means to you?

Mentimeter

2. What is the biggest challenge of incorporating resilience into local and state decarbonization efforts?

Mentimeter

90

3. Where do model energy codes have the strongest potential to address resilience?

Mentimeter

Back-up power requirements– individual on-site renewable energy, battery storage

Energy efficiency levels– stabilizing the power needs for electricity, heating, and cooling

Grid-enabled technologies- demand response and flexibility during peak loads

Passive survivability standards- ability to maintain safe indoor temps during heatwave or cold spell

Other (include in chat with question #)

72

The Nexus of Building Energy Codes and Resilience

Passive Survivability

The ability to maintain safe indoor conditions in the event of extended energy outage or loss of energy supply. In practice, passive survivability enables safe indoor thermal conditions, relying on building design measures that require no energy. As a measure of a building's thermal performance, passive survivability offers an integrated assessment of both energy efficiency and resilience.

Grid Resilience

Building energy technologies that provide efficiency and grid flexibility services. These technologies can provide grid services during peak demand periods. Demand load reductions alleviate energy supply and grid constraints, thereby decreasing the risk of power system failures.

Energy codes contribute to building resilience through **passive survivability** and **grid resilience.**

Key Questions

To request to speak: Type "Speak" as the first word of your comment, plus a summary of what you'd like to say using the "Questions" feature

1. How should DOE prioritize code updates?
2. Since each funded project is intended to enable updated building energy codes, what should DOE consider to be "updated" codes?
3. How should DOE ensure that States have implementation plans to sustain the adoption of model energy codes over time?
4. How should DOE consider broader building code updates intended to address resilience in addition to energy as part of the prioritization process?

U.S. DEPARTMENT OF ENERGY

Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

IAN BLANDING

Pacific Northwest National Laboratory

Ian.Blanding@pnnl.gov

U.S. DEPARTMENT OF ENERGY

Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

Energy Codes Workforce Education and Training

Section 40511 of the Infrastructure Investment & Jobs Act

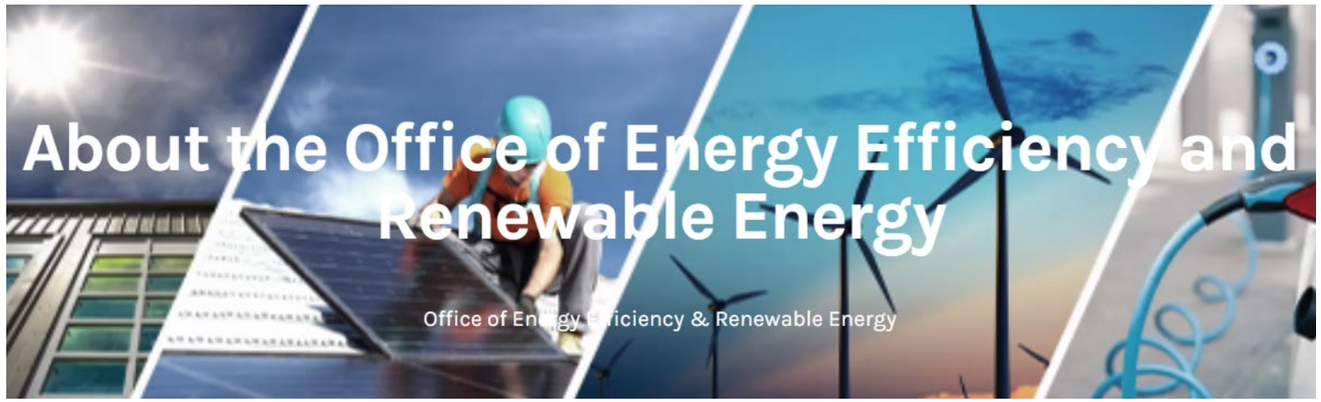
Chris Perry, Building Technologies Office

April 27, 2022

Energy Efficiency and Renewable Energy (EERE) Workforce Goals

Clean Energy Workforce Vision:

The United States has a nationally-representative workforce of sufficient size, skill, and compensation to carry out an equitable transition of America's energy infrastructure to achieve net-zero greenhouse gas emissions no later than 2050.



Office of Energy Efficiency & Renewable Energy » About the Office of Energy Efficiency and Renewable Energy

EERE's mission is to accelerate the research, development, demonstration, and deployment of technologies and solutions to equitably transition America to net-zero greenhouse gas emissions economy-wide by no later than 2050, and ensure the clean energy economy benefits all Americans, creating good paying jobs for the American people—especially workers and communities impacted by the energy transition and those historically underserved by the energy system and overburdened by pollution.

Goal of Efforts:

To support this vision, EERE will work to increase awareness of the clean energy workforce, support strong skills development among those that make clean energy deployment possible, increase ease for new people to enter the clean energy workforce, and support action that increases growth and stability of clean energy sectors.

Strategy to Address Challenges

Goal: Ensure career pathways for a diverse and qualified building efficiency workforce that enable high performance buildings nationwide.

Early Career Exposure & Education | Apprenticeships & On-The-Job Training | Mid- and Late-Career Workers

Low/Negative Perception	Confusing Pathways	Poor Quality Installation	Lacking Market Stability
Build Interest » Showcase careers in building efficiency as welcoming, impactful, and rewarding.	**Streamline Paths** » Clarify pathways from education and training to entry-level and long-term careers.	**Improve Skills** » Enhance continuing education. Include building science competencies in existing training pathways.	**Support Demand** » Support durable market demand growth for skilled workers, including by showcasing value of green building skills.

IIJA Language Related to Workforce Development

``(A) to create or enable State or regional partnerships to provide **training and materials** to—

``(i) builders, contractors and subcontractors, architects, and other design and construction professionals, relating to meeting updated building energy codes in a cost-effective manner; and

``(ii) building code officials, relating to improving implementation of and compliance with building energy codes;

``(2) Related topics.—**Training and materials** provided using a grant under this section may include information on the relationship between energy codes and—

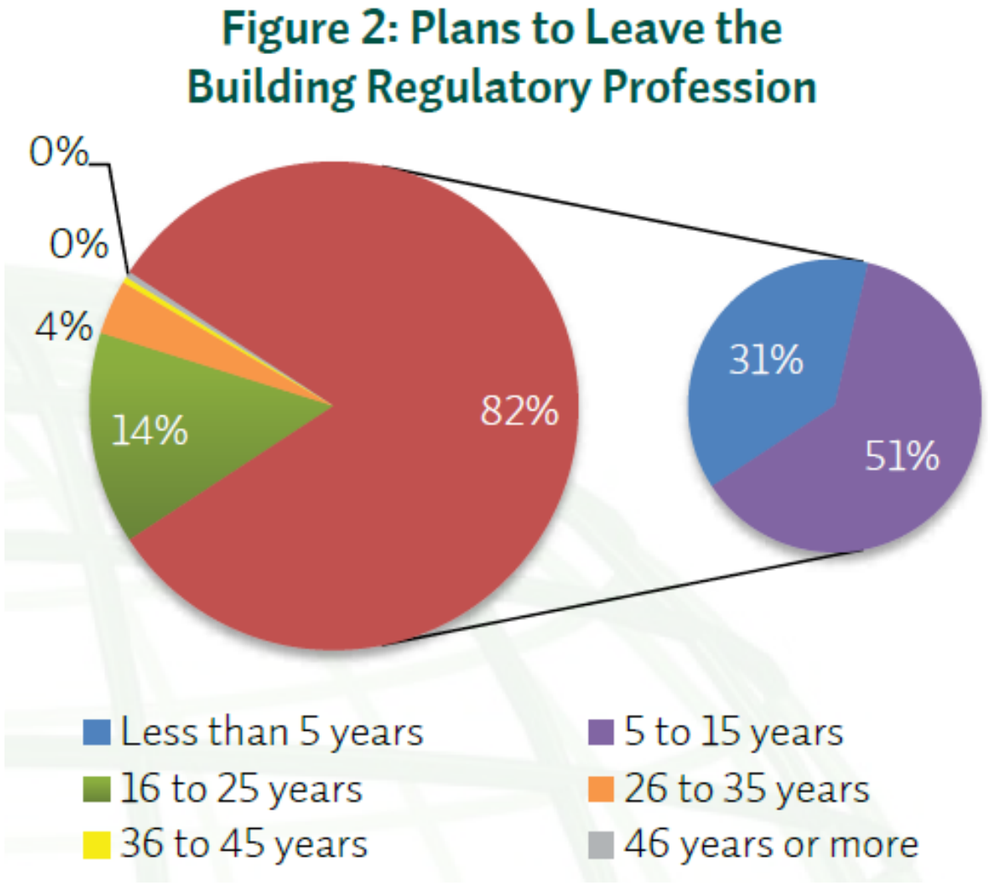
``(A) cost-effective, high-performance, and zero-net energy buildings;

``(B) improving resilience, health, and safety;

``(C) water savings and other environmental impacts; and

``(D) the economic impacts of energy codes.

