



Building the Future Now: Climate-Aligned Building Codes and Policies

Mountain Towns 2030 Webinar
April 21, 2022

nbi new buildings
institute



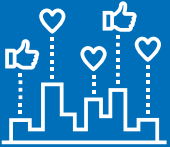
New Buildings Institute (NBI)

is a 501(C)(3) nonprofit that works collaboratively with industry market players—governments, utilities, energy efficiency advocates and building professionals—to promote advanced design practices, innovative technologies, public policies and programs that improve energy efficiency at the highest levels and decarbonize the built environment.

Agenda



Overview of Building Energy Codes



Introduction to Codes for Climate



Other Building Decarb Policies and Programs



Resources



Discussion

75%
electricity
consumption

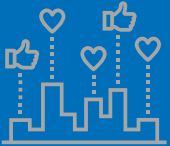
50% fossil gas
consumption

39% US
Emissions

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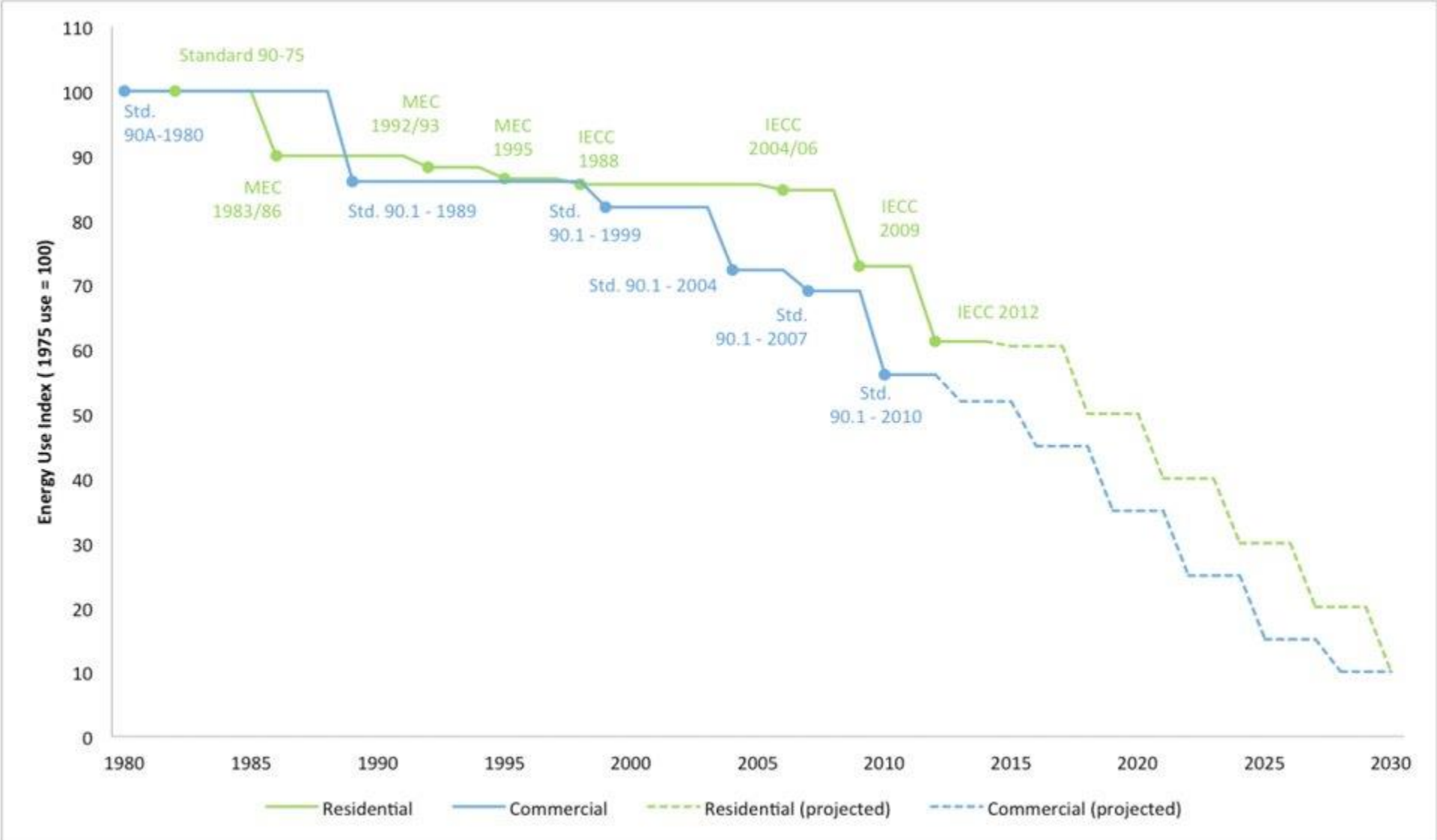


Resources



Discussion

Code Trajectory



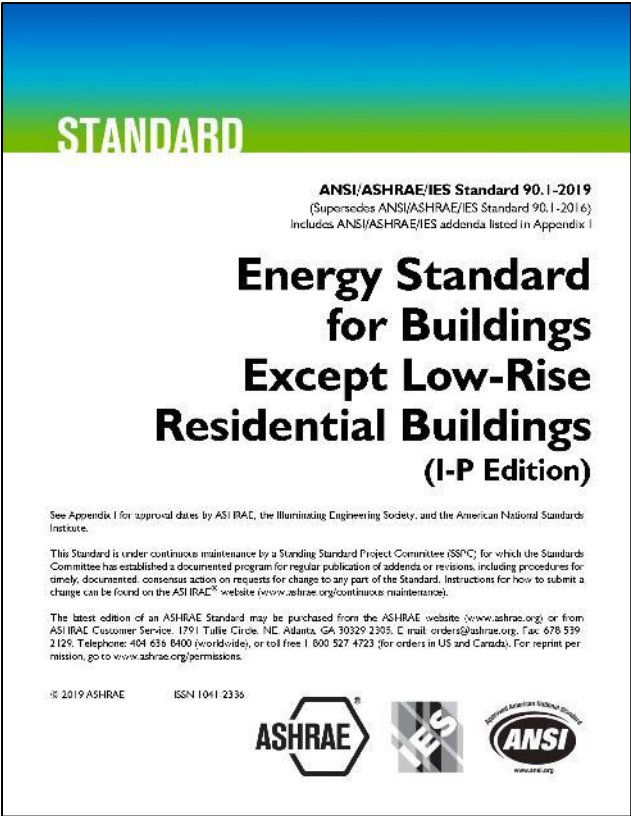
Graphic Source: US Department of Energy (DOE) Building Energy Codes Program. History of US Building Codes 1980-2012.

Code and Standards Bodies

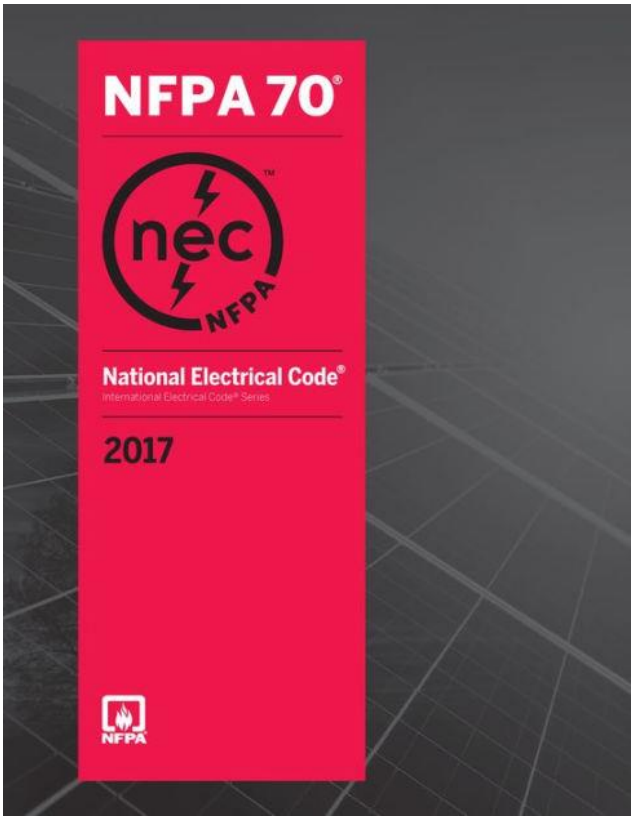
International Code Council (ICC)



