

U.S. DEPARTMENT OF  
**ENERGY**

Office of  
ENERGY EFFICIENCY &  
RENEWABLE ENERGY

# Transforming the U.S. Energy Code Landscape

2022 National Energy Codes Conference

July 20, 2022



# TODAY @ the National Energy Codes Conference

Welcome to the 2022 NECC!

- Who's all here?
- How can you participate?
- Key resources from DOE's Building Energy Codes Program
- A welcome message from *Regulatory Director*, [Ashley Armstrong](#)
- Keynote address from *Principal Deputy Assistant Secretary for Energy Efficiency and Renewable Energy*, [Kelly Speakes-Backman](#)

## Sessions:

- Infrastructure Funding to Support Implementation of Resilient & Efficient Codes
- The Intersection of Energy Codes and Building Performance Standards
- How Building Energy Codes Fit Your State's or City's Climate Plan





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# Introduction

## 2022 National Energy Codes Conference



# What's New in '22?

## Secretary Granholm delivered keynote address at 2021 NECC:

- Issued updated model energy code *determinations*:
  - Commercial: 4.7% national average site energy savings (90.1-2019 vs. 2016 edition)
  - Residential: 9.4% national average site energy savings (2021 IECC vs. 2018 edition)
- Announced new technical assistance supporting states and local governments
- Challenged states to adopt the latest energy codes (2021 IECC and Standard 90.1-2019)
- Published collection of updated technical assistance resources, including national, state and local code impact analyses, factsheets, compliance tools, and more!

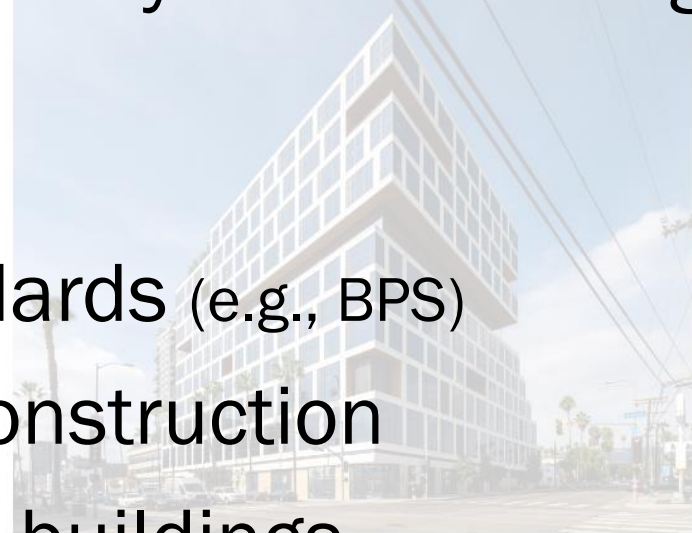
**Infrastructure Law:** \$225M supporting resilient and efficient codes

**Next:** 2024 IECC and Standard 90.1-2022 development is underway

> International Code Council (ICC) reports 50% progress toward their “Code on a Mission” goal with over 61 million households covered by the 2021 IECC

# Many exciting building code trends for 2022 (and beyond)

- States and local governments leading the way
- Sustainability and building decarbonization
- Advanced energy efficiency and tech integration (e.g., EV, PV, energy storage)
- Resilient construction
- Existing building standards (e.g., BPS)
- Prefab and modular construction
- Smart, grid-connected buildings



[www.bloomberg.com/news/features/2022-04-07/net-zero-buildings-could-bring-an-energy-savings-boom](http://www.bloomberg.com/news/features/2022-04-07/net-zero-buildings-could-bring-an-energy-savings-boom); [www.nytimes.com/2021/10/26/business/climate-change-sustainable-real-estate.html](http://www.nytimes.com/2021/10/26/business/climate-change-sustainable-real-estate.html); [www.forbes.com/sites/forbesrealestatecouncil/2019/10/30/resilient-construction-building-structures-that-withstand-natures-fury/?sh=1c040bc31b31](http://www.forbes.com/sites/forbesrealestatecouncil/2019/10/30/resilient-construction-building-structures-that-withstand-natures-fury/?sh=1c040bc31b31);