The Current Energy Codes Workforce is Aging Rapidly



A 2014 ICC-NIBS study found that over 80% of code professionals planned to leave the workforce within 15 years

media.iccsafe.org/docs/ICC-NBIS-Future-Of-Code-Officials.pdf

Examples of Addressing New and Existing Workforce

Community college training course

Home energy rater training site visit

news.estrellamountain.edu/2013/07/10/energy-careers-are-heating-emcc; everbluetraining.com/blower-door-testing-requirement-collier-county-fl/

Goals of Energy Codes Workforce Training

A well-trained energy codes workforce can:

- Understand the latest building technologies and construction practices
- Identify code requirement changes in updated versions of the code
- Improve the rate of codes compliance and installation/construction quality
- Recognize how policies like building performance standards intersect with codes
- Better support advanced technologies in the code, like electric vehicle charging infrastructure, solar photovoltaics, and energy storage
- Help cut U.S. energy use and carbon emissions, while saving home and building owners money on utility bills

Resources

- Building the Efficiency Workforce Preprint, NREL www.nrel.gov/docs/fy20osti/75497.pdf
- Building a Clean Energy Workforce, DOE Better Buildings Summit betterbuildingssolutioncenter.energy.gov/sites/default/files/slides/Building%20a%20Clean%20Energy%20Workforce%20-%20Slide%20Deck.pdf
- Training the Workforce for High-Performance Buildings: Enhancing Skills for Operations and Maintenance, ACEEE www.aceee.org/research-report/b2003
- Green Buildings Career Map, DOE greenbuildingscareermap.org/
- Workforce Development, ICC www.iccsafe.org/advocacy/energy-code-workforce-development/

Key Questions

To request to speak: Type "Speak" as the first word of your comment, plus a summary of what you'd like to say using the "Questions" feature

1. What types of **workforce education and training programs** would best help advance DOE's energy code priorities like adoption, compliance, stretch codes?
2. What are strategies to support an **equitable workforce**? For example, ways to improve diversity in the existing workforce and expanding training programs to underserved communities.
3. How should DOE prioritize training a **new workforce** entering the job market versus training the **existing workforce** on the latest in energy code and building construction trends?
4. How can DOE encourage workforce training programs to be sustained **long-term**, beyond the period of funding?
5. How should DOE consider **quality standards**, **labor standards**, **unions**, etc. in relation to workforce development?

U.S. DEPARTMENT OF ENERGY

Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

CHRIS PERRY

Building Technologies Office

U.S. Department of Energy

Christopher.Perry@ee.doe.gov

U.S. DEPARTMENT OF ENERGY

Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

Building Energy Code Implementation & Compliance

Section 40511 of the Infrastructure Investment & Jobs Act

Jeremy Williams, Building Technologies Office

April 27, 2022

What does the IIJA say about implementation and compliance?

The Secretary shall establish within the Building Technologies Office of the Department of Energy a program under which the Secretary shall award grants on a competitive basis to eligible entities to ***enable sustained cost-effective implementation of updated building energy codes****.* (Emphasis added)

Code *implementation* is established as an overarching priority for IIJA activities:

- "Sustained" suggests a long-term perspective
- Emphasis on "updated" building energy codes

Eligible Activities

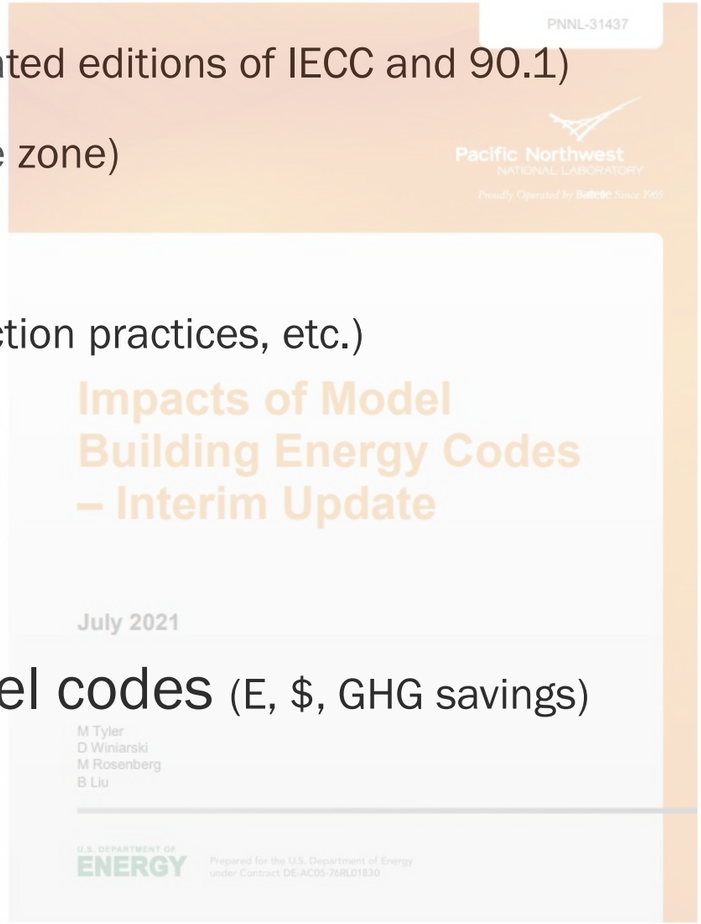
Sample activities specified in the IIJA:

- **Partnerships** which are focused on developing and delivering education & training
- Targeting a **wide range of industry professionals**: Builders, contractors, architects, engineers, building officials, and other design and construction professionals
- **Data** which can help represent and track:
  - Most commonly utilized compliance paths (e.g., prescriptive vs. performance)
  - Technology trends and typical design/construction trends preferred in practice
- **Plans** to successfully implement updated energy codes (e.g., state and local planning)
- **Compliance studies** to track implementation and validate impacts (e.g., E, $, GHG savings)
- Emphasizes that needs vary between rural and urban areas
- Scope:
  - Residential AND commercial buildings
  - New AND existing buildings

Technical Analysis Supporting Energy Code Implementation

DOE publishes a variety of technical reports, resources and analyses:

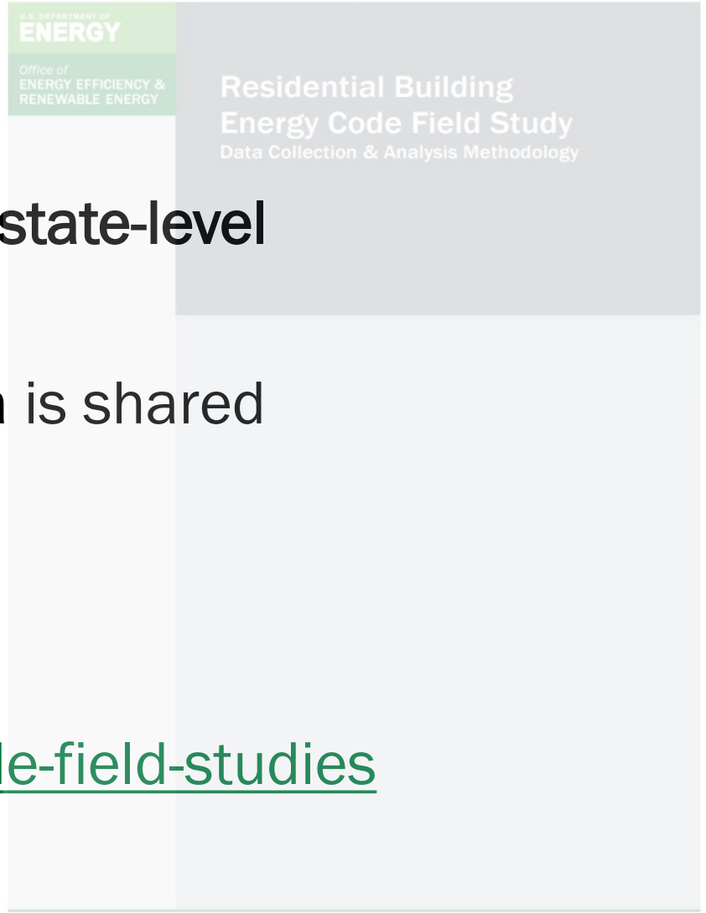
- Model code **determinations** and **energy savings analysis** (updated editions of IECC and 90.1)
- National and state **cost-effectiveness analysis** (reported by climate zone)
- Customized **state and local analysis**
- State cost-effectiveness tool (custom utility rates, building types, construction practices, etc.)
- Suite of **prototype buildings** and standard analysis methods
- Database of first costs utilized for model code analysis
- **Stretch code modules** for states and local governments
- **Benefits Report** illustrating the expected impacts of the model codes (E, $, GHG savings)



Learn more: https://www.energycodes.gov/impacts

Compliance Study Methodology

DOE has established approaches for evaluating compliance with energy codes for both residential and commercial buildings, including guidance for sampling, field data collection, analysis, and more.



Highlights of the Residential Methodology:

- Results based on an **energy metric** and can be reported at the **state-level**
- Focuses on **individual code requirements**
- **Data confidentiality** built into the experiment—no personal data is shared
- Designed around a **single site-visit** prioritizing **key items**
- Designed with **statistically significant** results in mind

Learn more: https://www.energycodes.gov/residential-energy-code-field-studies

RES*check* & COM*check* Compliance Tools

DOE develops and maintains the RES*check* & COM*check* software to help states and local governments demonstrate compliance with building energy codes

- Streamlines and simplifies energy code compliance processes
- Designers, builders and contractors enter project specifications
- Plan reviewers, field inspectors and other building officials verify compliance with applicable codes and standards
- Accepted by most states and local building departments
- Utilized in over 80,000 projects each year
- Plans to modernize software to cloud-based app

Learn more: https://www.energycodes.gov/rescheck

> What additional updates are needed to enable next-generation compliance workflows?

Compliance Resources

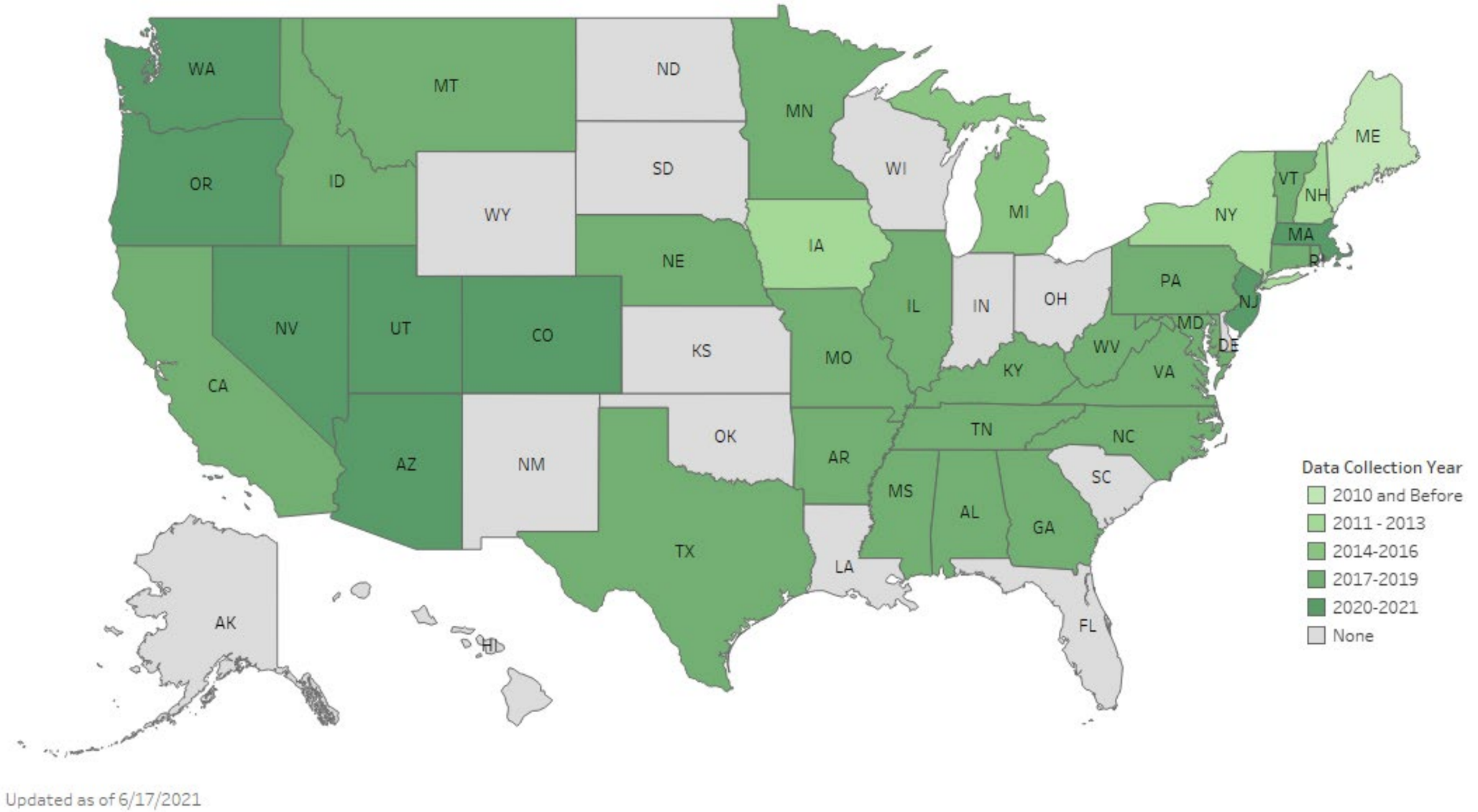
Additional compliance tools and resources supported by DOE:

- Compliance checklists (IECC and Standard 90.1)
- Education & training resources based on updated model codes
- Standardized research methods for evaluating compliance
- Factsheets and informational resources outlining the benefits of codes
- Drawings and specs demonstrating correct applications*
- Prescriptive requirements generator tool by climate zone*
- *Score & Store* compliance tracker and dashboard*
- Help Desk for code questions submitted by users