ASHRAE

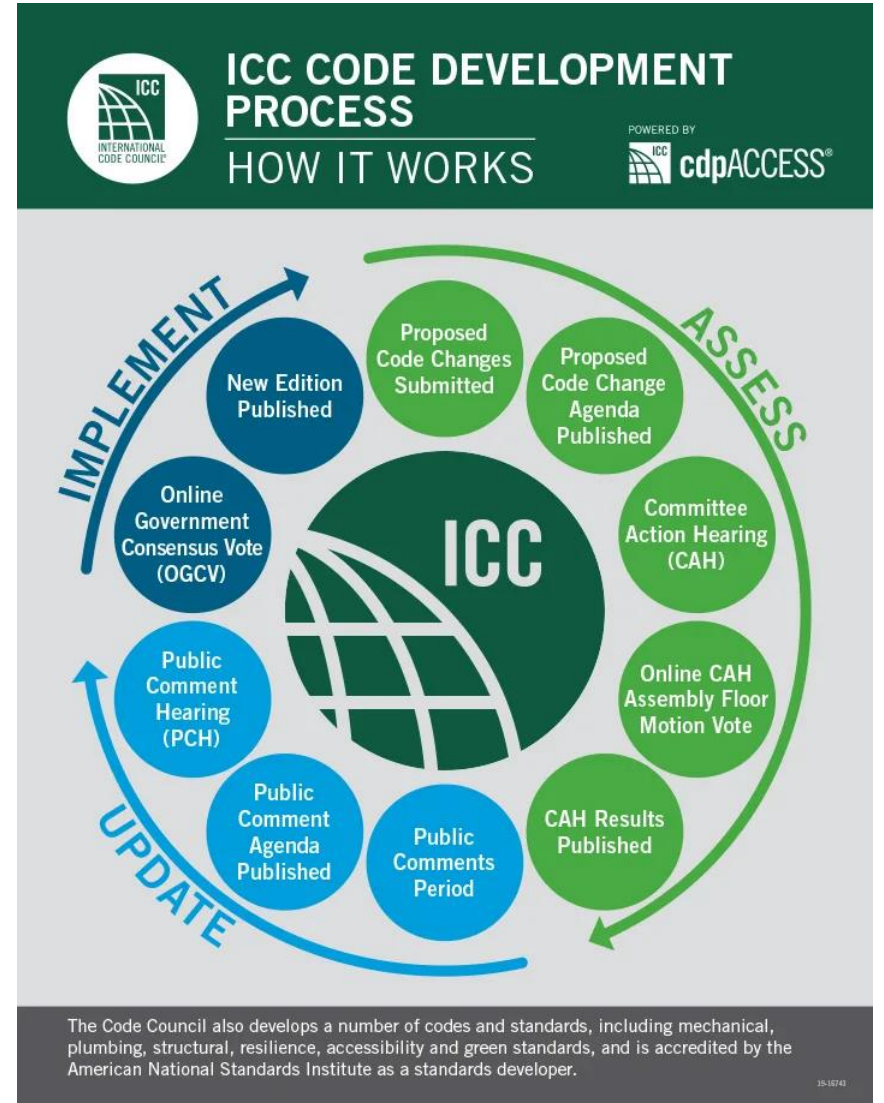


NFPA



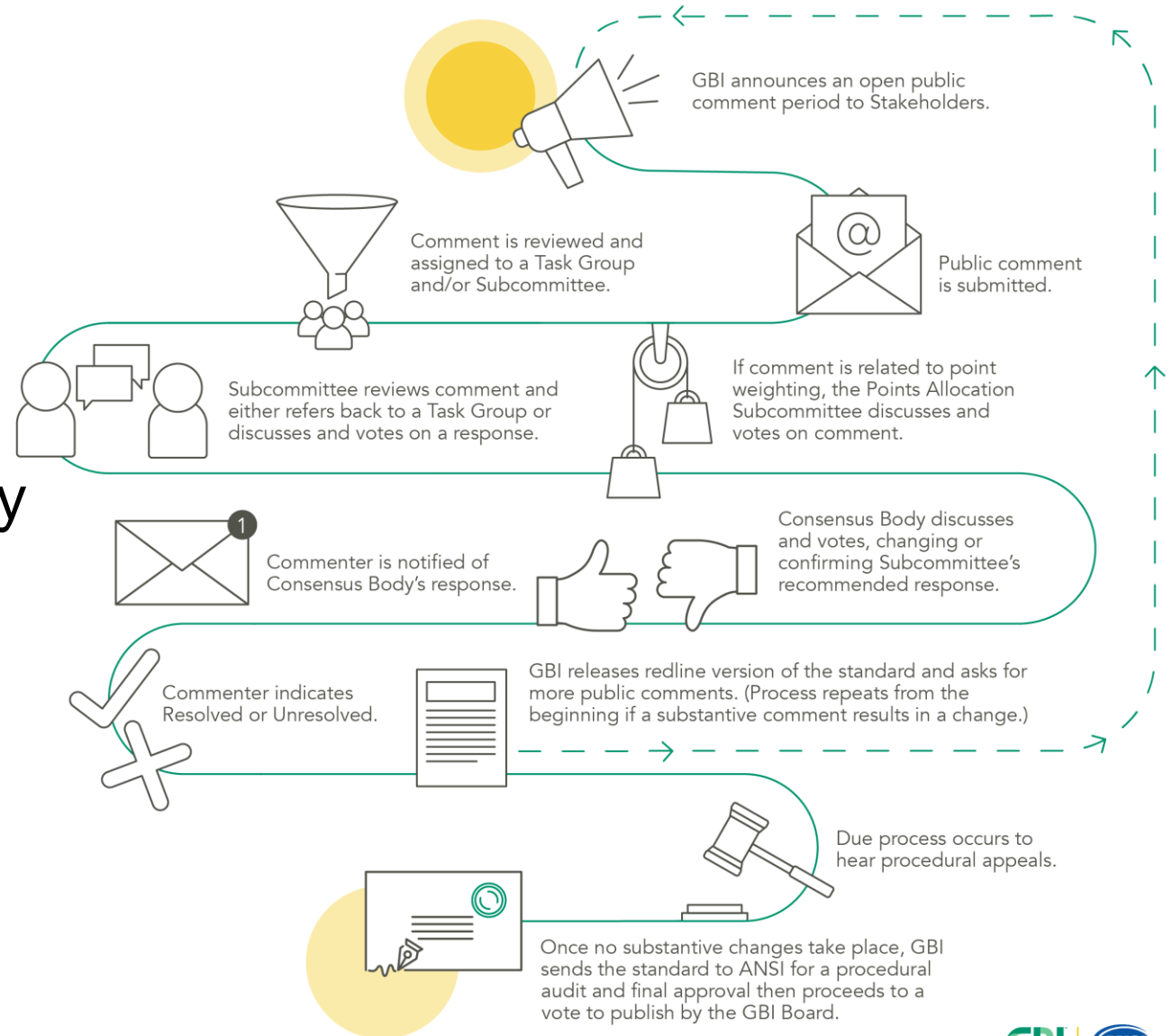
Code Development

- Committees are convened
- Proposals are developed, submitted and vetted
- Proposals are sent out for public comment
- Proposals finalized and voted on
- New editions are published (~3 years)



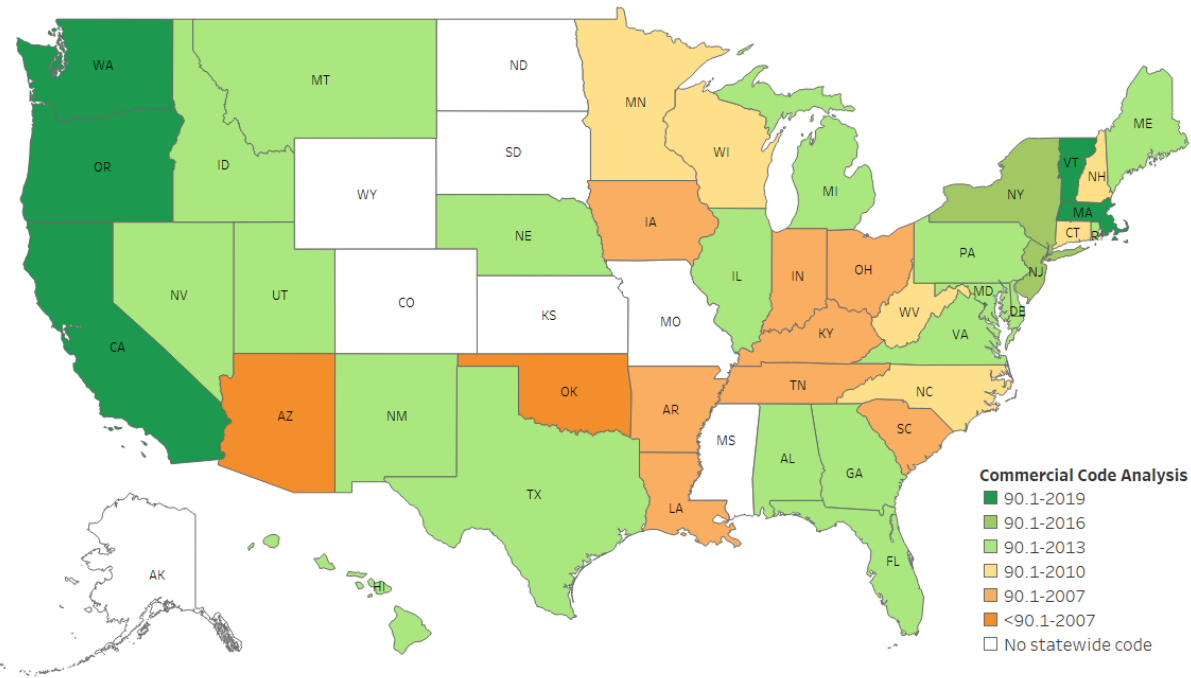
Standard Development

- Committees are convened
- Public proposals are submitted, vetted and decisions published
- Proposals may be workshopped by committee to reach consensus
- Committee members may bring forward proposals from inside, not only through public submission
- New editions published (~3 years)



