

Advanced Building Energy Efficiency Policy Task Force (ABEEP) meeting

Building Energy Policies and Municipal
Opportunities in Illinois

June 13, 2023





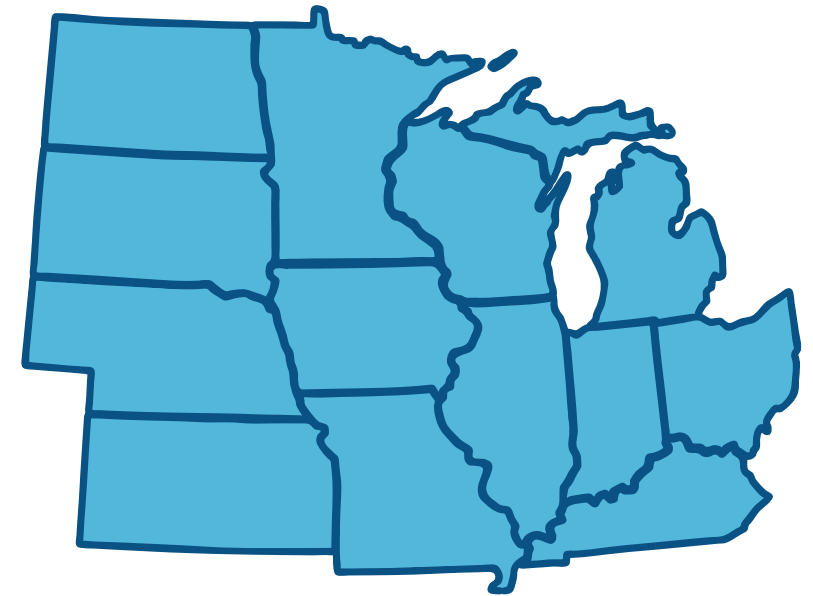
Climate + Clean Energy Solutions for everyone.

The knowledge, people, and
resources to solve our biggest
energy challenges.

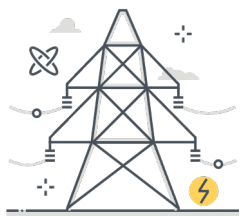


Midwest Energy Efficiency Alliance

The Midwest Energy Efficiency Alliance (MEEA) is a collaborative network, promoting energy efficiency to optimize energy generation, reduce consumption, create jobs and decrease carbon emissions in all Midwest communities.



MEEA is a non-profit membership organization with 160+ members, including:



Electric & gas utilities



State & local governments



Academic & Research institutions



Energy service companies & contractors

Metropolitan Mayors Caucus

Energy policies as sustainability and climate actions

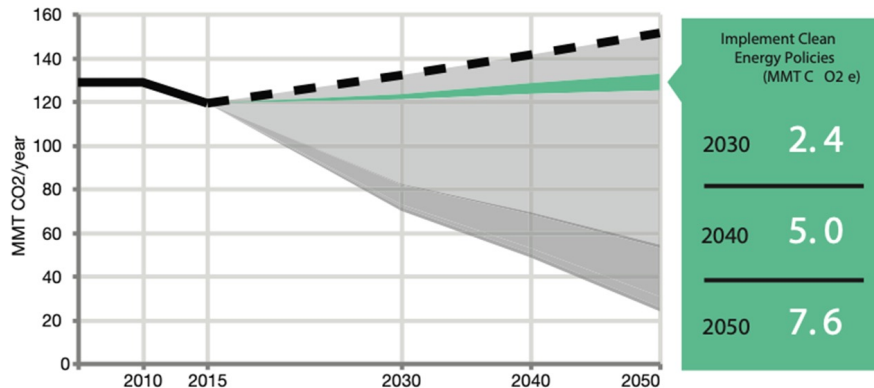


COLLABORATING FOR SUSTAINABLE COMMUNITIES



Goal: *Enact policies that support clean energy*

- Enact an ordinance requiring periodic benchmarking for large energy users
- Adopt 'stretch codes' setting higher standards for energy efficiency than IECC

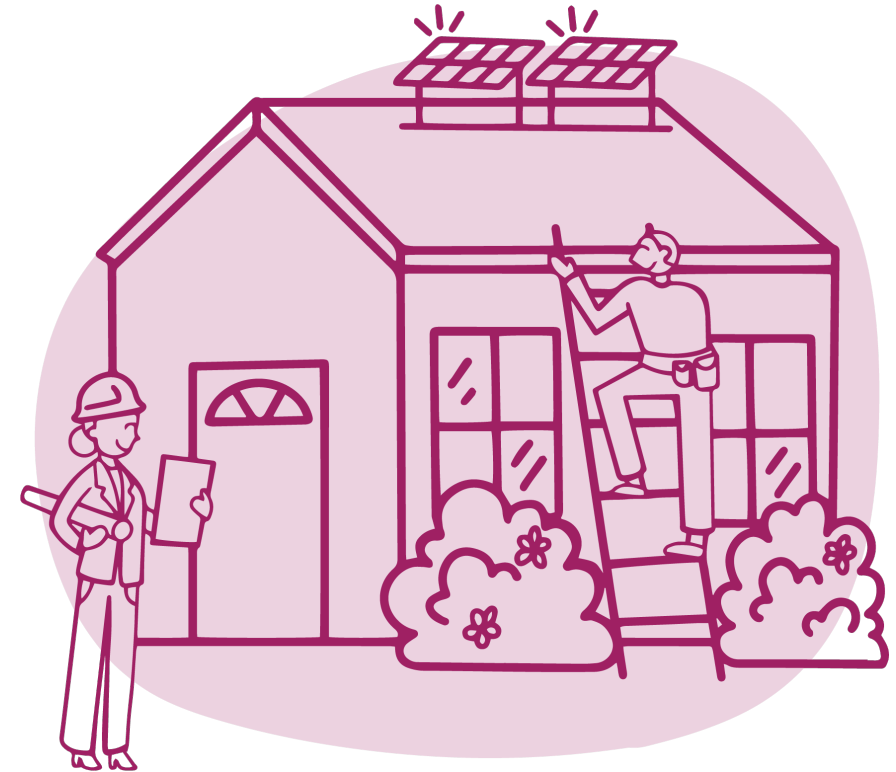


Climate Action Plan for the Chicago Region

- Support robust building energy codes, benchmarking, and building performance standards for retrofit projects
- Require high performance and net zero new construction