Learn more: https://www.energycodes.gov/technical-assistance/training

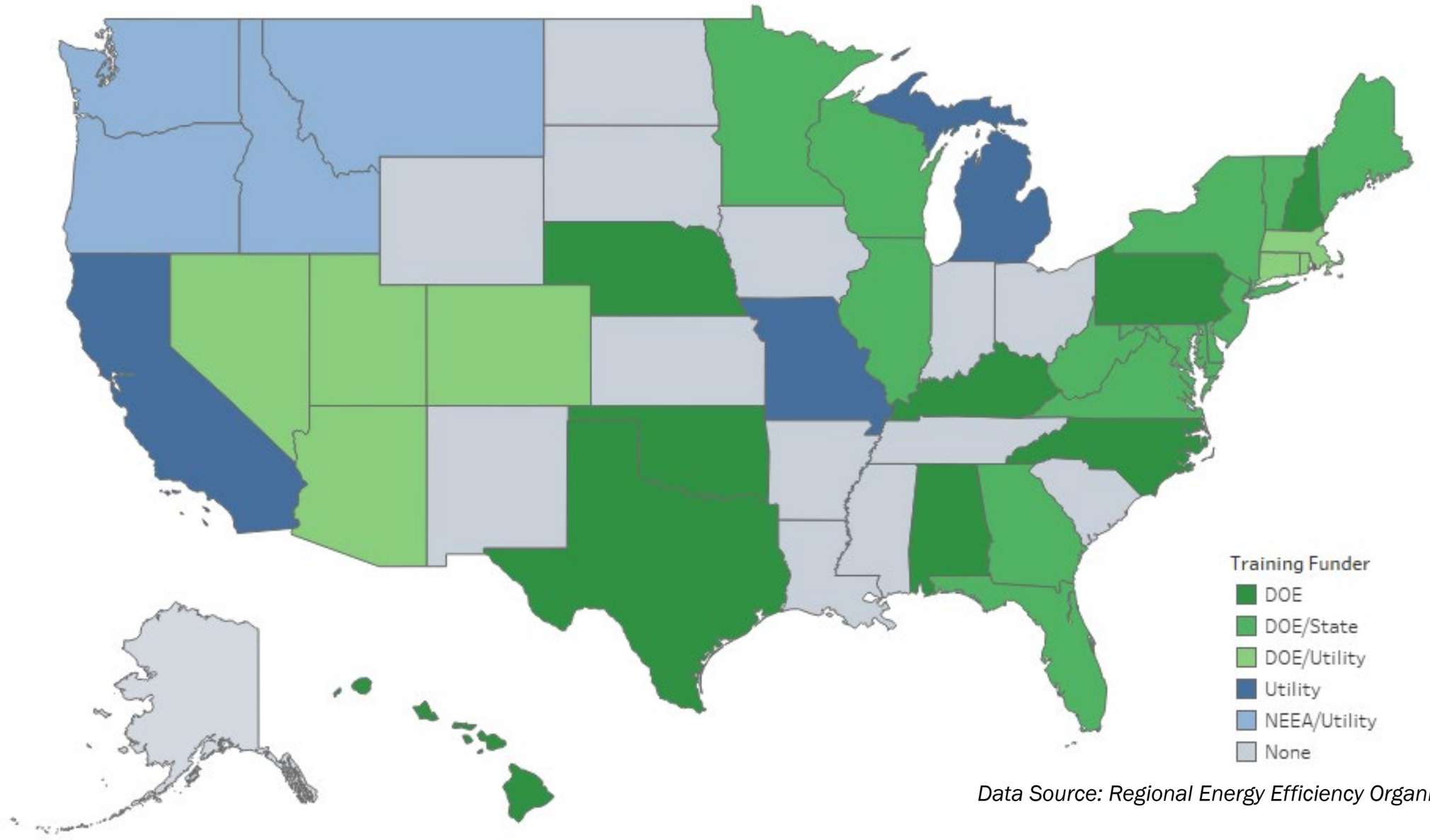
> What additional tools and resources are needed to support energy code compliance?

Single Family Compliance Studies



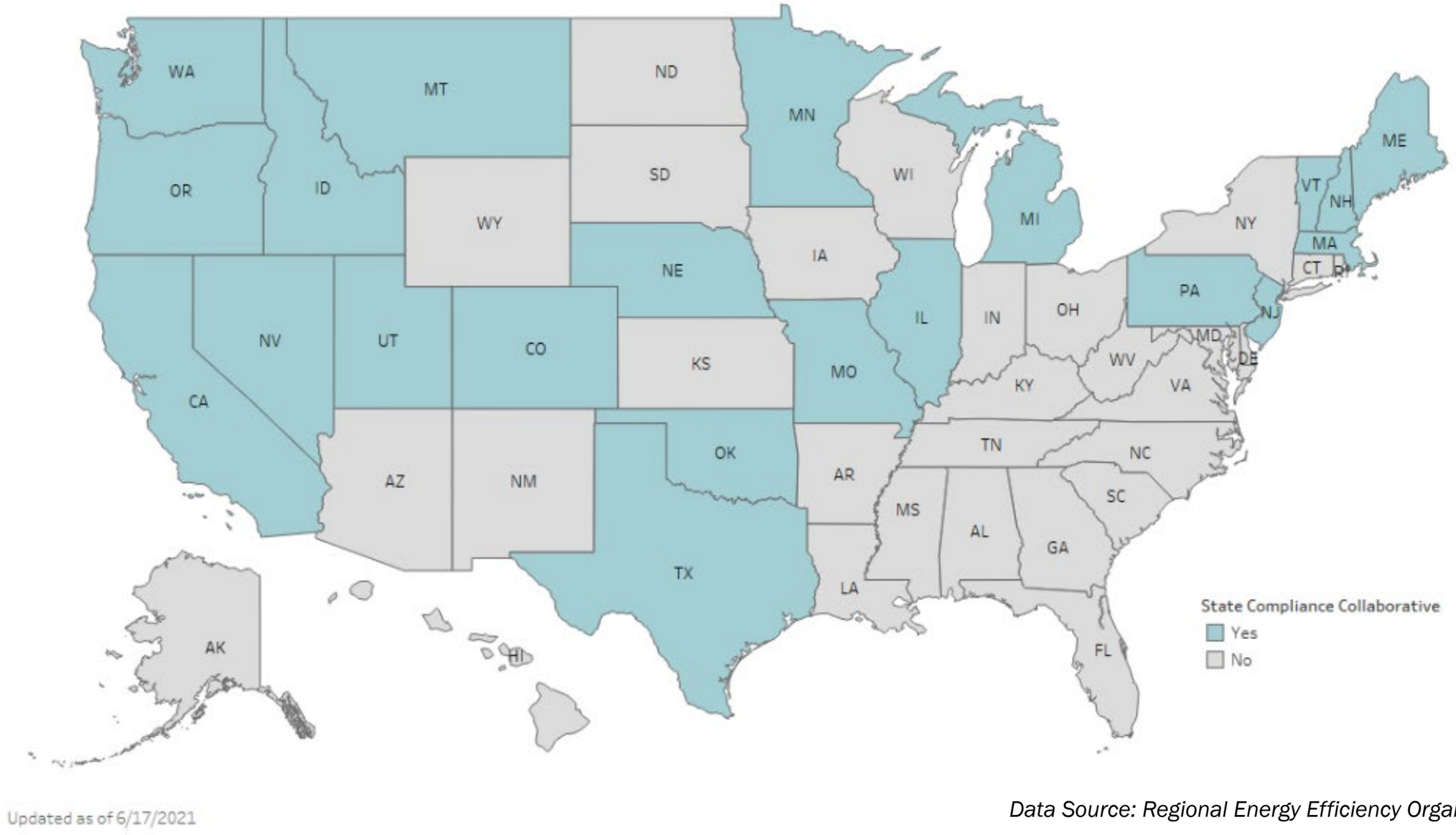
Updated as of 6/17/2021

State Energy Code Training Programs



Data Source: Regional Energy Efficiency Organizations

State Energy Code Compliance Collaboratives



Data Source: Regional Energy Efficiency Organizations

KEY QUESTIONS

To request to speak: Type "Speak" as the first word of your comment, plus a summary of what you'd like to say using the "Questions" feature