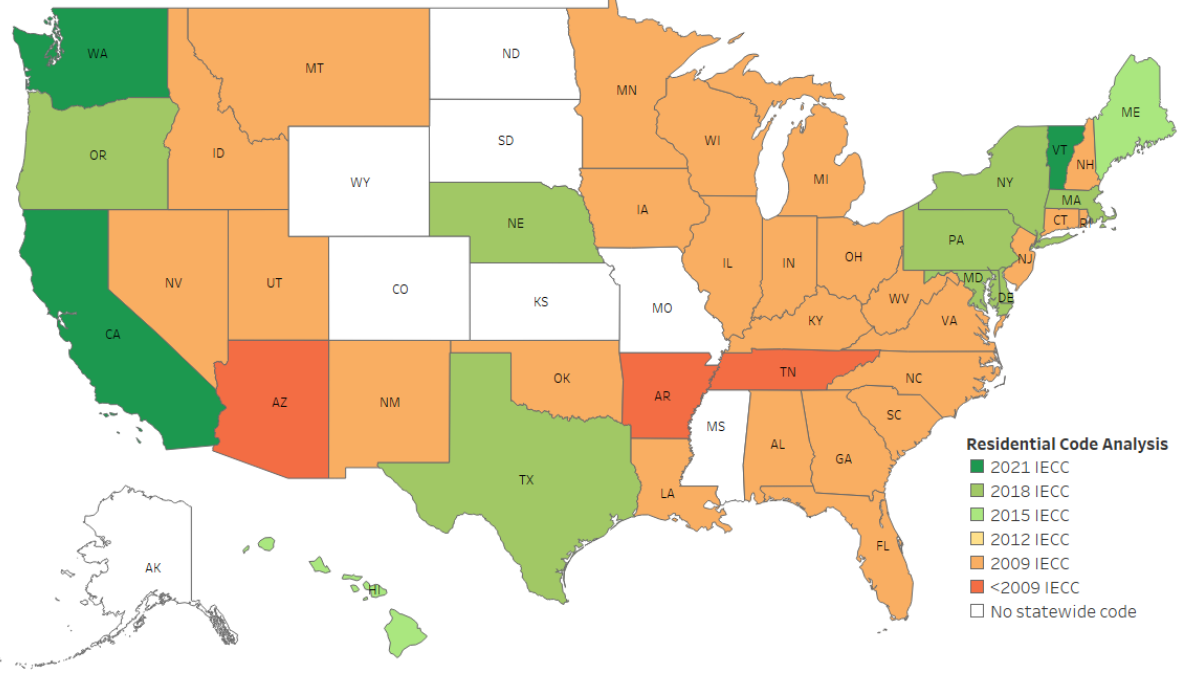
Code Adoption Status

Commercial Buildings



Updated as of 03/31/22

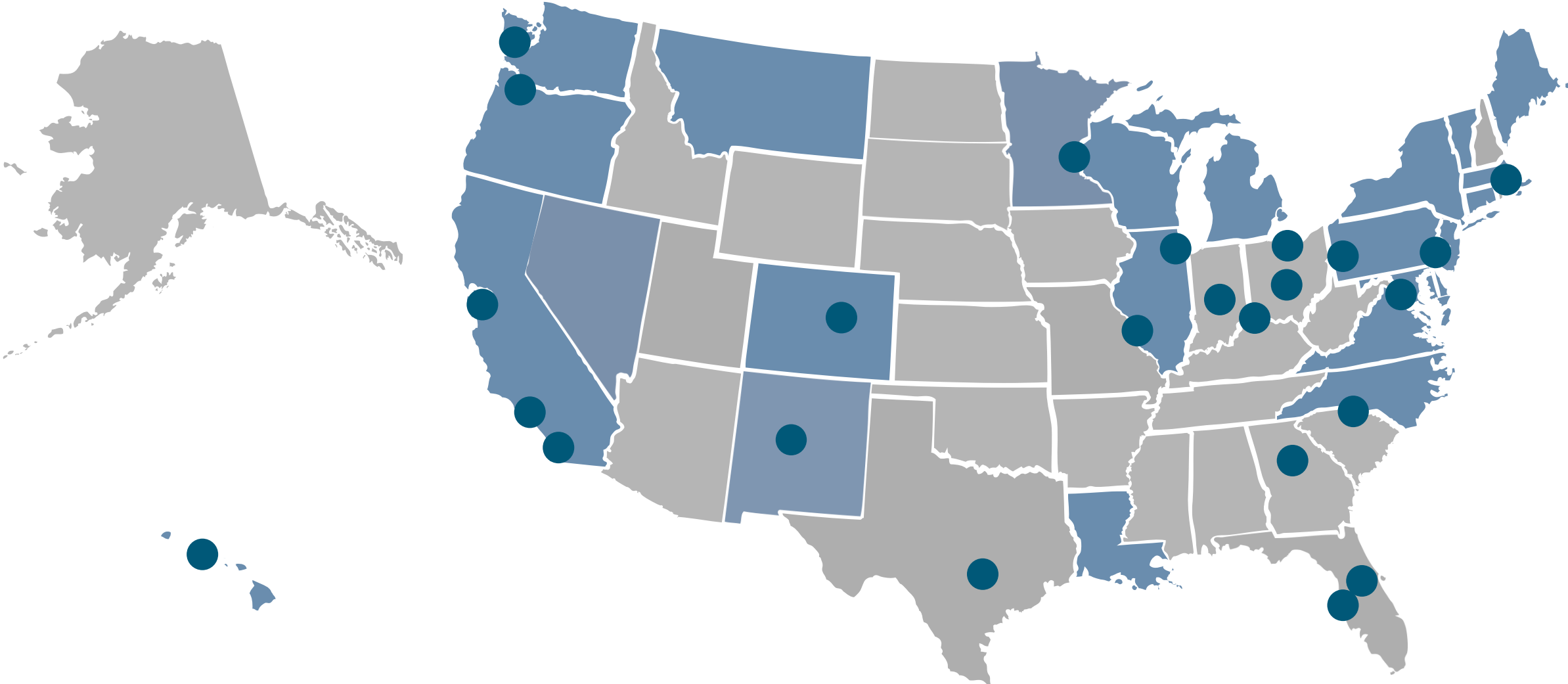
Residential Buildings



Updated as of 03/31/22

Graphic Source: US Department of Energy (DOE) <https://www.energycodes.gov/status>

US Leadership*

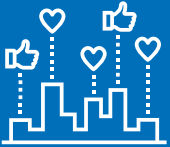


* Includes USCA, CESA, ACCC Cities

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Codes for Climate™

Tactical Actions



Support Policy-makers.

Align around a Code for Climate, and provide technical and policy support

Use what works.

Continue to engage and advance IECC and ASHRAE model codes and standards to meet climate needs