Agenda

- Introductions (15 minutes)
- Background on ABEEP (5 minutes)
- Overview of 2023 Plan (20 minutes)
- Policy first steps (40 minutes)
 - Stretch code 101
 - Benchmarking and BPS
- Next Steps (5 minutes)





Background on ABEEP

Project Background

Project goal

- Engage with municipalities to adopt and implement advanced building policies
- Develop support programs to help implement
- Develop savings and attribution methodologies that follow market transformation protocols

Utility funders

- ComEd, Nicor Gas, Peoples Gas and North Shore Gas



Advanced Building Policies Overview

Stretch codes

Target: New Buildings

Alternative compliance path that defines a higher level of energy efficiency

Building Performance Standard (BPS)

Target: Existing buildings

Focus on improving existing building stock through setting targets for efficiency upgrades

Task Force Objectives and Outcomes

- Help innovative municipalities pioneer stretch codes and BPS
- Get prepared to take action on building energy policies and have the tools to do so
- Assist in creation of resources for municipalities without obligation of adoption
- Provide feedback and guidance to utilities on most effective ways utilities can support
 - Emerging technology research led by ComEd, Peoples and North Shore and Nicor Gas

Value of Being Involved

Engagement by municipalities in the past has improved energy codes

The Climate and Equitable Jobs Act (CEJA) created new opportunities for municipal involvement in building policies

Preparation for imminent state policies and programs impacting municipalities

Opportunity for conversations, feedback, and direct involvement in shaping energy-efficient building policies and support

2022 ABEEP Meetings Overview

Meeting 1 (Aug 2): ABEEP Kickoff

- 21 attendees representing 11 communities
- Introduction to stretch codes and building performance standards

Meeting 2 (Oct 11): Introduction of Flow Charts

- 12 attendees representing 11 communities
- Introduction to flow charts for stretch codes and building performance standards
- Survey sent afterwards for additional feedback

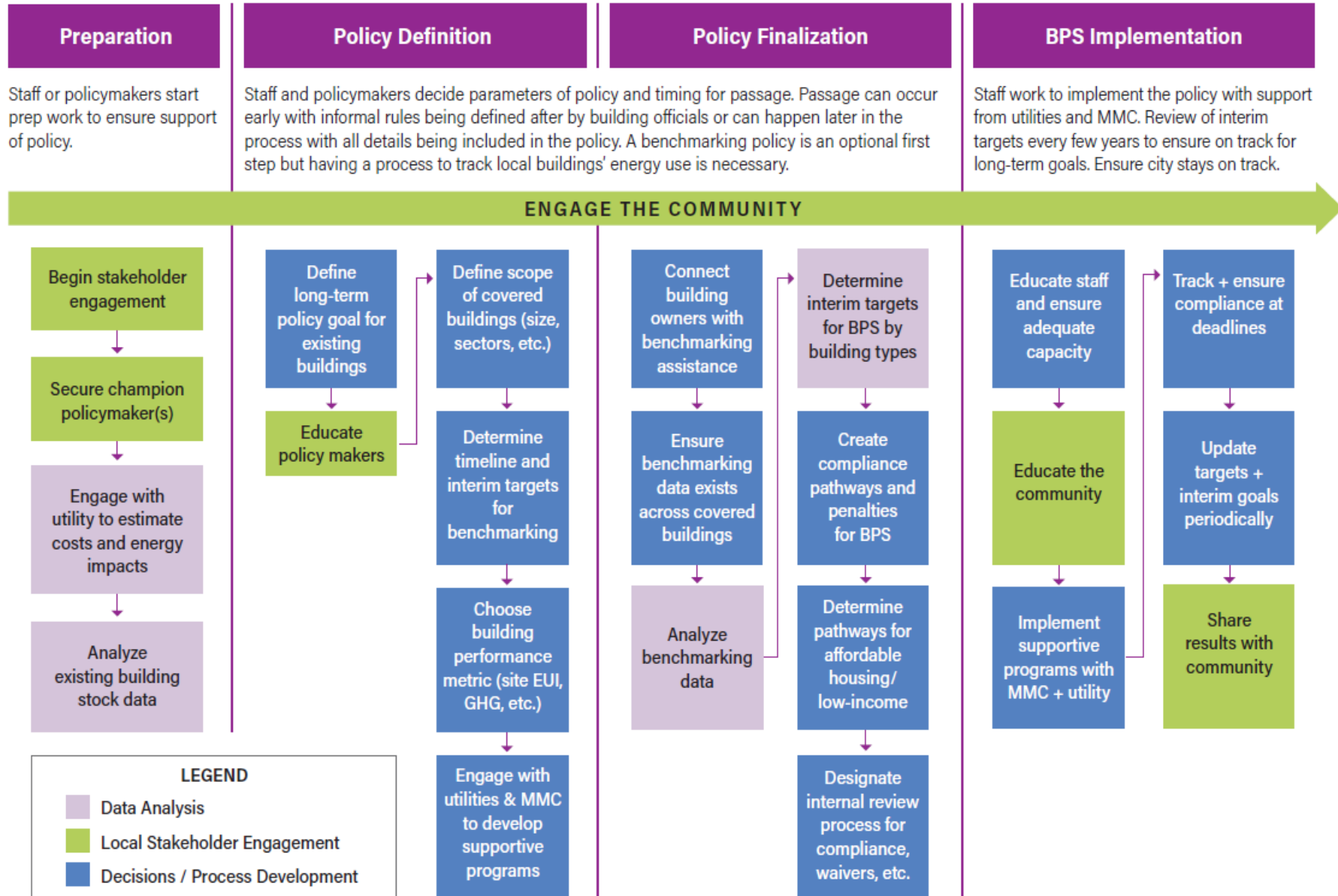
Meeting 3 (Dec 8): Final Poll + Review of Fact Sheets