1. What tools and resources are most needed to effectively support energy code implementation?
2. In which areas can DOE best support implementation of updated energy codes?
   (e.g., permitting/inspections, code compliance tools, implementation plans)
3. How can DOE effectively support long-term compliance improvements?
   (e.g., field studies, compliance collaboratives, utility code support programs)
4. Which technologies, measures, stakeholders and skills are most critical to ensuring high rates of compliance?
5. Are there any successful compliance improvement models that can be emulated? If so, what makes them successful

> Please keep these questions in mind as we navigate this session—and don't forget the additional questions on this topic in the RFI

U.S. DEPARTMENT OF ENERGY

Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

JEREMY WILLIAMS

Building Technologies Office

U.S. Department of Energy

Jeremy.Williams@ee.doe.gov

U.S. DEPARTMENT OF ENERGY

Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

Innovative Approaches to Energy Codes

Section 40511 of the Infrastructure Investment & Jobs Act

Harry Bergmann, Building Technologies Office

April 27, 2022

Examples of Innovative Approaches

- Stretch codes
  - Zero energy or carbon codes
  - All-electric codes
- Performance-based codes
- Building Performance Standards (BPS)
- Processes
  - Remote virtual inspections (RVI)
  - Energy codes software tools
  - Expedited permitting
- Training
  - Circuit riders

Stretch Codes

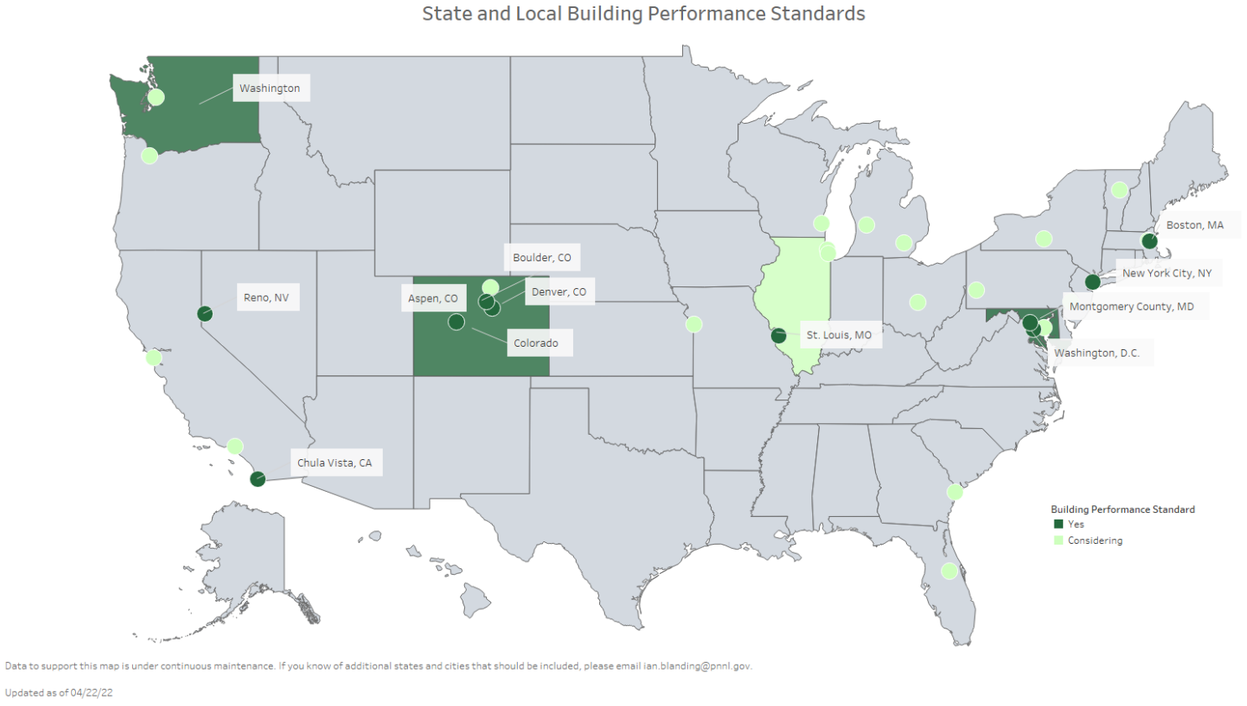
DOE publishes stretch code “plug-ins” which go above and beyond the requirements of the model energy codes (i.e., IECC and Standard 90.1):

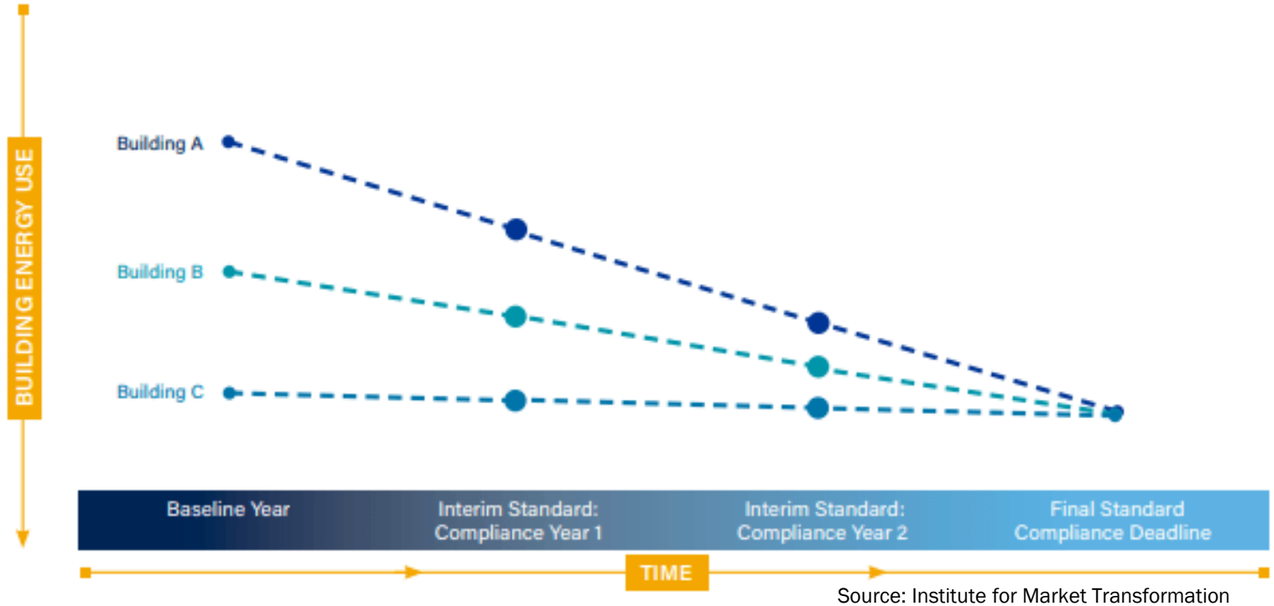
- Currently available stretch code modules (examples):
  - EV charging (required and readiness)
  - Photovoltaics (required and readiness)
  - Electrification readiness
  - Alternative performance metrics (e.g., TSPR)
  - Demand response
- Available to states and local governments pursuing advanced energy savings and emissions reductions, as well as for consideration for future model codes
  - Several concepts being considered for the 2024 IECC

> Learn more about our support for state and local stretch codes: https://www.energycodes.gov/stretch-codes

BPS and the Intersection of New and Existing Buildings

- First-of-its-kind performance-based policy to drive improvement in energy efficiency and reduction in emissions.
- Builds on a legacy of data-driven building energy and emissions policies.
- Can be customized and tailored to meet the needs of each implementing jurisdiction, but ultimately moves the building stock in the same direction.





Source: Institute for Market Transformation

BPS and the Intersection of New and Existing Buildings

Goal: Decarbonize the building sector through a life-cycle approach to energy and emissions performance.