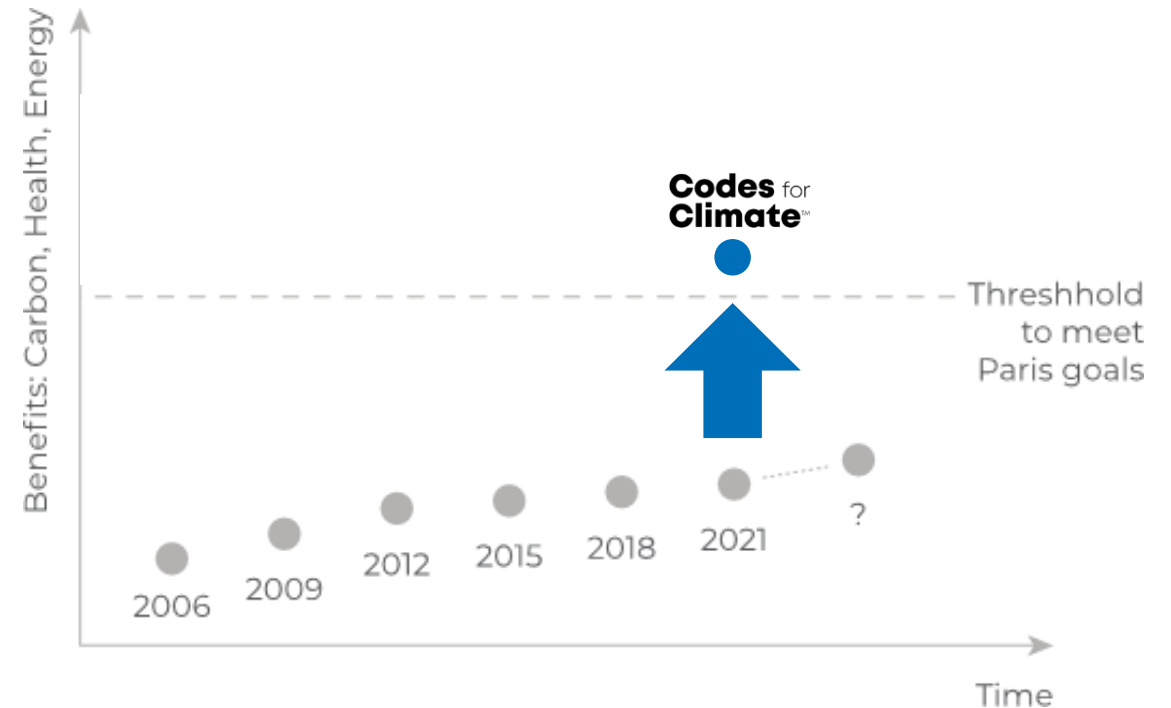
Disrupt what does not.

Create alternate and actionable code and policy language that provides states and cities the code they need.

The Strategy:

Codes for Climate™

We are creating **Codes for Climate™** to work with state and municipal governments to deliver the codes and standards needed to achieve 1.5°C climate goals.



Government goals v. current trajectory of codes

Generational Shift in Building Regulation

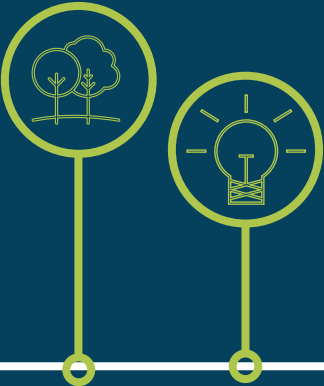
1970s Codes & Standards

Building energy codes
Utility rebate programs
National appliance standards



1990s Market Leadership

ENERGY STAR released
LEED standard released



2000s Disclosure

Benchmarking policies



2010s Zero Energy

NZE Certifications released
GTZ Database created

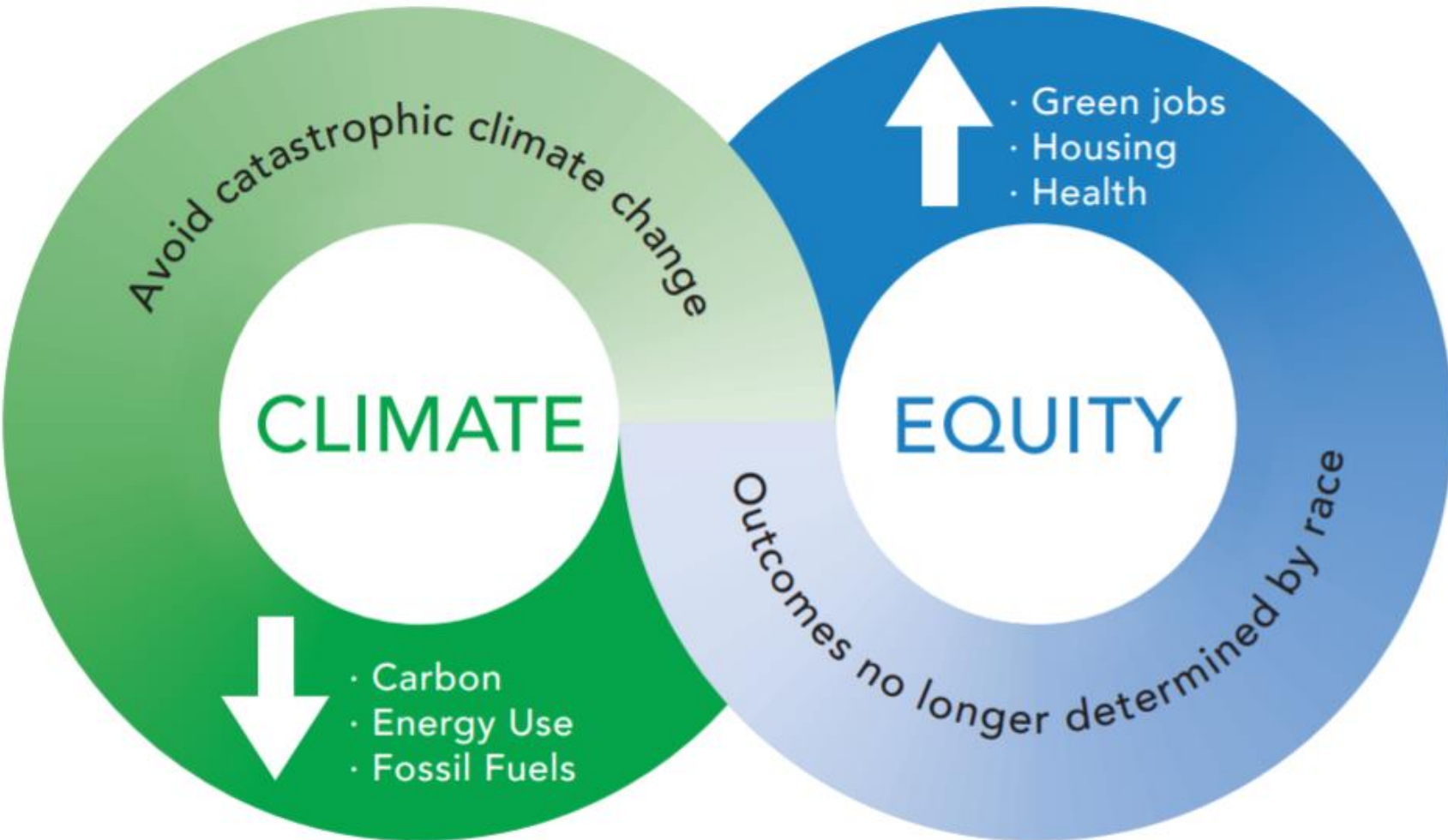


2020s Performance

Carbon centered regulations
Equity and environmental justice
Building performance standards



Climate and Equity Goals

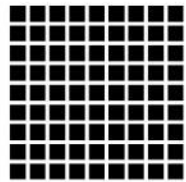


Source: ACCC BPS Framework

The Five Foundations of Zero Carbon Building Policies



Energy Efficiency



Renewable Energy



Grid Integration + Storage



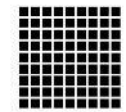
Building Electrification



Life-Cycle Impacts



New Goals for Buildings



	Scope	Goal
Efficiency	Base Codes / Building Systems	Highly Efficient / Passive Resilience
Electrification	Building Systems + Vehicles	Produce no onsite carbon emissions
Renewables	Onsite, Offsite + Procurement	Onsite resilience, Support RPS and additive procurement
Grid Integration	Controls, Storage	TOU Carbon reduction and Grid-sensitive
Lifecycle Impact	Embodied Carbon, Refrigerants + Deconstruction	Lifecycle GHG reductions
Equity	IAQ, Materials + More	Just transition, Improve health, Local Jobs, Affordability

Additional components of net zero energy building versus carbon neutral buildings