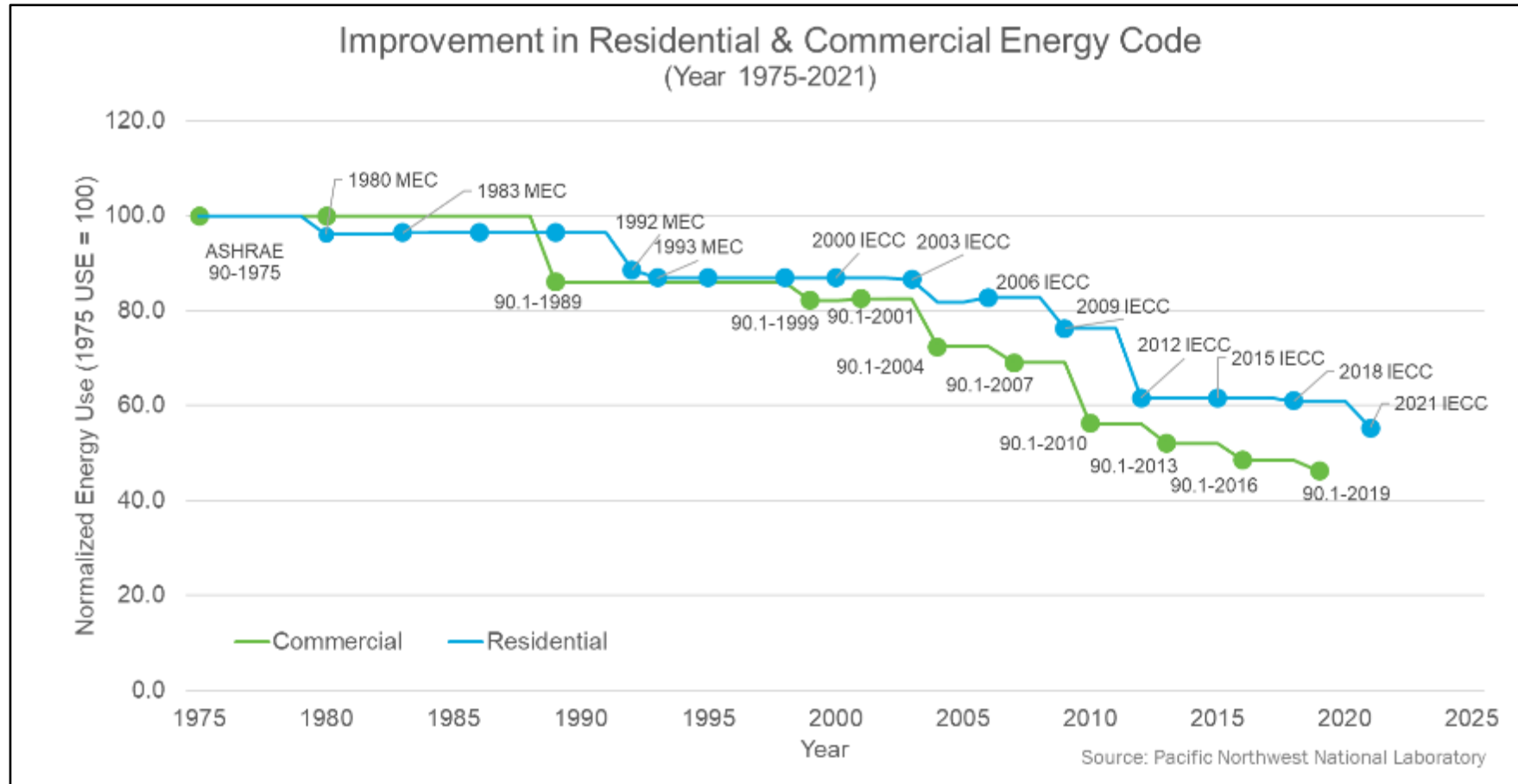
# COVID has changed the new building construction landscape



For example, homebuyers are demanding more suburban home construction.

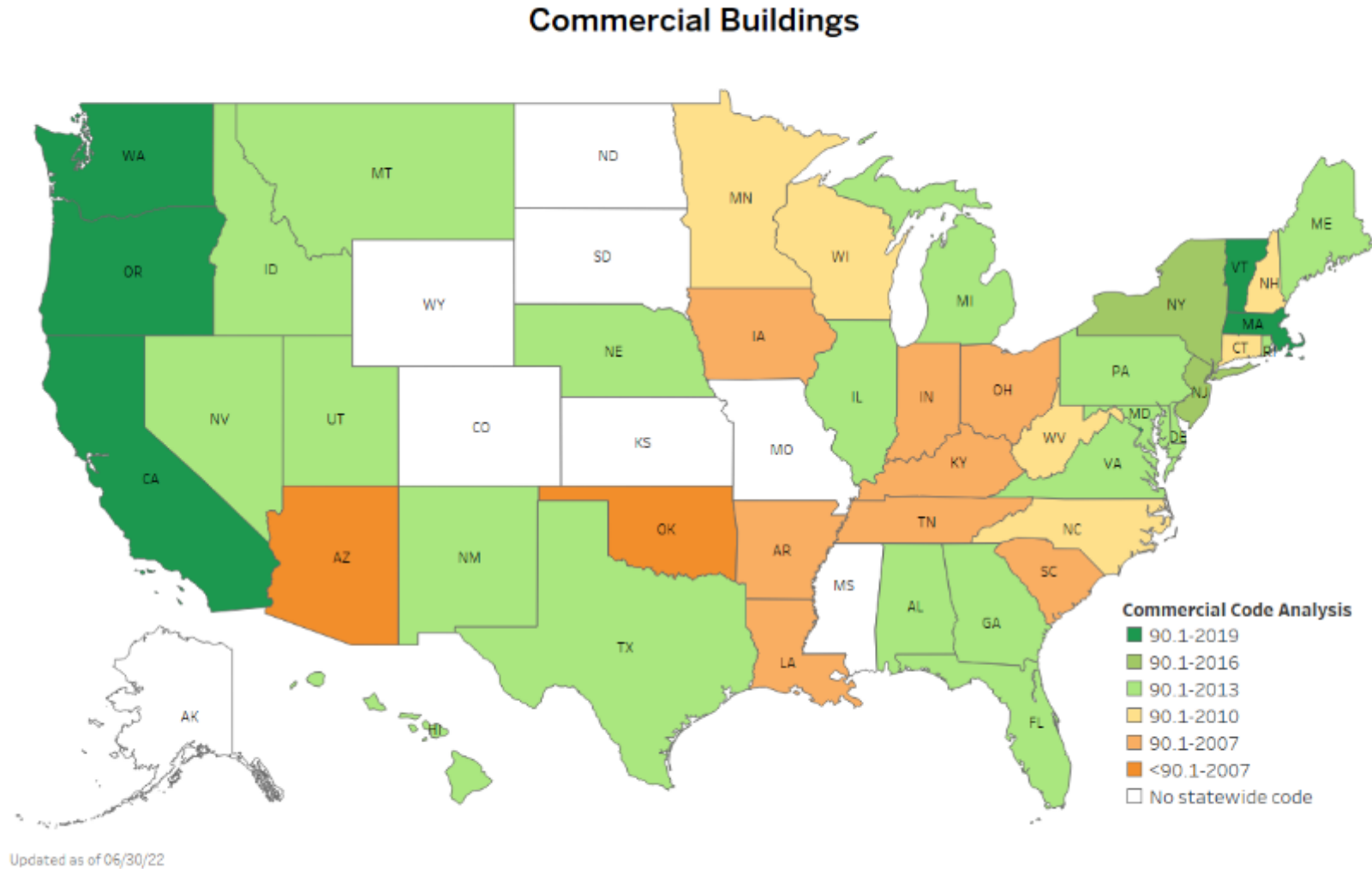
[www.bloomberg.com/news/features/2022-01-05/a-supernova-of-suburban-sprawl-fueled-by-covid](https://www.bloomberg.com/news/features/2022-01-05/a-supernova-of-suburban-sprawl-fueled-by-covid)