- New construction codes and existing building policies and programs need to be complementary in multiple ways:
  - Aligned goals
  - Complementary data collection & reporting requirements
  - Aligned definitions of “compliance”
- Innovative approaches can provide this linkage
  - Shared training programs
  - Shared software tools & resources
  - Shared technical evaluation methodologies for performance-based outcomes

Key Questions

To request to speak: Type "Speak" as the first word of your comment, plus a summary of what you'd like to say using the "Questions" feature

1. What types of innovative approaches can best support building energy code updates?
2. What role do you see building performance standards playing in the building codes landscape? How do BPS & new construction codes interface most effectively?
3. What other innovative solutions should DOE encourage under this initiative?
4. How can innovative approaches like those mentioned above support staff augmentation efforts like circuit rider programs, implementation help desks, etc.?
5. What types of innovative approaches best align with long-term objectives around energy and emissions goals for the building stock?
6. What are the key barriers to successfully implementing the innovative approaches mentioned above?
7. What type of stretch code provisions are needed that are not currently available?

U.S. DEPARTMENT OF ENERGY

Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

Harry Bergmann

Building Technologies Office

U.S. Department of Energy

Harry.Bergmann@ee.doe.gov

U.S. DEPARTMENT OF ENERGY

Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

Energy and Environmental Justice (EEJ)

Section 40511 of the Infrastructure Investment & Jobs Act

Elizabeth Doris, U.S. Department of Energy
Vrushali Mendon, Pacific Northwest National Laboratory
April 27, 2022

Elizabeth Doris: Guest Presenter on Energy Justice

Elizabeth Doris, Senior Advisor on Energy Justice, U.S. Department of Energy

- On detail from National Renewable Energy Laboratory to the US DOE Office of Energy Efficiency and Renewable Energy
- Previously worked as the Laboratory Program Manager for State Local, and Tribal Governments at the National Renewable Energy Laboratory
- She works to integrate opportunities for expanding EERE's research impact across the RDD&D portfolio through expansion to and inclusion of new stakeholders

WHY ENERGY AND ENVIRONMENTAL JUSTICE AT EERE?

INEQUITABLE BENEFITS

- **Black-majority census tracts installed 69% less rooftop PV** than no-majority tracts of same household income
- Less than half of U.S. community solar projects include low-income households
- Since 2006, **90% of electric vehicle income credits were received by the top income quintile.**

SCIENTIFIC IMPERITIVE

- Science improves with **diverse teams and approaches**
- Reviewers were more likely to choose similar gender and nationality characteristics in their selections
- Teams with greater ethnic diversity generate papers that get more visibility in scientific literature

EXECUTIVE ORDERS (EO)

- EO13985: Equity in Programming
- EO14008: Climate home and abroad (J40)

NEXT ITERATION OF GROWTH FOR CLEAN ENERGY TRANSCENDS TECHNOLOGY SILOS

EERE EEJ GOALS

Advance energy democracy, reduce energy burden, and alleviate energy insecurity and poverty for all Americans in a fair and equitable manner. EERE:

- Provides equitable research, development, demonstration, and deployment opportunities throughout its activities.
- Increases support for collaborations with disadvantaged and energy transition communities

GUIDING

Programmatic Leadership + Central Coordination + Crosscutting Programming

WORKING TEAMS

Responsive RDD&D
Develop and deliver tech that is usable to a broader audience

Stakeholder Engagement
Establish durable channels broader relationships

Improved Funding Mechanisms
Expand funds delivery to emerging partners

Enable Measurement
Be accountable for the change

Cohesive Communications
Share the story

DOE Justice40 Policy Priorities

(1) Decrease **energy burden**

(2) Decrease **environmental exposure and burdens**

(3) Increase **parity in clean energy technology** (e.g., solar, storage) **access and adoption**

(4) Increase **access to low-cost capital**

(5) Increase **clean energy enterprise creation** (MBE/DBE)

(6) Increase the **clean energy job pipeline and job training**

(7) Increase **energy resiliency**

(8) Increase **energy democracy** (including stakeholder engagement)

SAMPLE Approaches to DEI/J40 Language

Diversity of Project Execution Teams

- Include persons from groups underrepresented in STEM or from MSIs as PI, co-PI, and/or other senior personnel or postdoctoral researchers
- Include a diversity of disciplines on project teams: commercialization specialists, techno-societal integration specialists
- Mentoring programs with underrepresented researchers in science within the research project

Diversity of Input in Research Design

- Valued input from eventual end users of the technology integrated rigorously into project design
- Research strategies that identify and integrate the needs of disadvantaged communities
- Diverse disciplines and demographics in research design charettes planned into projects

Diversity in Geographic Extent of Impact

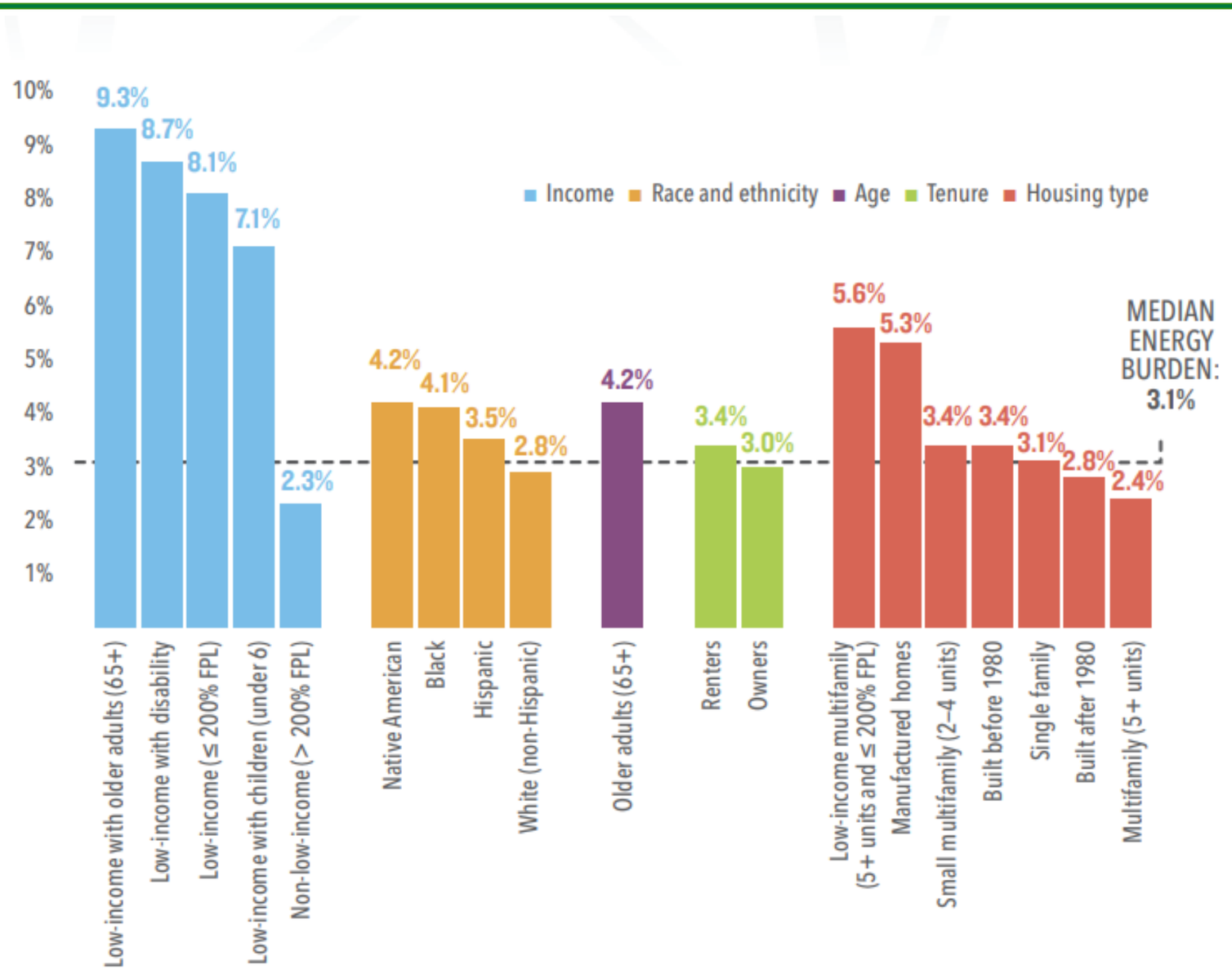
- Develop technologies that are more likely to have disproportionate benefit in disadvantaged communities: clean energy tech that enables community ownership;
- Thoughtful and responsible inclusion of disadvantaged communities in pilot programs and demonstrations (don't know how? See 'diverse project teams' above)
- Inclusion of input and outreach on efforts throughout project