- 14 attendees representing 10 communities
- Poll on current expectations regarding adoption, and influences on adoption
- Review of updated flow charts and introduction of fact sheets

Benchmarking and Building Performance Policy Setting Flow Chart

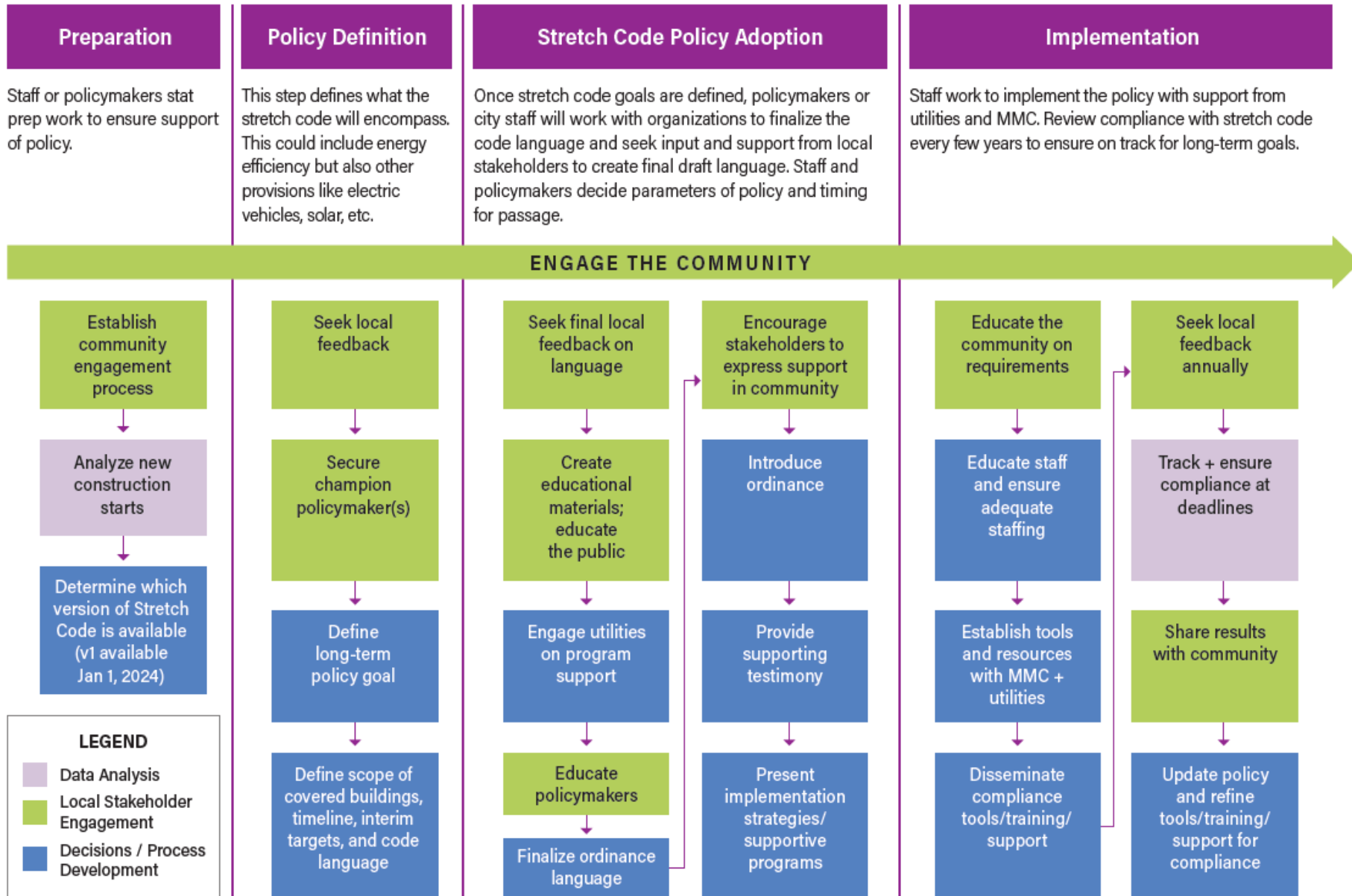
Benchmarking: Ongoing review of energy performance of existing buildings with the goal of informing and motivating performance improvements.

Building Performance Standard (BPS): Requirement that focuses on improving the existing building stock through setting minimum targets for efficiency upgrades.



Stretch Code Adoption and Implementation Flow Charts

A stretch code is an alternative compliance path that goes beyond the minimum base energy code requirements and defines a higher level of energy efficiency for new construction. If adopted by a municipality, the stretch code becomes the new minimum level new buildings must hit.