# Energy codes continue to improve over time



Efficient energy codes save energy, costs, and greenhouse gas emissions.

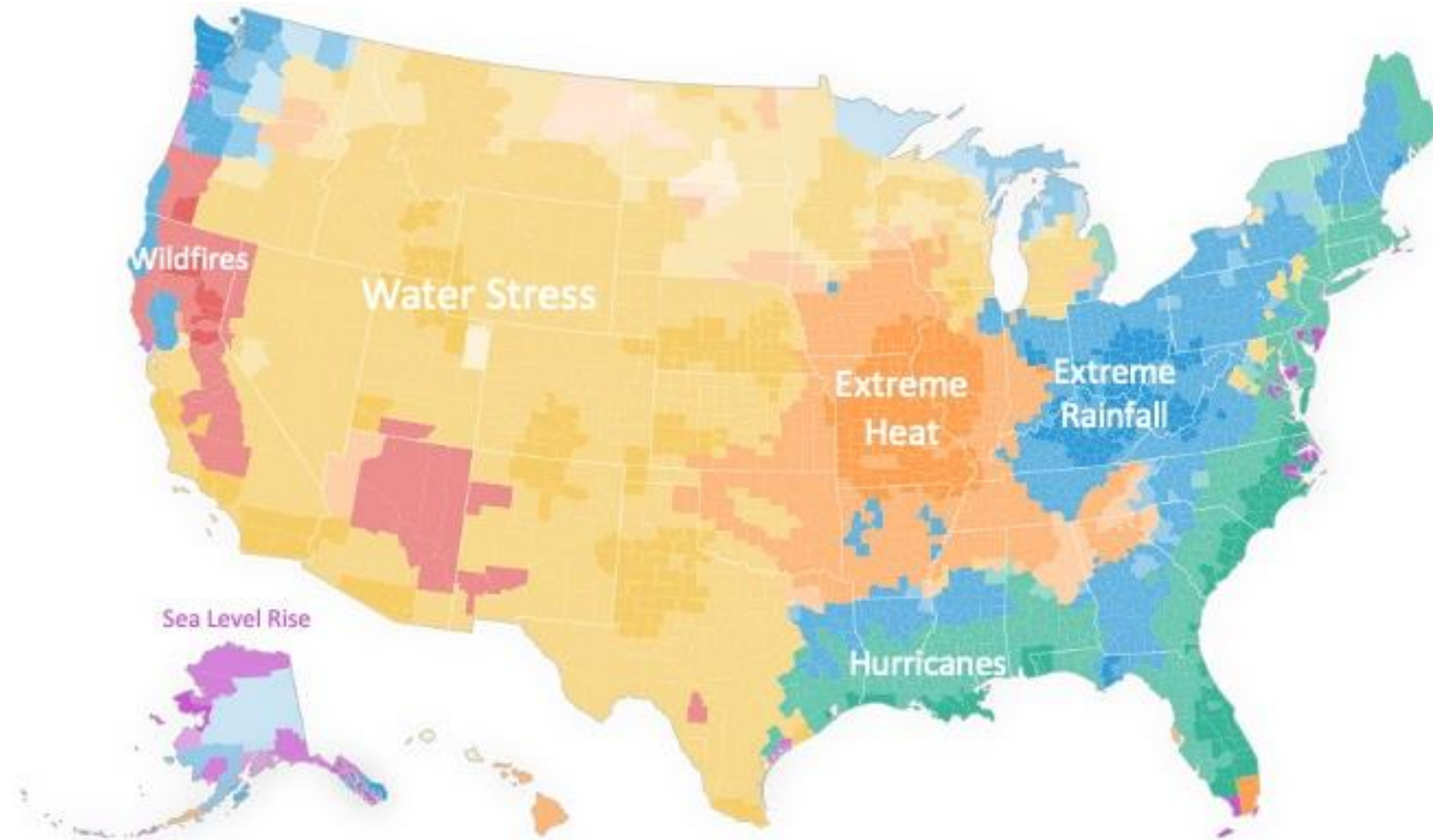
# Energy code adoption varies throughout the U.S.