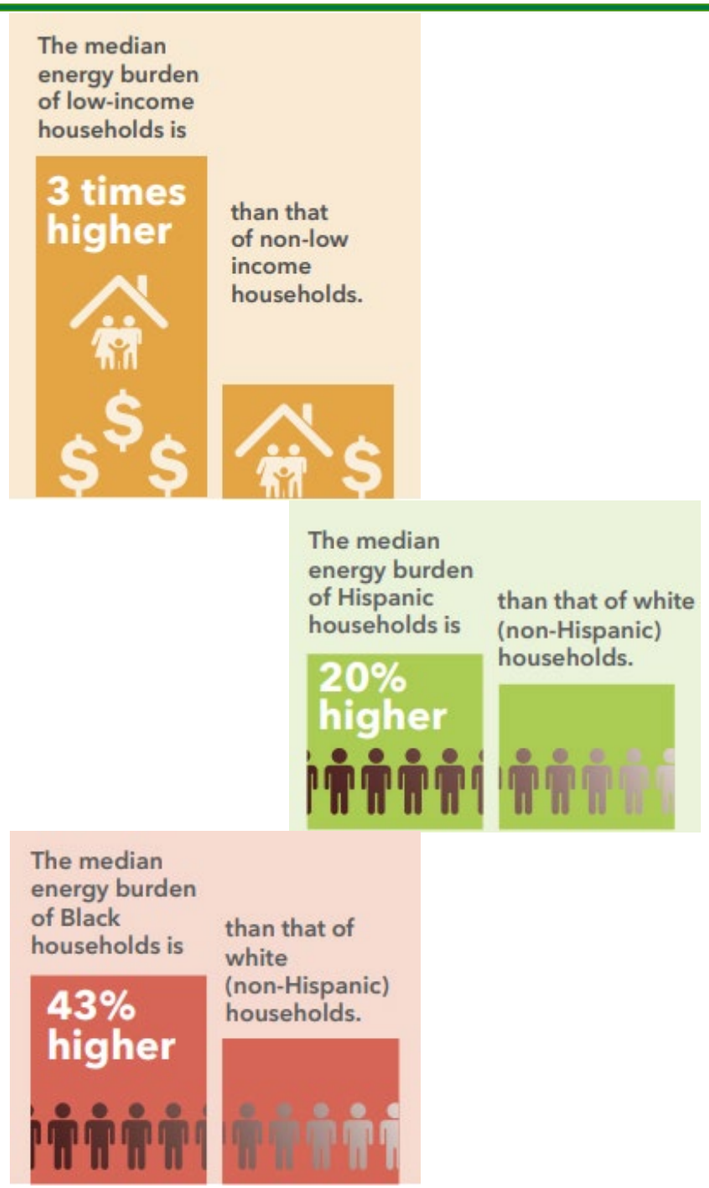
Who is missing from the conversations that should be included?

Mentimeter

37

Energy Burdens across Subgroups

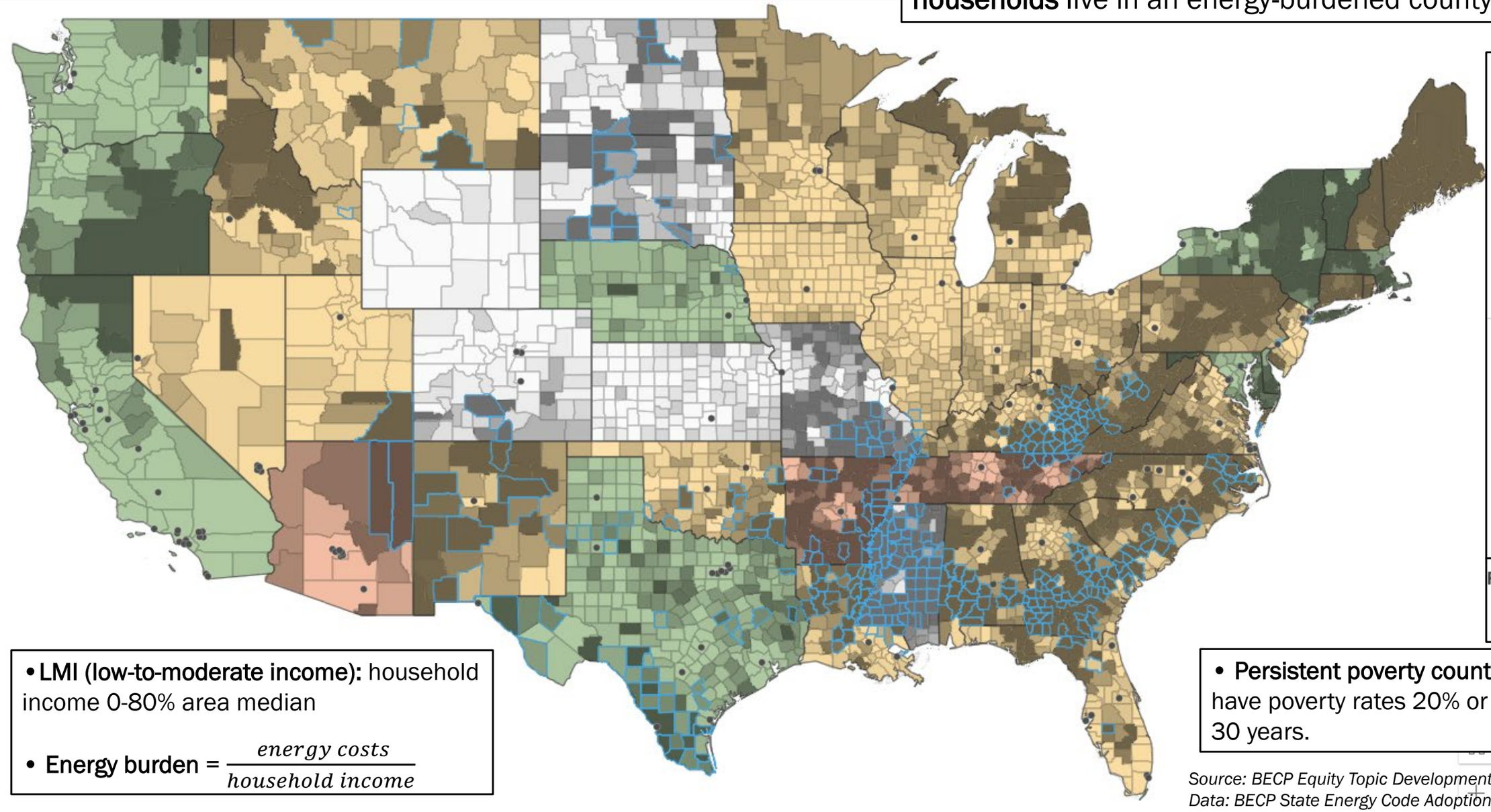




Source: Drehobl, Ross and Ayala. ACEEE 2020.

Energy Burdens across the US

In states with 2009 IECC or worse, **over 65% of LMI households** live in an energy-burdened county (> 6%).



- **LMI (low-to-moderate income):** household income 0-80% area median
- **Energy burden** = $\frac{energy\ costs}{household\ income}$

- **Persistent poverty county-** counties that have poverty rates 20% or greater for at least 30 years.