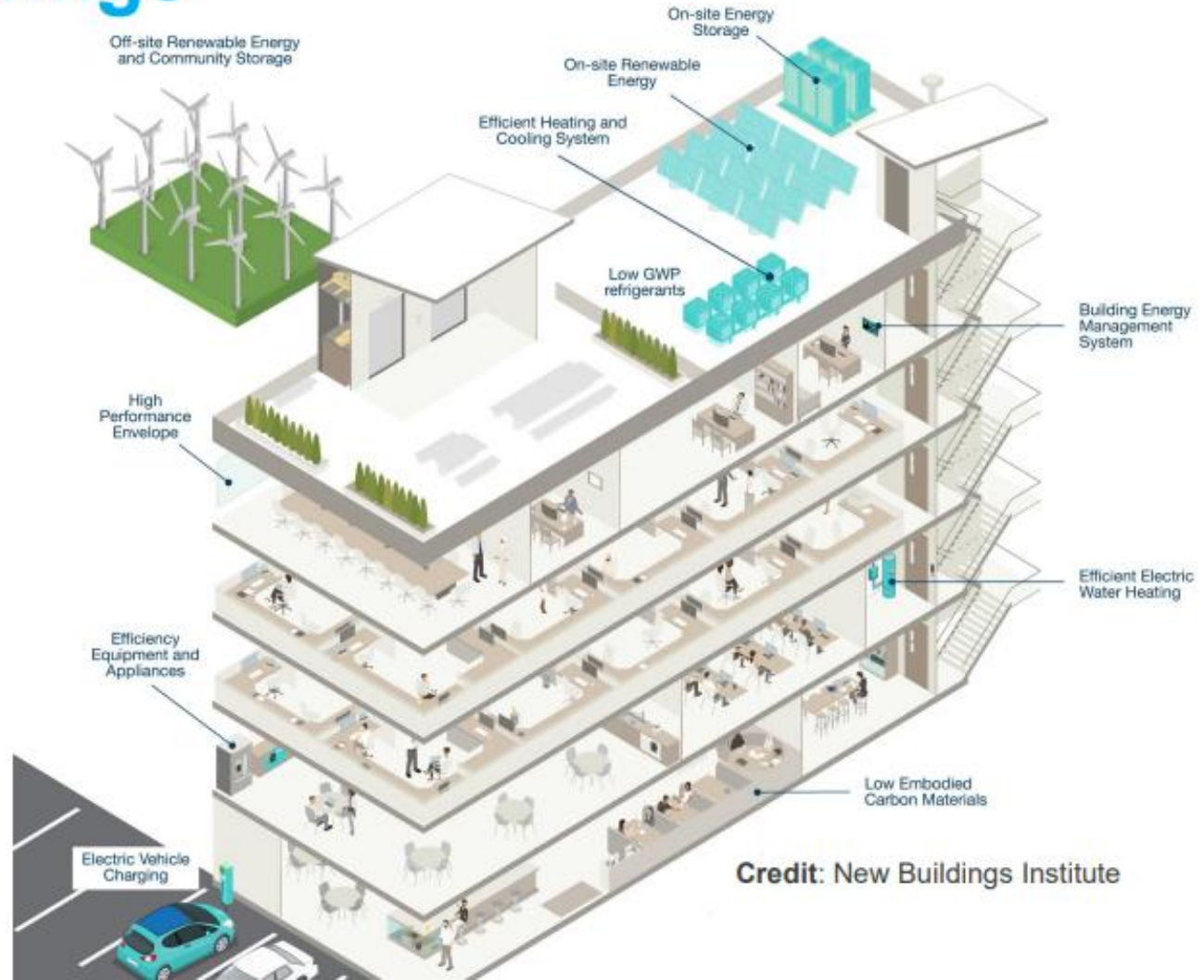
In addition to the Core Components, **carbon neutral buildings** should incorporate as much as possible the additional components listed below. As grid-supplied resources get cleaner, **building-grid integration** will become necessary to address peak demand and enable load shifting. Reducing onsite GHG emissions through **electrification** and **embodied carbon** will become priorities for driving down the climate changing impacts of the built environment.

Core Components:

- Maximize energy efficiency
- Prioritize on-site renewables
- Utilize off-site renewables
- Measure and manage net zero operations

Additional Components:

- Electrification-ready and minimize/eliminate on-site fossil fuels
- Optimize building-grid integration and on-site storage
- Specify low GWP refrigerants
- Select low embodied carbon materials



Credit: New Buildings Institute

Codes for Climate Workstreams



On-demand subject matter expertise



Technical support on code development and adoption



Deep engagement in model code development processes

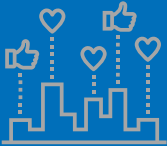


Resource, guidance, and model policy development

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Existing Buildings Policies

Benchmarking/ Transparency

- Measure and share whole-building energy data and whole building characteristics

Energy Audit/RCx

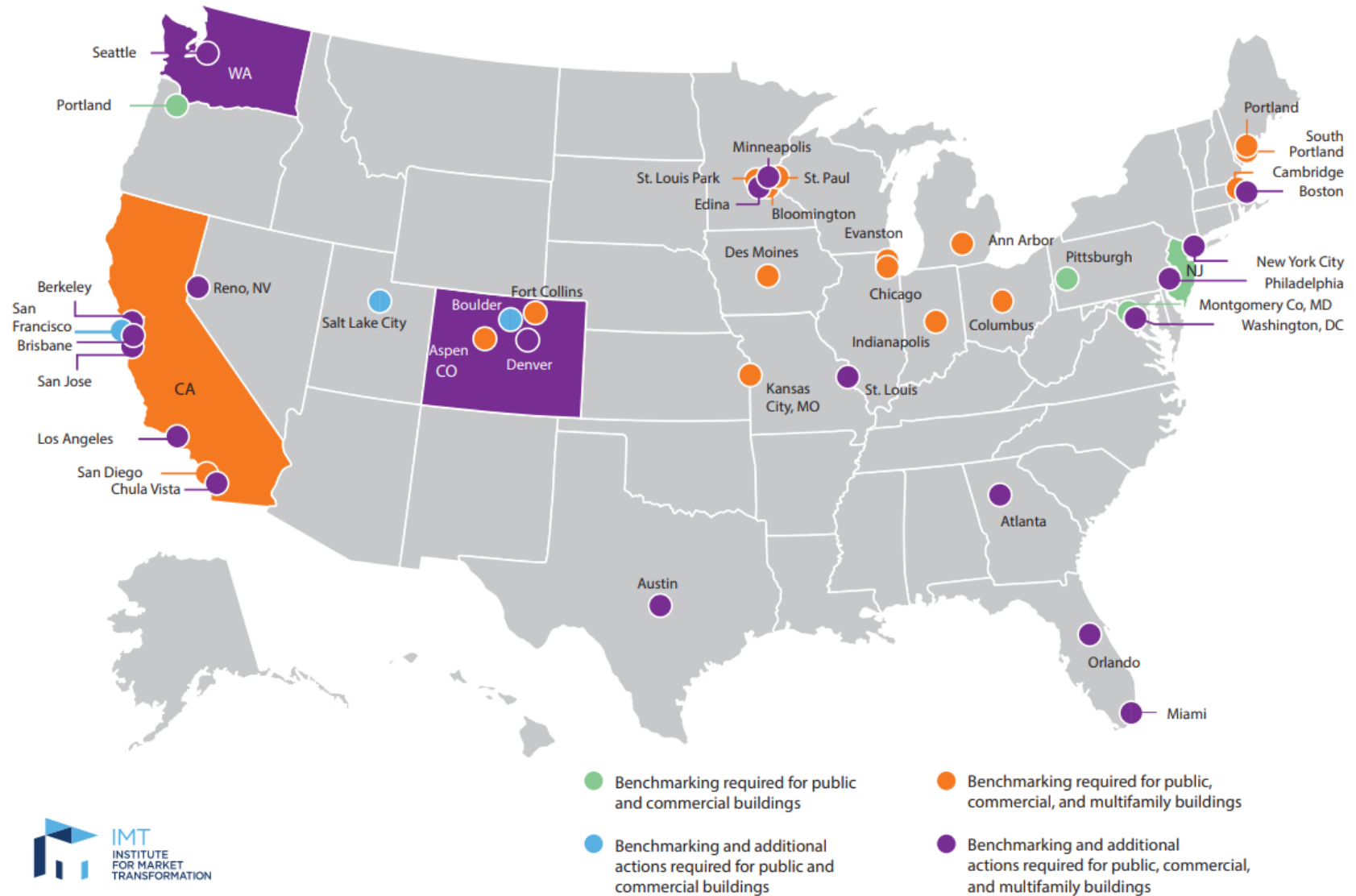
- Require analysis of building energy systems
- Collect data about building systems and energy conservation measures
- May require operational efficiency improvements

Building Performance Policies

- Compare building performance to threshold
- Building required to improve performance if threshold is not met



Subnational Existing Buildings Policies



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Map Source: Institute for Market Transformation (IMT) <https://www.imt.org/resources/map-u-s-building-benchmarking-policies/>

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Why Existing Buildings Policies

Benchmarking/ Transparency

- Provide market with information
- Inform market engagement and outreach
- Measure progress toward goals
- Support city planning and policymaking
- Support evidence-based policymaking

Energy Audit/RCx

- Identify actionable next steps at the building level
- Provide insight for program design and delivery
- Support performance improvements

Building Performance Policies

- Require continuous performance improvements, or continuous high performance, in regulated buildings