[www.energycodes.gov/status/commercial](http://www.energycodes.gov/status/commercial)



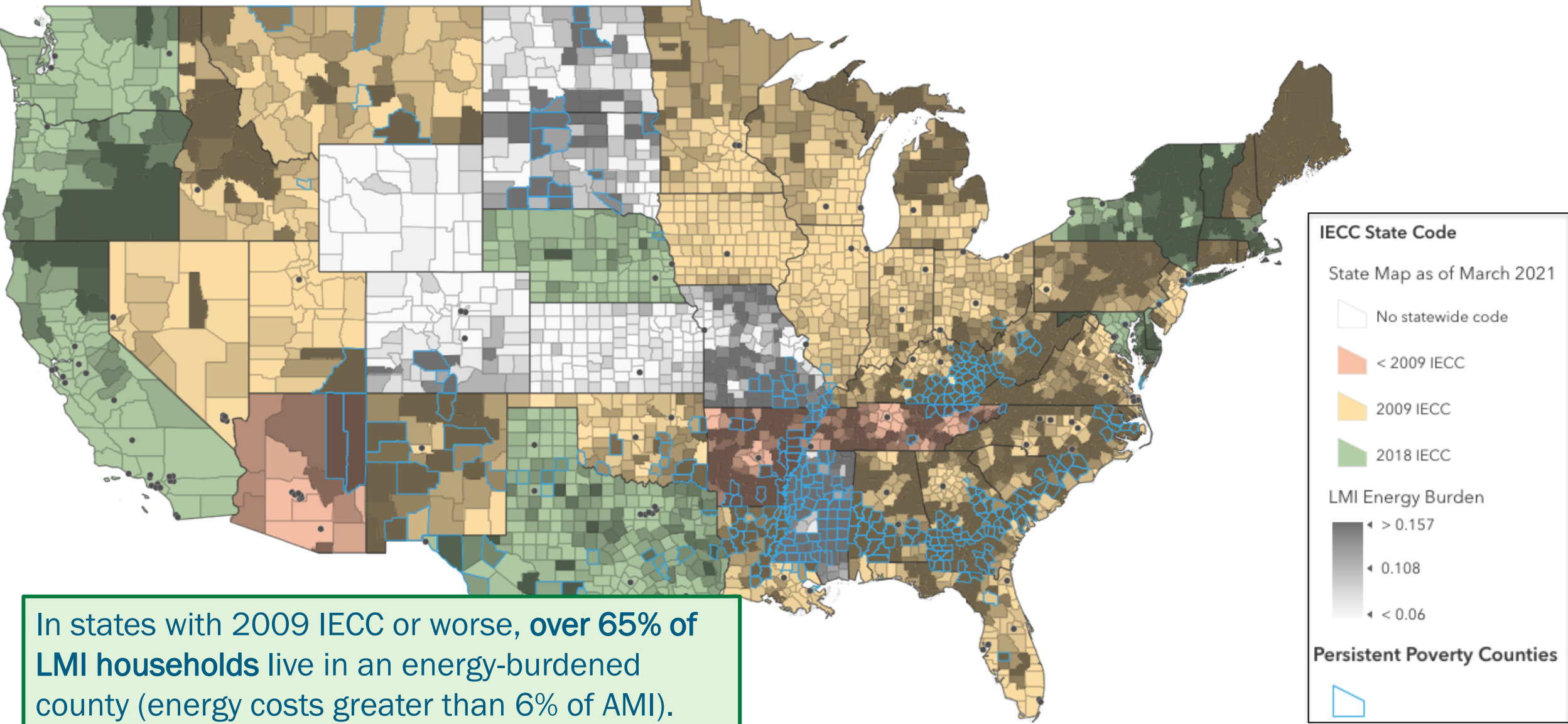
# Energy codes provide important resilience benefits



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](https://www.nytimes.com/interactive/2020/09/18/opinion/wildfire-hurricane-climate.html);