Fact Sheets and Guides

Now Available

- Local Stakeholder Engagement Process
- Local Stakeholder Engagement: Who to Engage?
- Analyze Existing Building Stock Data and Define Scope
- Choose Building Performance Metric and Determine Targets
- Create Compliance Pathway and Determine Timeline
- Build Your Own Stretch Code

Under creation

- Benchmarking basics
- Policy maker support

Analyze Existing Building Stock Data and Define Scope

WHAT	WHY	WHO	WHEN
Analysis of baseline conditions to understand types of buildings, owners, tenants that could be impacted by BPS and to define which buildings would be covered by the policy.	Research provides a greater understanding of how BPS will impact the community and the overall impact on energy.	Natural gas and electric utilities can provide technical support during this process.	A study should be done early in the process to understand policy considerations.

ANALYSIS CAN INCLUDE

Building types

- How many commercial and residential buildings?
- What are the common building types?
- How big are the buildings?
- What's the building age?
- What are common heating and cooling systems?

People

- Which buildings will be impacted?
- What are the demographic details of buildings impacted?
- What are barriers for these buildings?

Decision-making

- Who makes decisions at buildings?
- Are the buildings occupied by renters or owners?
- What relationships does the city have with building owners?
- What are channels of communication?

COVERED BUILDINGS

By building type

- Often include commercial and high-rise multifamily buildings
- Low-rise and single family typically not included as part of policy
- May exclude low-income or affordable housing buildings, or provide longer timelines to comply

By size

- Can be informed by initial existing building stock analysis
- Vary between 10,000 and 50,000 square feet
- Sometimes include smaller buildings but set a later date for initial compliance

CITY	COVERED BUILDINGS
Boston	All commercial and multifamily buildings > 20,000 sq ft.
Maryland	Public, commercial and multifamily buildings > 35,000 sq ft.
New York City	All commercial and multifamily > 25,000 sq ft.
St. Louis, MO	Municipal commercial institutional and multifamily buildings > 50,000 sq ft
Washington DC	2021: Privately owned building > 50,000 sq ft 2027: Privately owned buildings > 25,000 sq ft 2033: Privately owned buildings > 10,000 sq ft



2023 ABEEP

2023 Overall Project Relevant Scope Items

ABEEP

- 1-on-1 technical assistance with municipalities
- Quarterly meetings with large group
- Development of additional fact sheets and resources

Support Strategy Development

- Slipstream and MEEA working on developing programs and support strategies

Energy Saving Estimates

- Goal to understand likelihood of adoption across state, barriers, influences
- Our team may reach out to municipalities for surveys or interviews in next few months

1-on-1 Assistance

Goals

- Provide technical assistance directed at each city's circumstances
- Help drive forward adoption of stretch code and BPS

Requirements

- Recurring meetings at cadence that works for each city
- Consider the policies in earnest with no need to commit

1-on-1 Assistance – Involved Municipalities

Involved Municipalities

- Oak Park
- Northbrook
- Elgin
- Broadview
- Naperville

Can add more municipalities – reach out if interested

1-on-1 Assistance – Involved Municipalities

Northbrook

- Sustainability coordinator and building official
- Interested in technical assistance and help in growing coalition in Northbrook
- Monthly meetings starting in May 2023 through December 2023

Broadview

- Mayor, Building Commissioner, and Acting Fire Chief
- Plan to create a Broadview specific road map
 - Break down into smaller steps
- Monthly meetings starting in May 2023 through December 2023

1-on-1 Assistance – Involved Municipalities

Elgin

- Sustainability Commission Chairman, staff likely to join after hired
- Interested in presentations to various stakeholders across the city to increase knowledge and interest
- Monthly meetings starting in May 2023 through December 2023

Naperville

- Sustainability staff, Building Commissioner, Engineering and Transportation Director, Sustainability Commission representative
- Adhoc meetings as updates to stretch code are ready to share

1-on-1 Assistance – Oak Park

Engagement

- Started engagement in 2022
- Multiple city staff departments involved; attend weekly meetings as needed

Stretch Code Assistance

- Village Building Commission is reviewing the 2021 IECC for adoption now; will consider stretch code when language is available
- Providing technical assistance around stretch code language

Benchmarking and BPS Assistance

- Provided technical assistance for benchmarking ordinance; passed Feb. 2023
- Hosted benchmarking data jams to help building owners comply

ABEEP Large Group 2023 Plan

Second Meeting – Q3 2023

- Updates from municipalities involved in 1-on-1 technical assistance
- Continued updates on stretch code development and next steps
- Overview of new technical resources

Third Meeting – Q4 2023

- Response to feedback received over next several months
- Discussion on support strategies
- Continued updates on stretch code development and next steps

Additional Technical Resources: What Else Do You Need?

What would you like us to share in future ABEEP meetings?

What documents or resources do you need created or shared?

How can we serve as an ongoing source of information?