Considerations for Existing Buildings Policies

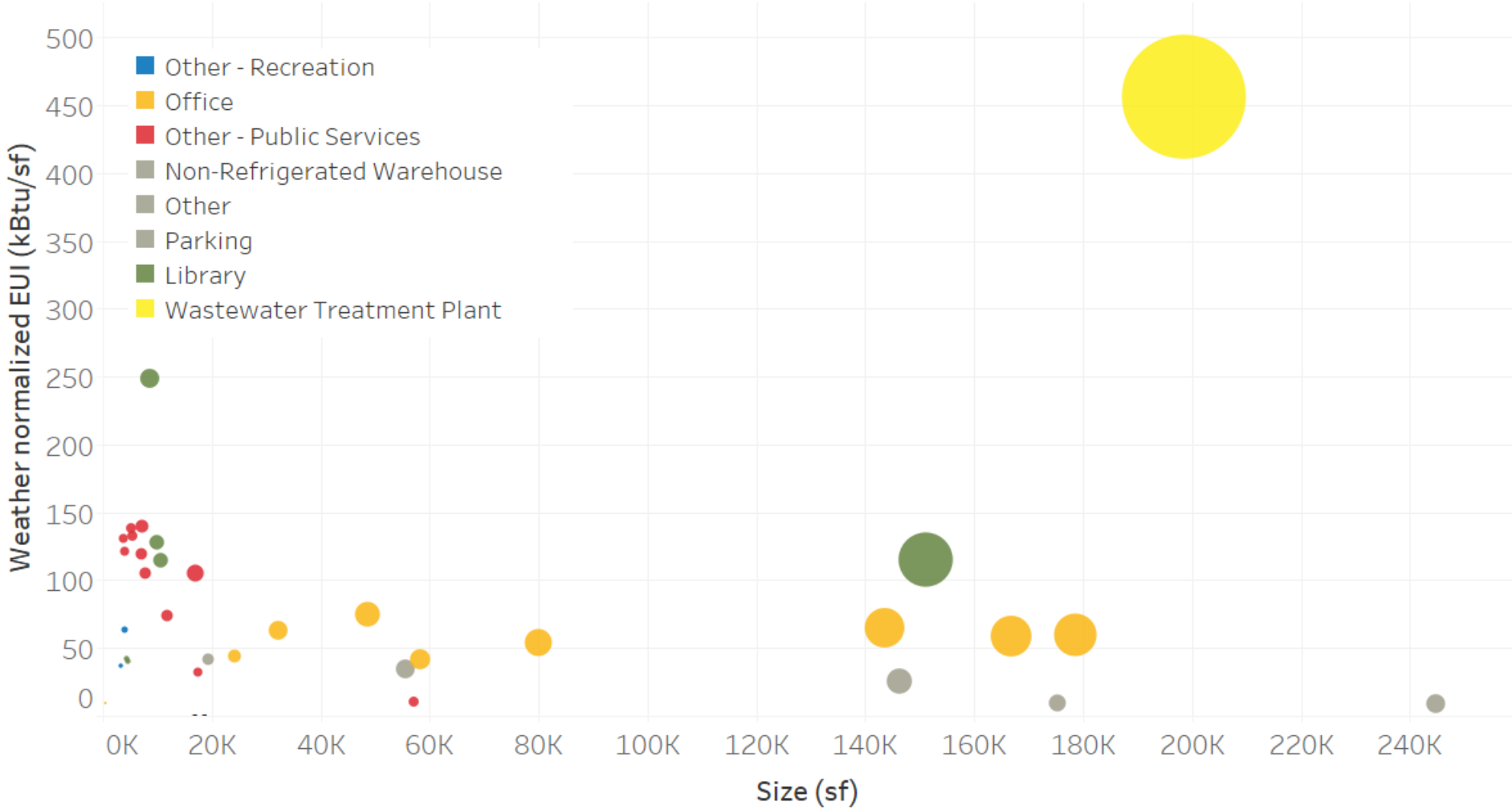
- Impact
- Data quality and management
- Data accessibility and clarity
- Accommodations for under-resourced building owners
- City resources to support compliance
- What's next?



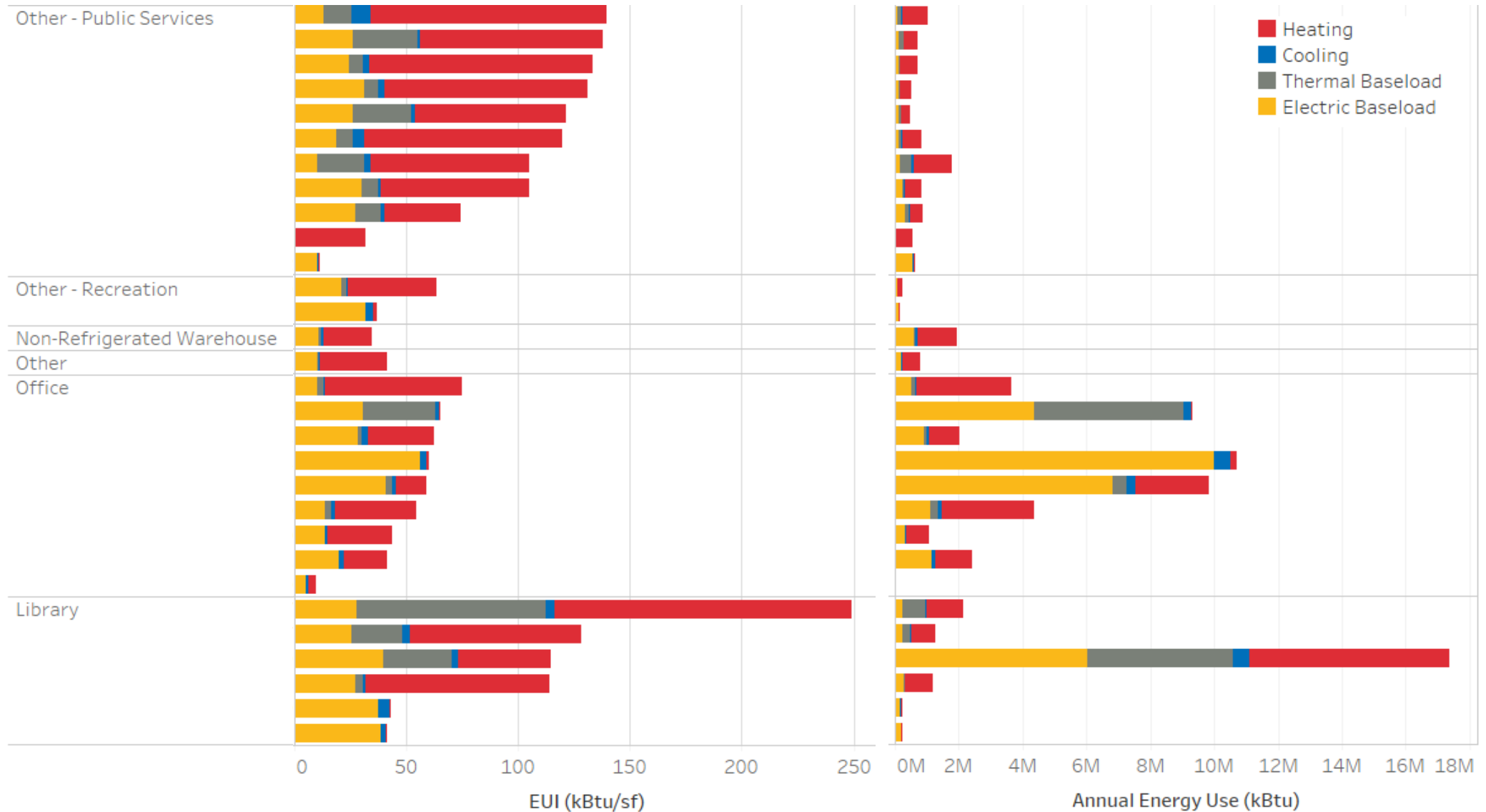
City Lead by Example Programs

- City-level leadership
- Asset management
- Proof-of-concept technology and operational demonstrations
- Workforce and market development

Portfolio Snapshot (FirstView)