# Energy codes help reduce energy burden







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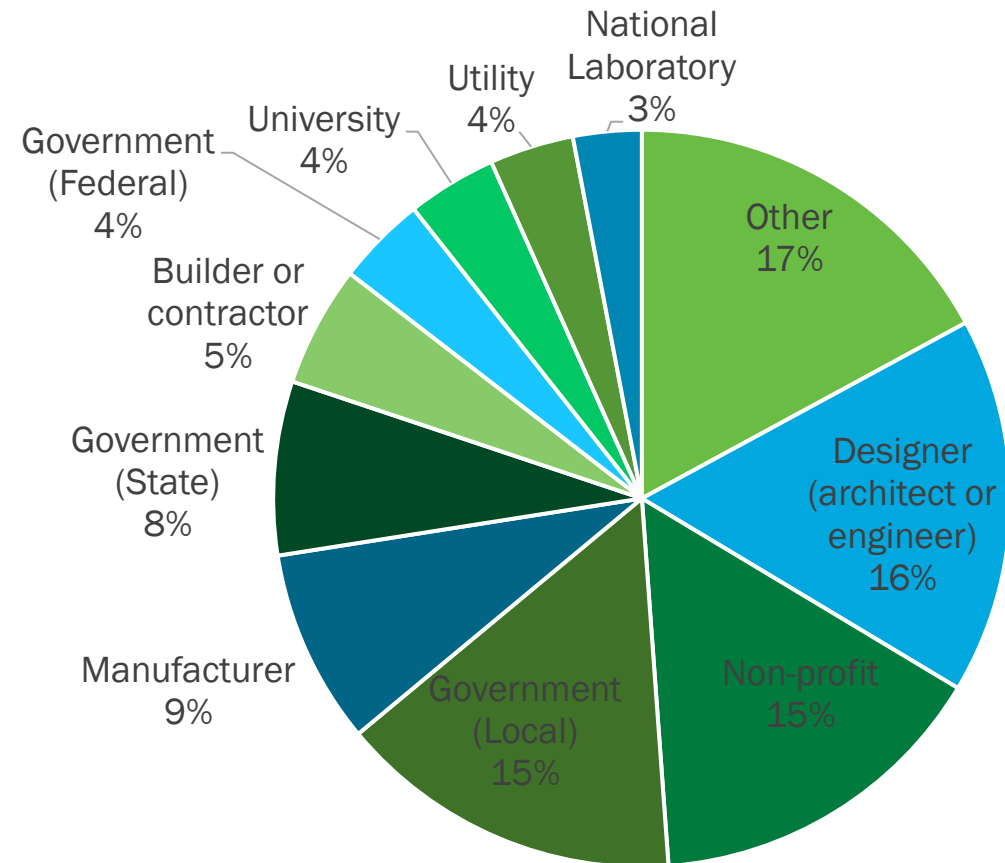
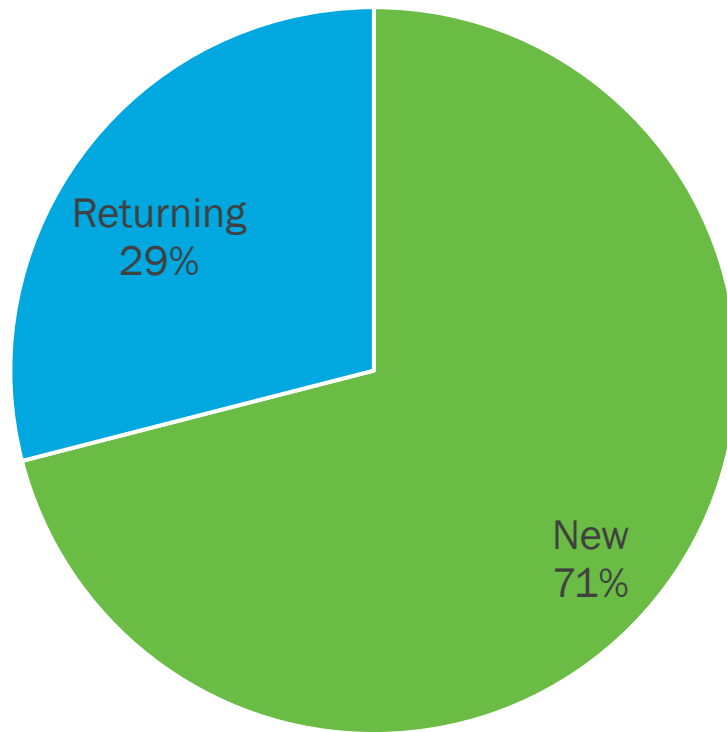
# Demographics and Housekeeping

## 2022 National Energy Codes Conference



# Who is tuning in this week?

- 879 registrants
- Nearly every state + DC and Puerto Rico represented, as well as 20 other countries from Australia to the United Kingdom



# Housekeeping + Logistics



Agenda is available at [energycodes.gov](https://energycodes.gov)



How to participate:

- Chat is open for comments and questions (attendees are muted by default)
- There will be polling opportunities to share feedback
- Breakout sessions are discussion based



AIA, ICC, and RESNET professional development credits are available for the main sessions



Session presentations will be made available next week



Check out our [NECC Seminar Series](#) which runs every other Thursday starting in August and throughout the Fall

(9085 1605)