Stretch Codes

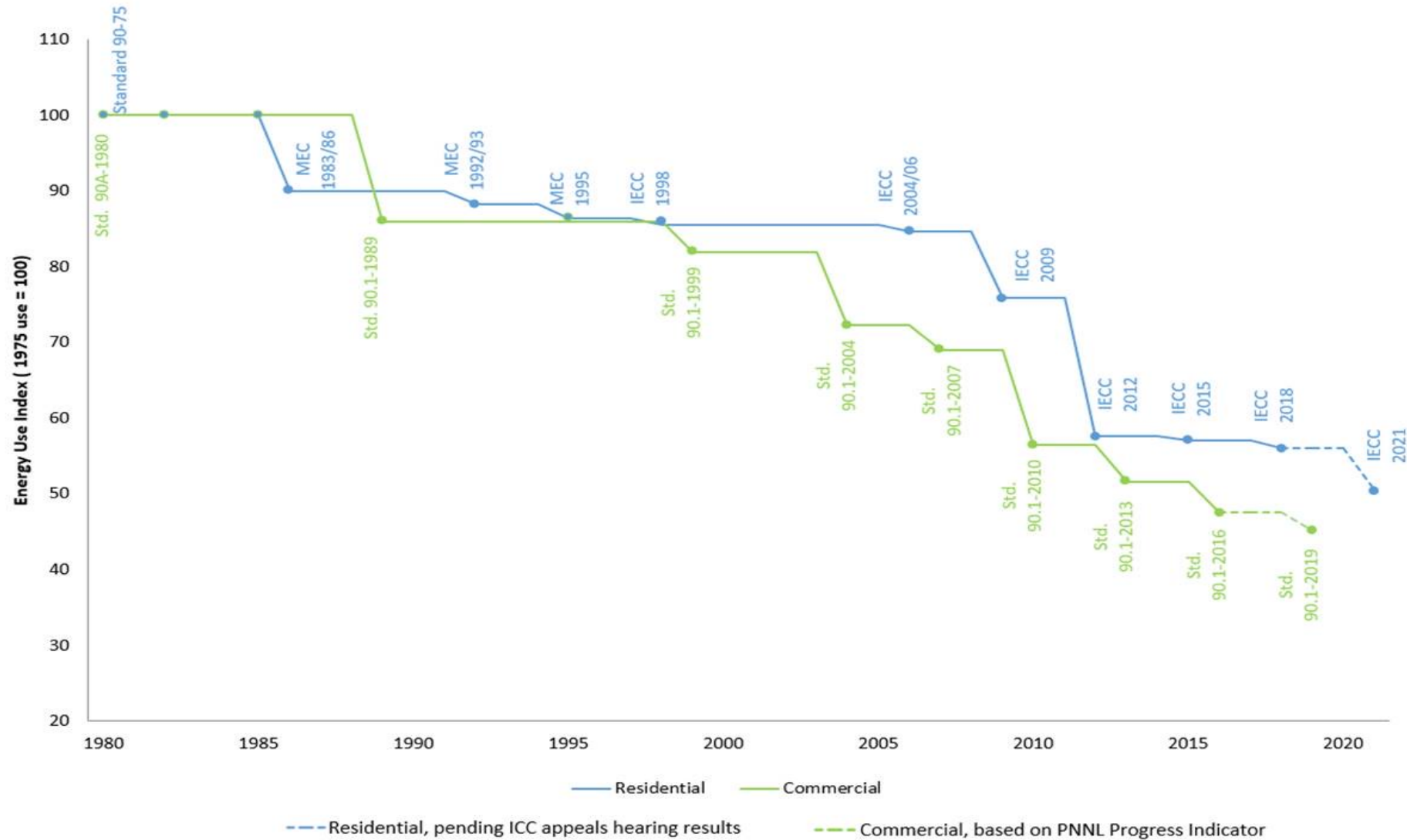
Energy Codes

New Construction (mostly)

- IECC and ASHRAE 90.1
- Worst building that can be built (the floor)
- Model codes updated every three years
- States and municipalities conduct adoption
- (Illinois updates with every new model code)



Model Energy Codes Efficiency



Energy Code

More Than Just A Book of Rules

- Insulation/sealing/fenestration of building envelope
- Lighting (efficiency and controls)
- Mechanical systems (efficiency and controls)
- Now beginning to include other **non-efficiency** items (renewables, EVs, electric-readiness)
- Historically had not addressed **operations**, load shifting, or fuel type

Stretch Codes

Background

- Gives municipalities that want the ability to take meaningful action on energy use and climate change an alternative mandatory compliance path that promotes energy efficiency beyond the available code options
- Provides significant cost savings for residents and businesses
- Help gain market acceptance of the adoption of more energy efficient codes in the future

Stretch Code in CEJA

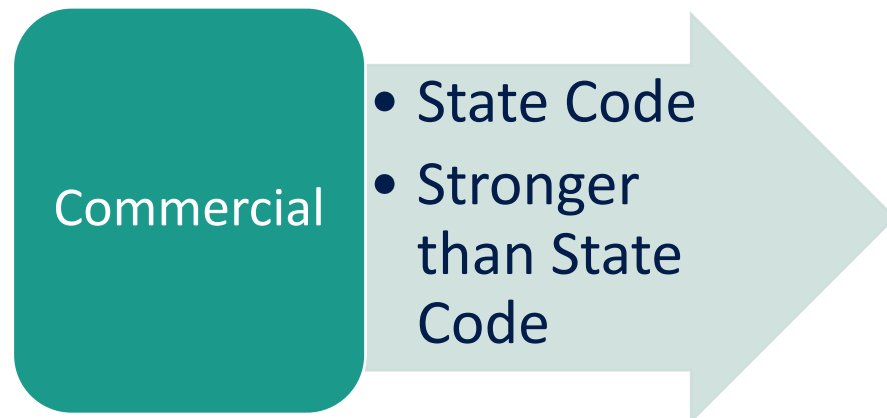
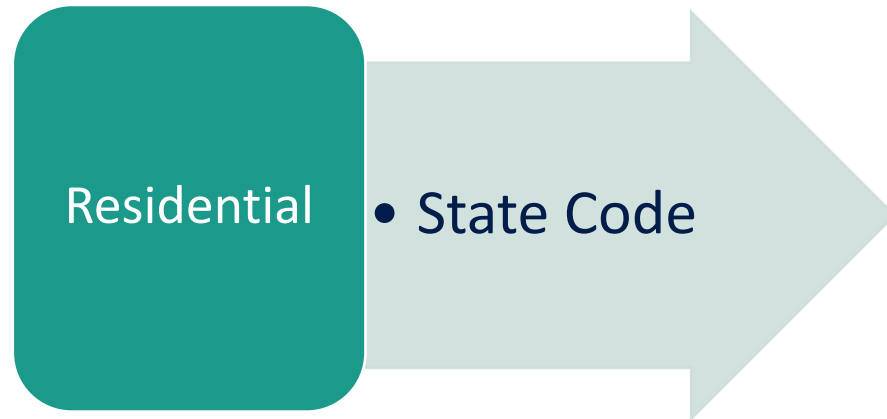
Bill Elements

- Directs the Illinois Capital Development Board (CDB) to create a commercial and residential stretch energy code that can be adopted by individual municipalities.
- Stretch code must meet a set of specific “site energy index” performance targets that include “only conservation measures and excludes net energy credit for any on-site or off-site energy production.”
- Stretch code targets increase in energy efficiency every three years; first target is 9.1% more efficient than current Illinois code.
- Once formally adopted by a municipality, the stretch code takes the place of the state energy code and establishes the minimum energy efficiency requirements for new construction, additions, and major renovations.