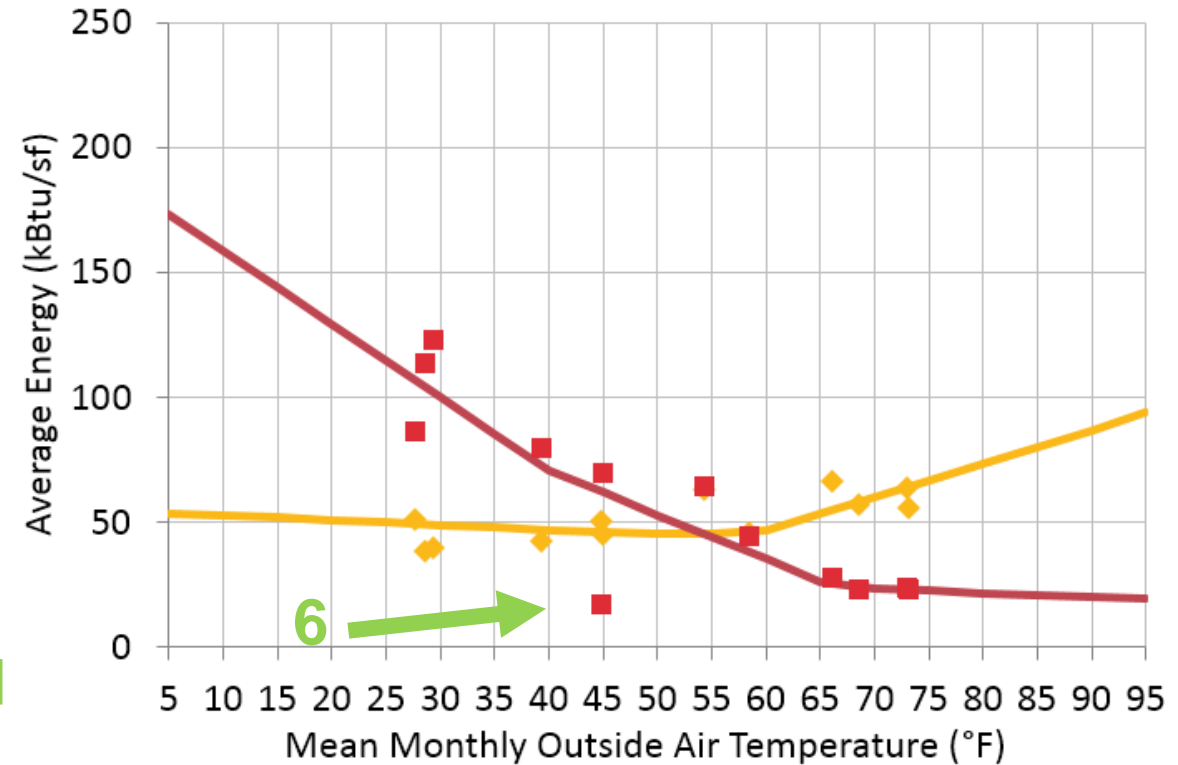
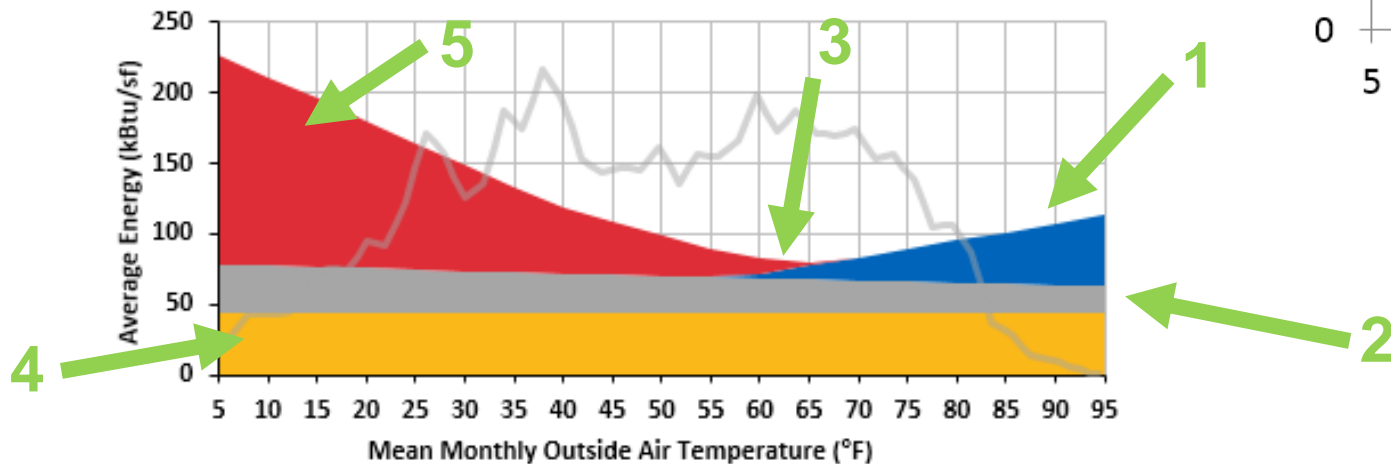


End-Use Analysis (FirstView)



Building-Level Diagnostics (FirstView)

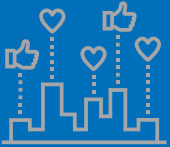
1. Cooling Efficiency
2. Summer Gas Use (Thermal baseload)
3. Control Issues
4. Lights and Plugs
5. Shell and Ventilation (Heating Efficiency)
6. Data Consistency (Noisiness)



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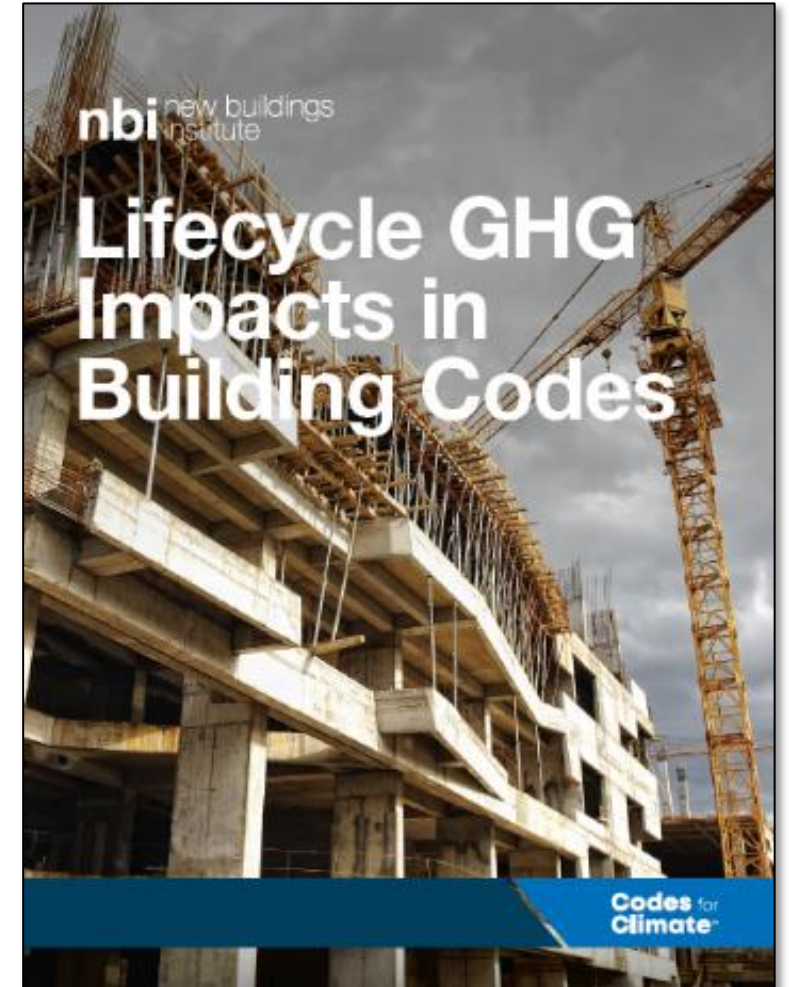
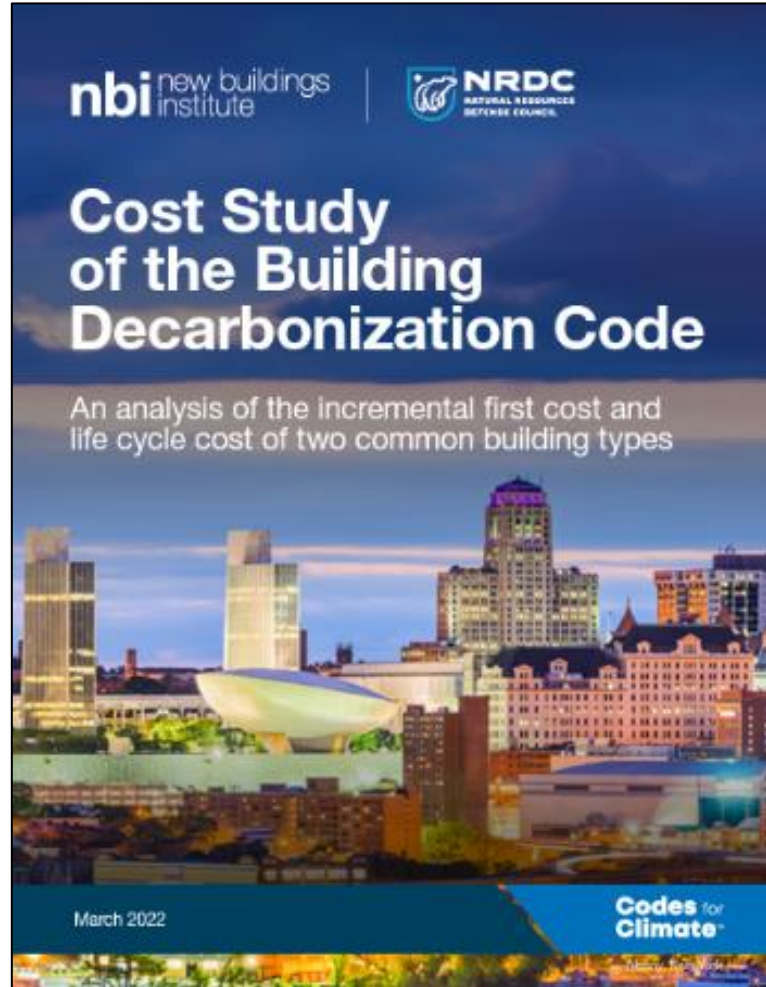