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

“ENTER CODE HERE” at top of the webpage

OR

Navigate directly to: <https://www.menti.com/msbrja3e43>







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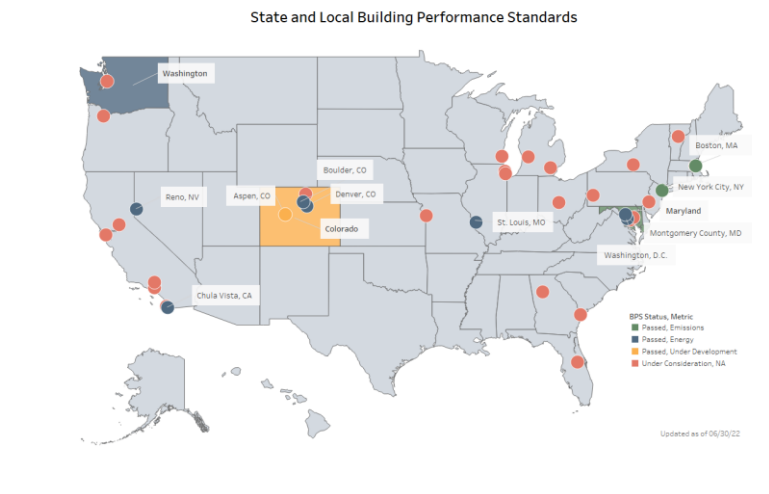
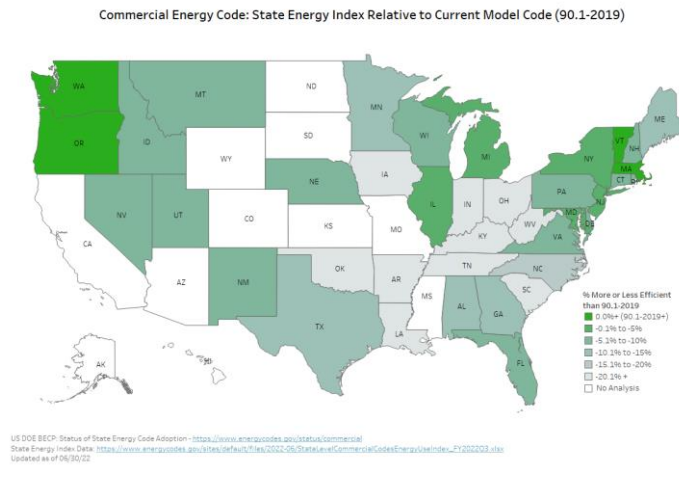
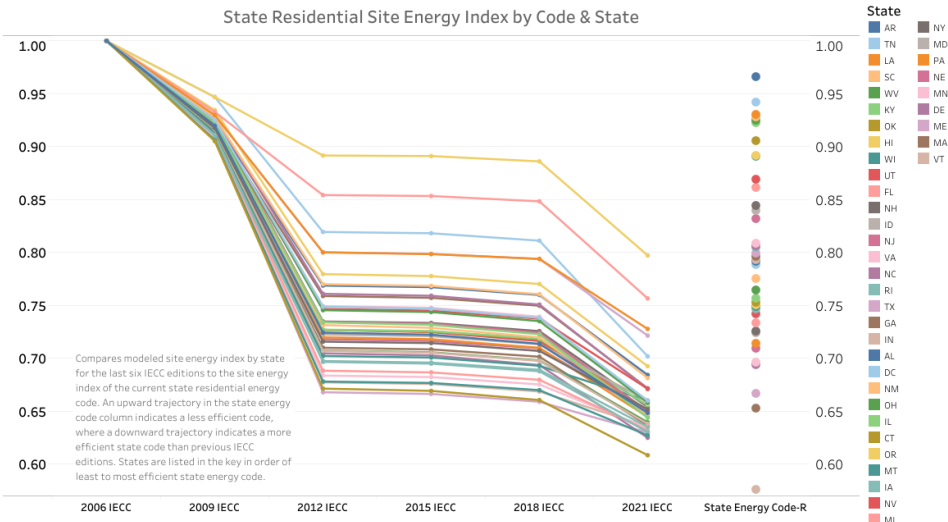
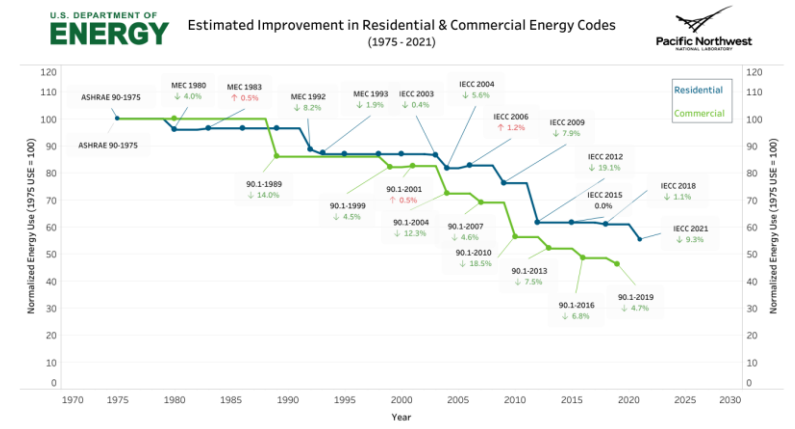
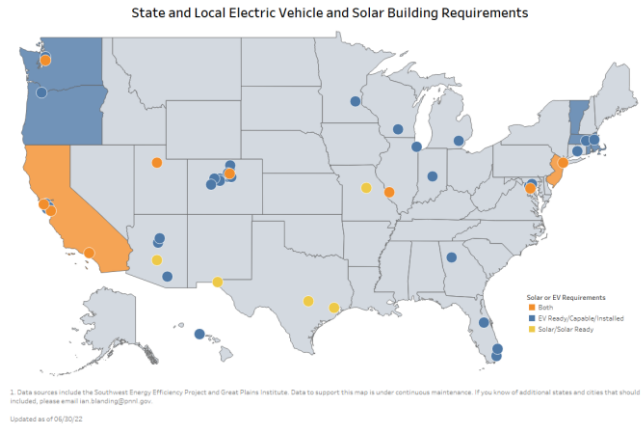
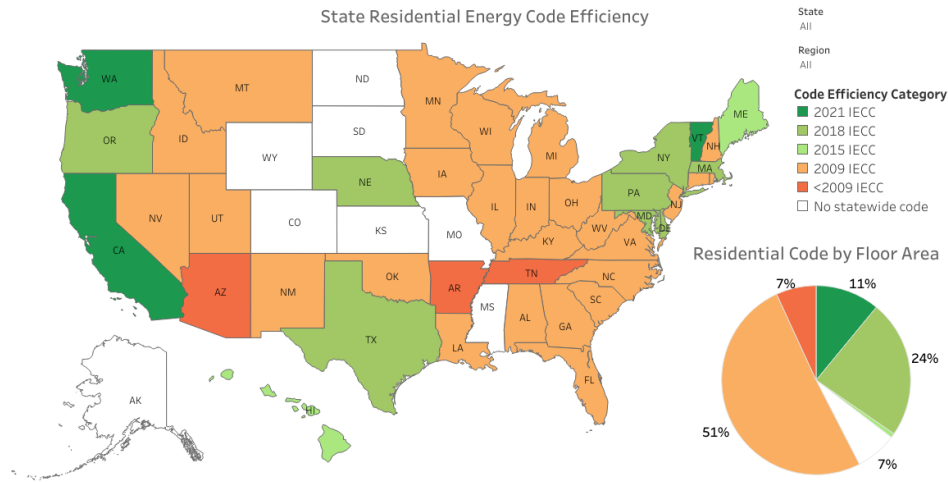
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# Key Resources