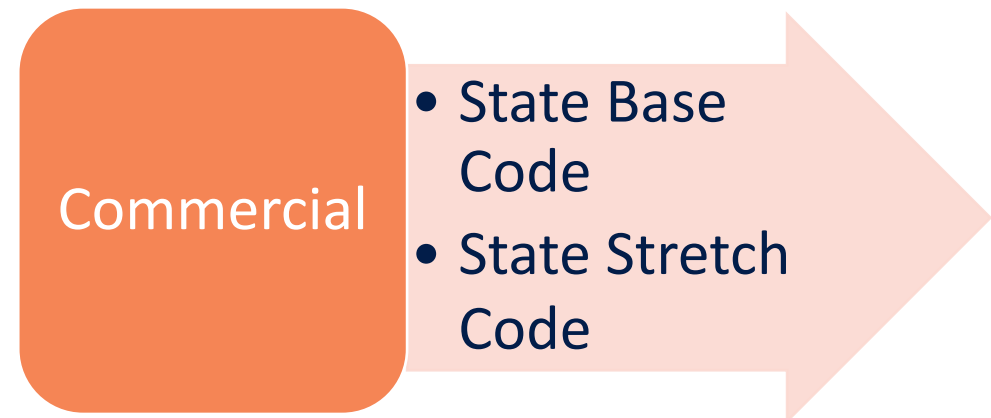
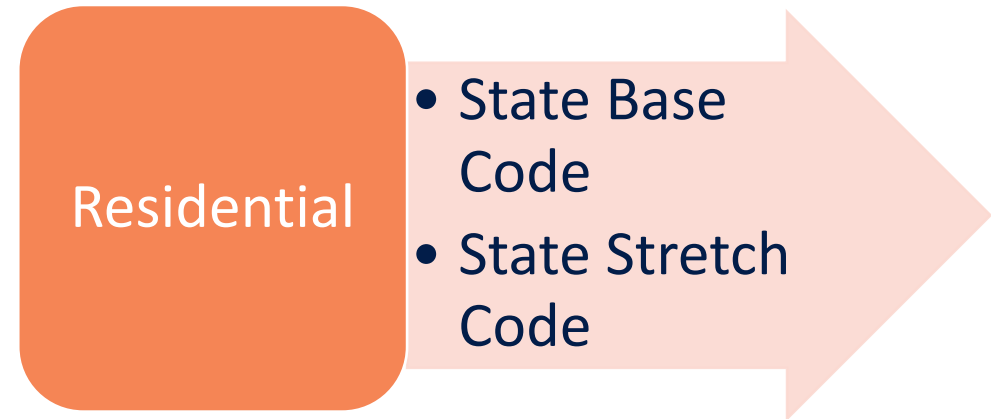
Energy Codes in Illinois

Options for Municipalities

Prior to CEJA



Post-CEJA (by Jan 1, 2024)



Residential Targets

Single-family and low-rise multifamily buildings

Stretch Code Version	Implementation Date	Site Energy Index	Performance Targets	Code Created By
2024 Residential Stretch Code	December 31, 2023	0.50	At least 50% more efficient than 2006 IECC	Set by CDB by July 31, 2023
2026 Residential Stretch Code	December 31, 2025	0.40-0.42	At least 60% more efficient than 2006 IECC*	Set by CDB in 2025
2029 Residential Stretch Code	December 31, 2028	0.33 - 0.35	At least 67% more efficient than 2006 IECC**	Set by CDB in 2028
2032 Residential Stretch Code	December 31, 2031	0.25	At least 75% more efficient than 2006 IECC	Set by CDB in 2031

*If “unanticipated burdens” are associated with previous stretch code, new code must be at least 58% more efficient than 2006 IECC and at least 5% better than 2024 IECC

** If “unanticipated burdens” are associated with previous stretch code, new code must be at least 65% more efficient than 2006 IECC; and at least 5% better than 2027 IECC

Commercial Targets

Commercial buildings and multifamily buildings higher than 3 stories

Stretch Code Version	Implementation Date	Site Energy Index	Performance Targets	Code Created By
2024 Commercial Stretch Code	December 31, 2023	0.60	At least 40% more efficient than 2006 IECC	Set by CDB by July 31, 2023
2026 Commercial Stretch Code	December 31, 2025	0.50	At least 50% more efficient than 2006 IECC	Set by CDB in 2025
2029 Commercial Stretch Code	December 31, 2028	0.44	At least 56% more efficient than 2006 IECC	Set by CDB in 2028
2032 Commercial Stretch Code	December 31, 2031	0.39	At least 61% more efficient than 2006 IECC	Set by CDB in 2031

Residential Stretch Energy Code - DRAFT

Residential Stretch Code

Overall Concepts in DRAFT

- Must meet site energy index of 0.50 (50% better than 2006 IECC)
- Current IL code is ~0.76
- Using 2021 IECC* as baseline; modifying to meet CEJA targets