Source: BECP Equity Topic Development Webinar. May 25, 2021
Data: BECP State Energy Code Adoption Maps, NREL Solar for All map

Key Questions

To request to speak: Type "Speak" as the first word of your comment, plus a summary of what you'd like to say using the "Questions" feature

1. What EEJ concerns or priorities are most relevant for this new initiative?
2. How can DOE support meaningful and sustained engagement with relevant disadvantaged communities?
3. How can DOE incentivize partnerships with community partners such as nonprofits, minority-owned businesses and significant engagement of HBCU/MSI/TCU partners?
4. What strategies, policies, and practices can this potential FOA deploy to support EEJ goals? How should these be measured and evaluated?
5. How can applicants ensure that community-based stakeholders or organizations, in especially underserved communities, are engaged and included in the planning, decision-making, and implementation processes?
6. What measures should we take to ensure that harm to communities with environmental justice concerns are mitigated?

ELIZABETH DORIS

Energy Efficiency & Renewable Energy

U.S. Department of Energy

Elizabeth.Doris@ee.doe.gov

VRUSHALI MENDON

Energy & Environment Directorate

Pacific Northwest National Laboratory

Vrushali.Mendon@pnnl.gov

U.S. DEPARTMENT OF ENERGY

Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

Strategic Partnerships Supporting Building Energy Codes

Section 40511 of the Infrastructure Investment & Jobs Act

Request for Information + Public Workshop

April 27, 2022

Eligible Entities

(1)“Eligible entity – the term “eligible entity” means –

- (A) a relevant **Stage agency**, as determined by the Secretary, such as a State building code agency, State energy office, or a Tribal energy office”

(2) **Partnership** – The term “partnership” means a partnership between an eligible entity described in paragraph (1)(A) and 1 or more of the following entities:

- (A) Local building code agencies
- (B) Codes and standards developers
- (C) Association of builders and design and construction professionals
- (D) Local and utility energy efficiency programs
- (E) Consumer, energy efficiency, and environmental advocates
- (F) Other entities, as determined by the Secretary

- Eligible applicants are **states** or **partnerships** (which must include a state agency)

> What types of strategic partnerships can best support energy code implementation?

Stakeholders

Successful past projects have been combined many of the following (examples):

- State agencies (e.g., state energy offices, code agencies)
- Local governments (e.g., cities and counties, local building departments, community orgs)
- Design and construction professionals (e.g., architects, engineers, builders, contractors)
- Trade associations and organized labor unions
- Non-governmental organizations (NGOs)
- Academic and other research institutions
- Utilities and energy efficiency program administrators
- Environmental and consumer advocates
- Workforce training organizations

> Which stakeholders are critical to a successful partnership, either as part of the project team or as a coordinating entity?

Sample Partnerships

Energy + Resilience Planning:

- Collaborative development of the energy and resilience plan for a given state
- Strategic partnership which provides technical assistance to a state or local government agency (e.g., commerce department, emergency management, energy office)
- Emphasis on the role of building codes, including their effective implementation, as a core component of plans to reduce energy consumption and emissions
- Identify critical facilities and establish plans to increase their energy resilience, including mitigation against extreme heat and cold events
- Detailed action plans which tie to broader energy and climate goals
- Partnership comprised of cognizant state agency, NGOs, regional partners, community organizations, academia

> Are there successful models which can be replicated under this initiative?

Sample Partnerships

Innovative Approaches:

Example A: Establish statewide energy code circuit-rider program

- Identify areas of the state with limited energy code enforcement (e.g., rural areas)
- Deploy recognized expert across jurisdictional boundaries to provide direct TA
- Strategic partnership between state agency, local governments, SEO, trainers

Example B: Develop BPS for a given locale

- Conduct stock analysis to identify opportunities to reduce energy and emissions
- Develop energy targets and draft BPS upon which the locale will solicit comment
- Establish partnership between city sustainability office, NGO, consultant

> Are there successful models which can be replicated under this initiative?

Sample Partnerships

Energy Equity:

Example A: Emphasize under-represented perspectives in code activities

- Establish forum to identify, explore and address needs faced by EJ communities
- Bolster participation of under-represented interests in code development and adoption processes, including state, local and national code bodies
- Partnership between NGOs, consultants and code development organizations

Example B: Develop code language which increases equitable outcomes

- Evaluate current model energy code language and identify opportunities to address equity and issues facing LMI households (e.g., split incentives faced by renters in multifamily buildings)
- Provide recommendations to DOE, PNNL and code development organizations which can be considered as future proposals to the model codes, or published as state and local amendments
- Partnership between NGOs, consultants and code development organizations

> Are there successful models which can be replicated under this initiative?

Sample Partnerships

Additional Partnerships:

Example A: National Energy Codes Compliance Collaborative:

- National and regional organizations, NGOs, state & local governments, as well as builders, architects, engineers and organizations representing key stakeholder interests
- Provide thought leadership on building energy codes implementation issues
- Function as a de facto technical assistance body
- Build on successful model leveraged by many states across the U.S.

Example B: Additional strategic partnerships to enhance implementation

- Establish cohort of leading states and cities to coordinate activities and share best practices
- Enable cross-cutting partnerships which may be outside or transcend other categories
- Provide a network for states and local governments to band together—and in a way that allows participation by local governments in states who do not apply

> Are there successful models which can be replicated under this initiative?

KEY QUESTIONS

To request to speak: Type "Speak" as the first word of your comment, plus a summary of what you'd like to say using the "Questions" feature

1. What types of strategic partnerships can best help address challenges and support widespread implementation of updated energy codes?
2. What state agencies can best support the objectives of this initiative?
   (e.g., state energy offices, regulatory and code administration agencies, safety, planning and resilience)
3. What is the role of local governments? How can we best reach local governments?
   (e.g., municipal governments, building departments, community organizations, planning and resilience)
4. Which stakeholders are critical to a successful partnership? Are there additional (non-project) partners and stakeholders who should be emphasized?
5. How can we ensure activities remain linked to code updates?

> Please keep these questions in mind as we navigate this session—and don't forget the additional questions on this topic in the RFI!

U.S. DEPARTMENT OF ENERGY

Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

JEREMY WILLIAMS

Building Technologies Office

U.S. Department of Energy

Jeremy.Williams@ee.doe.gov

Overarching Questions

1. What types of activities should DOE start working on now to lay the groundwork for project applicants? For example, updating tools, methodologies, and other resources.
2. What types of cross-cutting support (e.g., technical assistance) would be valuable from the DOE/national laboratories, and/or from other federal agencies, to provide in proposal development or project execution?
3. How can this funding effectively leverage other sources of funding, such as from states, utility programs, and other BIL provisions (e.g., FEMA/BRIC resilience funding).
4. How should DOE prioritize different criteria when evaluating applicants?
5. What other criteria should DOE prioritize when evaluating applicants?
6. How should DOE track overall outcomes from this funding? What metrics should DOE request from each project team?
7. What did we miss? What additional information that would be valuable to help DOE maximize the potential of this initiative?

ENERGY CODES | 2022

2022 NATIONAL ENERGY CODES CONFERENCE
HOSTED BY THE U.S. DEPARTMENT OF ENERGY

July 2022 | VIRTUAL

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

Building Energy Codes

2022 National Energy Codes Conference (NECC):

- July 19-21 (Virtual)
- Emphasis on energy code implementation, and new technical assistance supported under the Infrastructure Investment and Jobs Act

A three-day collection of interactive sessions, training, and the latest on all things energy codes!

> Check out the 2021 event and session lineup!

How to Respond to the RFI & Thank you for Attending

- Find a link to the RFI here: www.energycodes.gov/RECI-codes-workshop
- Comments due no later than 5:00pm ET on **May 20, 2022**
- Submit comments electronically to RECI_RFI@hq.doe.gov
- Slides from today will be posted on the Building Energy Codes Program webpage www.energycodes.gov

Thank you for attending today and we look forward to your feedback on the RFI!