## DOE Building Energy Codes Program



# Now offering a suite of new interactive BECP infographics











[www.energycodes.gov/state-portal](http://www.energycodes.gov/state-portal)

[www.energycodes.gov/infographics](http://www.energycodes.gov/infographics)

# Stretch code resources include EV charging, solar PV, and others

## Technical Briefs

| Title                              | Description   | Report Link   | Fact Sheet Link  |
|------------------------------------|---|---|--|
| EV Charging                        | <p>Numerous studies show that sales of plug-in electric vehicles (PEVs) have grown consistently over the past 2 years in the U.S. Edison Electric Institute (EII) estimates one million PEVs on the road in 2018 and forecasts a total of 18.7 million PEVs on the road by 2030. Based on this forecast, EII projects the need for an additional 9.6 million PEV charging stations by 2030.</p> <p>States and local governments have expressed interest to DOE in having energy code overlay requirements to support policy goals. This technical brief provides code language for PEV charging infrastructure for adoption by model codes, and states and local governments.</p> | <a href="#">EV Tech Brief</a>     | <a href="#">EV Fact Sheet</a>     |
| Simplified HVAC System Performance | This technical brief provides an additional heating, ventilation, and air conditioning (HVAC) System Performance path that goes beyond the prescriptive energy code. It provides a comprehensive performance-based approach for HVAC system evaluation and analysis.  | <a href="#">HSP Tech Brief</a>  | <a href="#">HSP Fact Sheet</a>  |

|                       |  |   |   |
|-----------------------|--|---|---|
| Energy Credits        | This technical brief provides additional energy efficiency measures that go beyond the current prescriptive commercial energy codes. It demonstrates relative savings for multiple measures and shows a base savings package by building type and climate zone that is cost effective for building owners and tenants.                                     | <a href="#">Energy Credits Tech Brief</a>      | <a href="#">Energy Credits Fact Sheet</a>      |
| Electric Readiness    | This technical brief provides requirements for electric readiness that could be incorporated into model residential energy codes. It provides background on the basis and benefits of the provisions, and model code language that can be plugged into the IECC or adapted into other energy codes.  | <a href="#">Electric Readiness Tech Brief</a>  | <a href="#">Electric Readiness Fact Sheet</a>  |
| GEB (Demand Response) | This technical brief provides requirements for demand-responsive thermostats and water heaters that could be incorporated into model residential energy codes. It provides background on the benefits of these devices, impacts on the cost of construction, and model code language that can be plugged into the IECC or adapted into other energy codes. | <a href="#">GEB Tech Brief</a>                 | <a href="#">GEB Fact Sheet</a>                 |

[www.energycodes.gov/stretch-codes](http://www.energycodes.gov/stretch-codes)

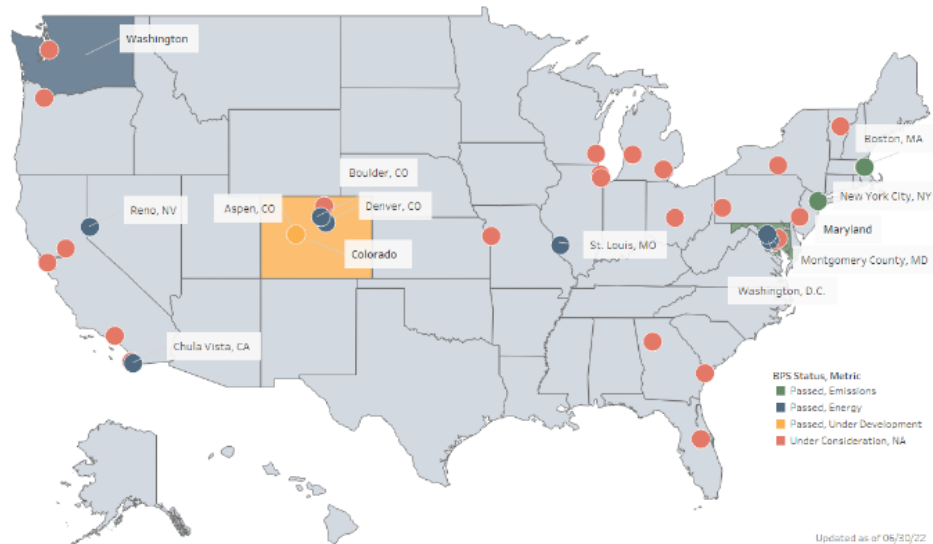


# New resources on Building Performance Standards (BPS)

## Building Performance Standards

Building Performance Standards (BPS) are outcome-based policies and laws aimed at reducing the carbon impact of the built environment by requiring existing buildings to meet energy and/or greenhouse gas emissions-based performance targets. When combined with building codes that regulate performance in specific instances like new construction or major renovations, BPS are powerful policy tools that provide a lifecycle approach to building performance and can empower state and local governments to deliver on their energy and carbon goals for the building sector.