*Considered draft 2024 IECC, but it did not meet 0.60

Residential Stretch Code

*Overall Concepts in DRAFT –
New Construction*

Mandatory Measures

Electric-Ready

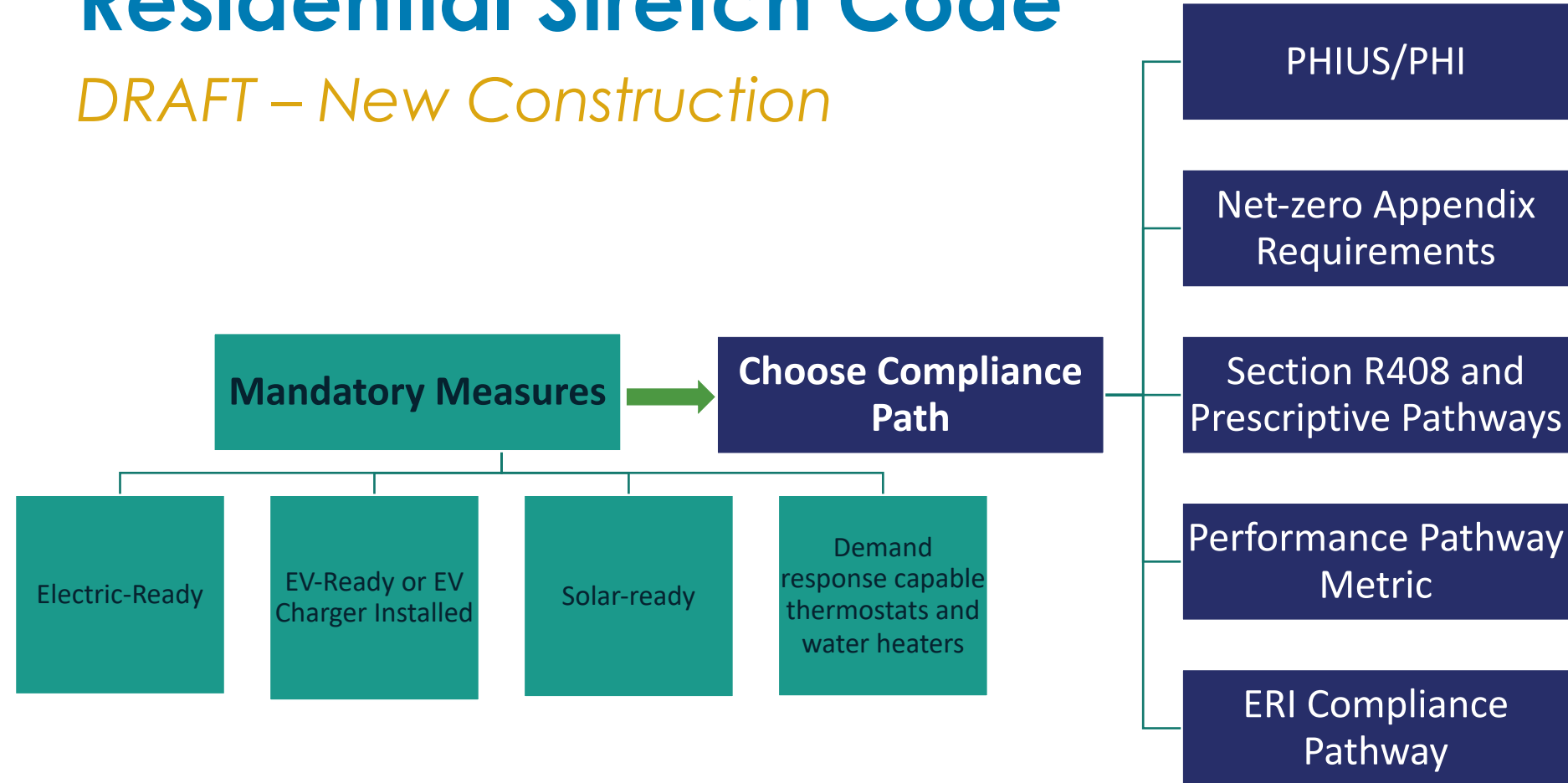
EV-Ready or EV
Charger Installed

Solar-ready

Demand
response capable
thermostats and
water heaters

Residential Stretch Code

DRAFT – New Construction



Residential Stretch Code

Overall Concepts in DRAFT

Concept	Short Description
Electric-Ready	Require mixed-fuel residential buildings to be electric-ready for water heating, space heating, cooking and clothes drying.
EV-Ready or EV Charger Installed	Require residential buildings to be EV-ready or EV Charger installed and multifamily buildings to comply with commercial stretch code EV infrastructure requirements.
Solar-ready	Require residential buildings to be solar-ready and multifamily buildings to comply with commercial stretch code solar readiness and installation requirements.
Demand response capable thermostats and water heaters	Require thermostats and electric water heaters to be demand response capable.
Allowed Alternate Compliance Pathways	Allows PHIUS, PHI and Appendix RC, the Zero Energy Appendix as compliance pathways in the Illinois Stretch Code.
Section R408 and Prescriptive Pathways	Requires buildings to either install heat pumps for space heating and water heating and have a tight building envelope (2 ACH50 + ERV/HRV) or achieve 30 credits from new credits in R408
Performance Pathway Metric	Revises the Performance Pathway to be based on a Site Energy metric instead of utility cost to align with CEJA targets
ERI Compliance Pathway	Revise ERI ventilation calculation and ERI metric to align with CEJA targets
Existing Building Performance	Requires several important existing building measures from the 2024 IECC: (1) Energy credits from table required for alterations and additions; (2) Duct testing requirements; (3) HVAC load calculation/right-sizing; and (4) HVAC controls requirement.
Electrification Appendix	Additional language for electrification, to be adopted as an Appendix to the Stretch Code

Subject to change after energy modeling in order to meet the CEJA targets.