Resources

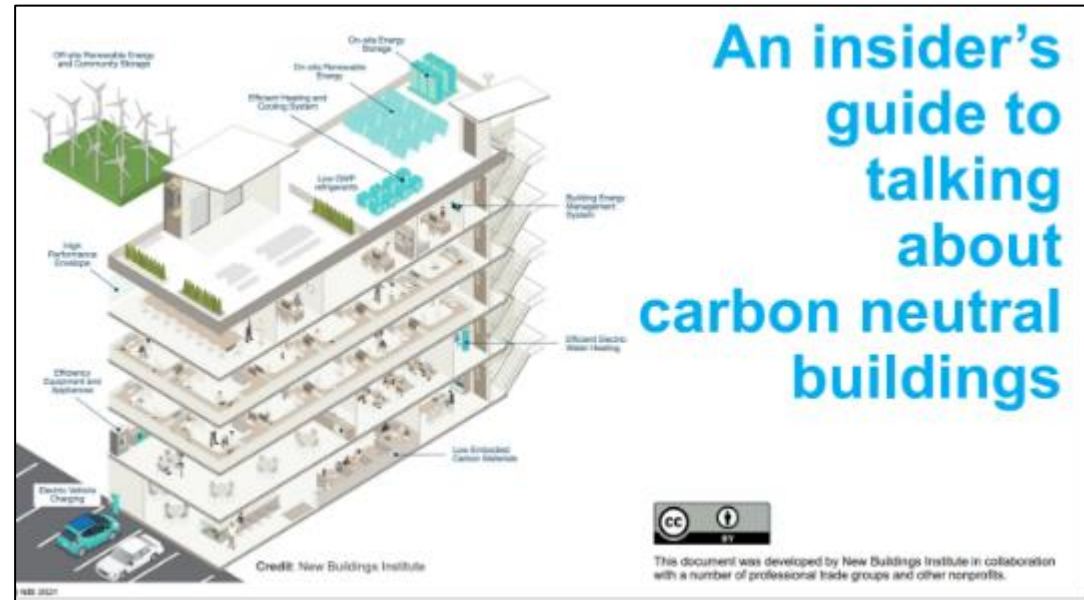
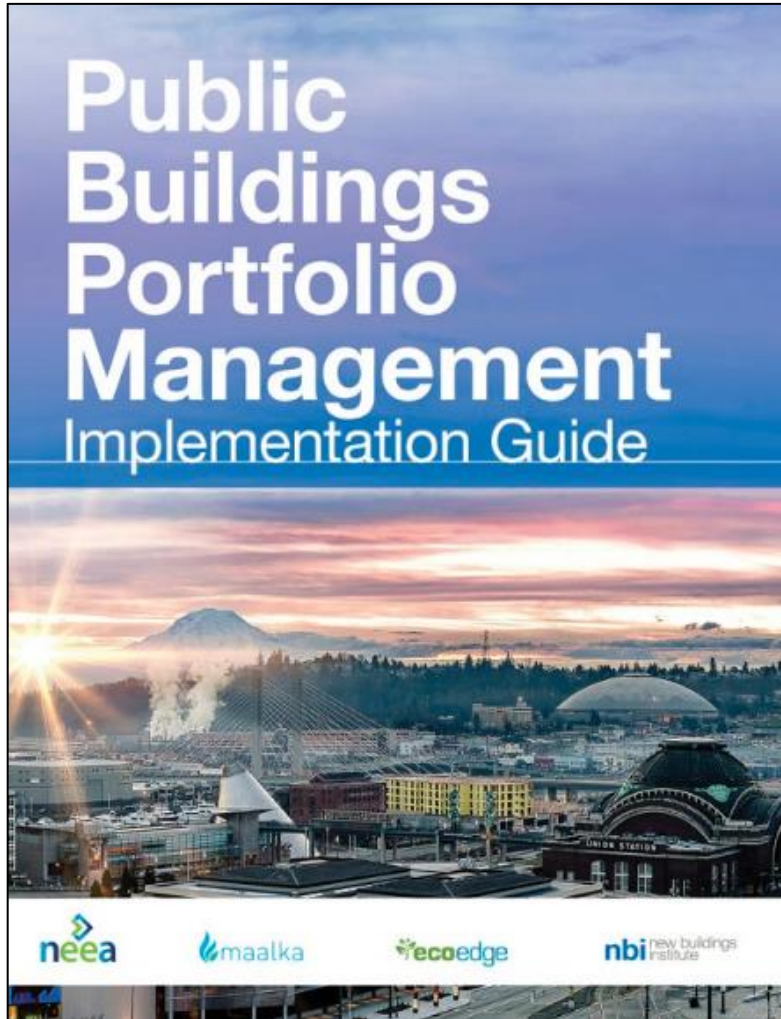


Discussion

Resources

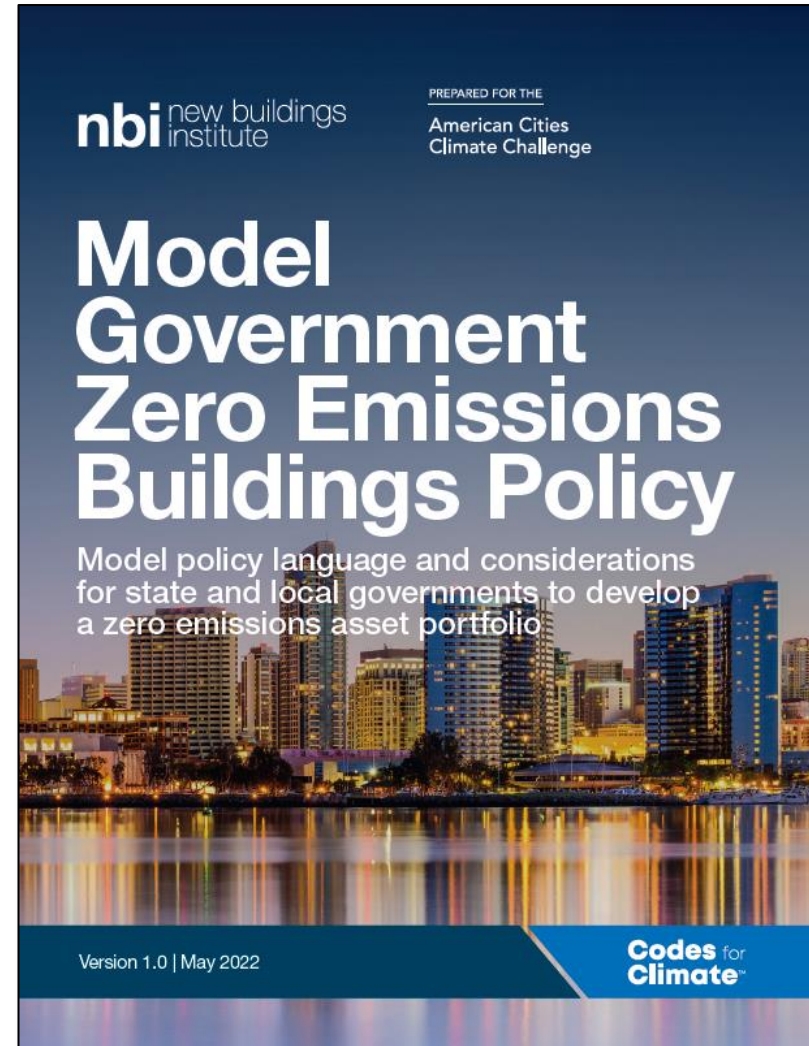


Resources



Coming in May!

*Sign up to receive NBI's newsletter
and communications to be notified
when this is available*



Key Links and Newsletters

Building Decarbonization Code

<https://newbuildings.org/resource/building-decarbonization-code/>

Cost Study of the Building Decarbonization Code

<https://newbuildings.org/resource/cost-study-of-the-building-decarbonization-code/>

Lifecycle GHG Impacts in Building Codes

<https://newbuildings.org/resource/lifecycle-ghg-impacts-in-codes/>

Public Buildings Portfolio Management

<https://newbuildings.org/resource/public-buildings-portfolio-management/>

Insider's Guide to Talking About Carbon Neutral Buildings

<https://newbuildings.org/wp-content/uploads/2021/09/Insiders-Guide-to-Carbon-Neutral-Buildings-2021092-1.pdf>

FirstView

<https://newbuildings.org/resource/firstview/>

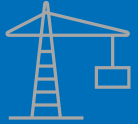
NBI Newsletter and Communications

<https://newbuildings.org/news/>

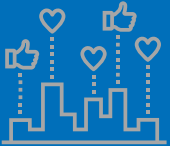
Codes for Climate Newsletter and Communications

<https://www.codesforclimate.org/join-us/>

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