State and Local Building Performance Standards



### LEARN MORE...

[BPS IMPLEMENTATION](#)

[BPS RESOURCE LIBRARY](#)

[BPS FINANCING](#)

[BPS TECHNICAL ASSISTANCE](#)

[www.energycodes.gov/BPS](http://www.energycodes.gov/BPS)

# State resources quantifying energy, cost and GHG impacts

## State Analysis

Pacific Northwest National Laboratory (PNNL) assesses recent editions of the model codes to quantify the associated energy & cost savings. These analyses take into account varying state-level conditions, such as incremental costs, utility rates, climatic conditions and construction trends. The residential analyses are customized based on current state energy codes. The following national analyses are currently available:

### State Cost-effectiveness Analysis Reports

| State    | Commercial   | Residential   |
|----------|--|---|
| Alabama  | <a href="#">ASHRAE 90.1-2019</a> <br><a href="#">ASHRAE 90.1-2016</a> <br><a href="#">ASHRAE 90.1-2013</a>        | <a href="#">2021 IECC</a> <br><a href="#">2018 IECC</a> <br><a href="#">2015 IECC</a>        |
| Alaska   | <a href="#">ASHRAE 90.1-2019</a> <br><a href="#">ASHRAE 90.1-2016</a> <br><a href="#">ASHRAE 90.1-2013</a>        | <a href="#">2021 IECC</a> <br><a href="#">2018 IECC</a> <br><a href="#">2015 IECC</a>        |
| Arizona  | <a href="#">ASHRAE 90.1-2019</a> <br><a href="#">ASHRAE 90.1-2016</a> <br><a href="#">ASHRAE 90.1-2013</a>      | <a href="#">2021 IECC</a> <br><a href="#">2018 IECC</a> <br><a href="#">2015 IECC</a>      |
| Arkansas | <a href="#">ASHRAE 90.1-2019</a> <br><a href="#">ASHRAE 90.1-2016</a> <br><a href="#">ASHRAE 90.1-2013</a>  | <a href="#">2021 IECC</a> <br><a href="#">2018 IECC</a> <br><a href="#">2015 IECC</a>  |

## The Impact of Building Energy Codes

Building energy codes represent a significant savings opportunity for U.S. home and business owners. Model energy codes for residential and commercial buildings are projected to save (cumulative 2010-2040):

- **\$138 billion** energy cost savings
- **900 MMT** of avoided CO2 emissions
- **13.5 quads** of primary energy

These savings equate to the annual emissions of:

- 195 million passenger vehicles
- 227 coal power plants
- 108 million homes

For perspective, the primary energy consumption of the entire U.S. commercial and residential sectors in 2020 was estimated at 38 quads.

[www.energycodes.gov/national-and-state-analysis](http://www.energycodes.gov/national-and-state-analysis)

<https://www.energycodes.gov/impact-analysis>

# Submit request for technical assistance from DOE

EERE » Technical Assistance » Help Desk

## Help Desk

Submit technical questions about building energy codes, REScheck or COMcheck projects, or BECP website content.



1 Choose a Support Type      2 About You      3 Details

1 of 3 (0%)

Software/Tool Support     Technical Support     Website Support

Technical Support Type ? \*

Formal Technical Assistance ▼

[www.energycodes.gov/technical-assistance/help-desk](http://www.energycodes.gov/technical-assistance/help-desk)



# Thank you to our planning committee, speakers, and participants!

We appreciate you spending part of your week with DOE and our Building Energy Codes family. Stay in touch!

Learn more at [energycodes.gov](http://energycodes.gov) and [energy.gov/eere/buildings](http://energy.gov/eere/buildings)

Contact us:

- Chris Perry ([christopher.perry@ee.doe.gov](mailto:christopher.perry@ee.doe.gov))
- Jeremy Williams ([jeremy.williams@ee.doe.gov](mailto:jeremy.williams@ee.doe.gov))



# Meet the DOE Building Energy Codes Program Team



**Ashley Armstrong, Regulatory 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

# Building Energy Codes Program Vision

- DOE is amplifying its technical assistance activities supporting implementation of the latest building energy codes
- Focus areas:
  - Traditional: training, workforce development, compliance activities
  - Innovative: stretch codes, BPS
  - Resilient building code measures
  - Equity, Energy, Environmental Justice (EEEJ)
- Bolstered by \$225 million IIJA funding to support code implementation (more on that soon!)

# Biden-Harris efforts to improve building codes

## FACT SHEET: Biden-Harris Administration Launches Initiative to Modernize Building Codes, Improve Climate Resilience, and Reduce Energy Costs

JUNE 01, 2022 • STATEMENTS AND RELEASES

*New Building Codes Initiative will boost resilience to the impacts of climate change, lower utility bills for homes and businesses, and prioritize underserved communities*

Today, the Biden-Harris Administration is announcing a National Initiative to Advance Building Codes that will help state, local, Tribal, and territorial governments adopt the latest, current building codes and standards, enabling communities to be more resilient to hurricanes, flooding, wildfires, and other extreme weather events that are intensifying due to climate change.

Modern building codes and standards provide a range of smart design and construction methods that save lives, reduce property damage, and lower utility bills—for example, by ensuring that roofs can withstand hurricane winds, that construction materials are resistant to flood damage, and that insulation keeps heating and cooling costs low. With extreme weather events

- Ensure federally-funded buildings are built using modern codes and standards
- Harness \$225 million from IIJA funding to support energy code implementation
- Incentivize communities to adopt the latest codes and standards
- Lead by example in federal portfolio by targeting net-zero building emissions by 2045

[www.whitehouse.gov/briefing-room/statements-releases/2022/06/01/fact-sheet-biden-harris-administration-launches-initiative-to-modernize-building-codes-improve-climate-resilience-and-reduce-energy-costs/](https://www.whitehouse.gov/briefing-room/statements-releases/2022/06/01/fact-sheet-biden-harris-administration-launches-initiative-to-modernize-building-codes-improve-climate-resilience-and-reduce-energy-costs/)