Commercial Stretch Energy Code - DRAFT

Commercial Stretch Code

Overall Concepts in DRAFT

- Must meet site energy index of 0.60 (40% better than 2006 IECC)
- Using DRAFT 2024 IECC as baseline

Commercial Stretch Code

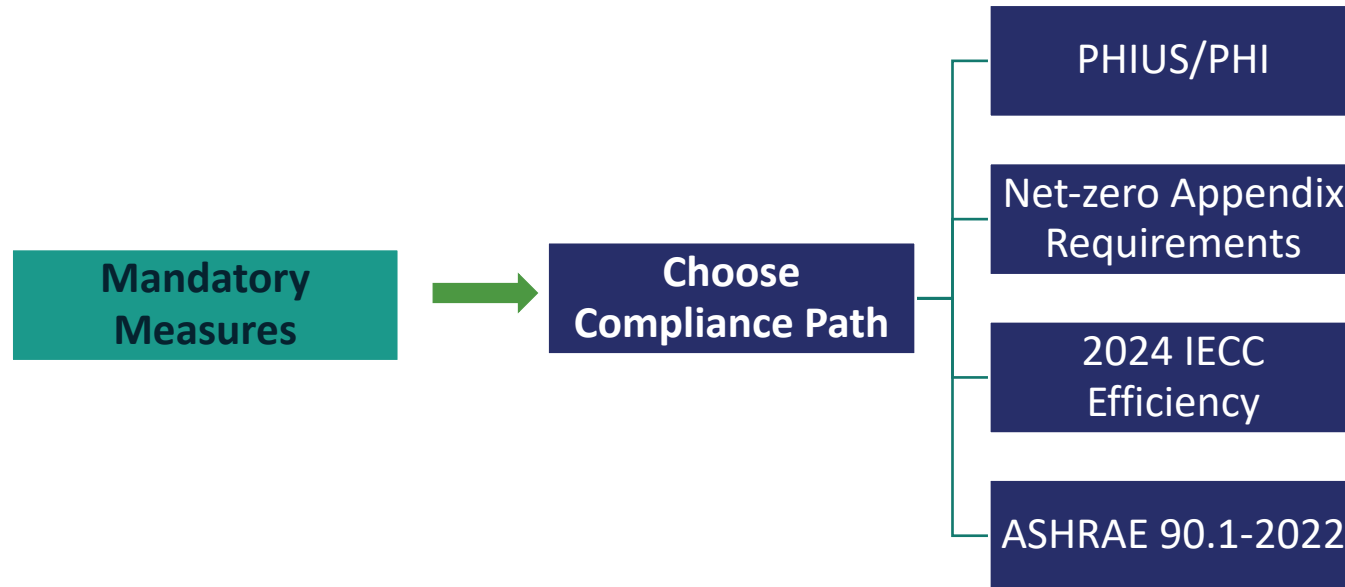
Overall Concepts in DRAFT

Mandatory

- ASHRAE 90.1 and Mandatory Requirements
- Energy Storage Ready
- Electric Vehicle Ready
- Horticultural Lighting
- Electric-Ready
- Electric Vehicle Accessibility
- Heat Pump Incentive for New Construction

Commercial Stretch Code

DRAFT – New Construction



Commercial Stretch Code

Overall Concepts in DRAFT (above 2024 IECC)

Concept	Short Description
Compliance Pathways	Allows PHIUS and Appendix CC as compliance pathways in the Illinois Stretch Code.
ASHRAE 90.1 and Mandatory Requirements	Requires buildings that choose to comply with ASHRAE 90.1-2022 instead of the 2024 IECC to also comply with certain requirements (EV-ready, electric-ready, etc.) in the 2024 IECC.
Energy Storage Ready	Clarifies the correct fire code reference to improve safety of energy storage ready requirements.
Electric Vehicle Ready	Clarifies the correct international building code reference to improve the accessibility of EV infrastructure.
Horticultural Lighting	Requires horticultural lighting to comply with current lighting requirements for cannabis facilities.
Electric-Ready	Requires new R2 occupancy commercial buildings to include electric infrastructure that would be required for electric appliance installation at time of combustion appliance replacement.
Electric Vehicle Accessibility	Clarifies EV accessibility requirements.
Heat Pump Incentive for New Construction	Requires additional energy credits for buildings that do not use heat pumps for main space heating and cooling.
Site EUI instead of Utility Costs in Performance Pathway	Revises the performance pathway so that it is based on a site energy metric instead of a utility cost metric.
Energy Efficiency Requirement for Substantial Improvements	Requires substantial improvements to be electric-ready and meet energy efficiency threshold.
Heat Pump Incentive for Existing Buildings	Requires additions and changes of occupancy to receive additional energy credits if heat pump equipment is not installed.
Orientation Proposal	Illinois amendment to the 2021 IECC that improves energy use by considering fenestration and building orientation.
All-Electric Appendix	Proposal submitted by NRDC and modified to reflect other adopted amendments.

Stretch Code Development

Next Steps

- Recommendations for elements and requirements of the stretch code must be completed by **December 31, 2023**, with final language available for adoption by **July 1, 2024**.
- The availability of a stretch code will now make it easier for municipalities to adopt.

How We Can Help

Technical assistance

- Provide code/ordinance draft language
- Discuss stretch code elements with municipal staff
- Conduct presentations/webinars on stretch code elements

Stakeholder engagement

- Provide stakeholder education on stretch code
- Coordinate or participate in public stakeholder engagement meetings



Benchmarking and Building Performance Standards

Elements of Building Performance Standards

Benchmarking

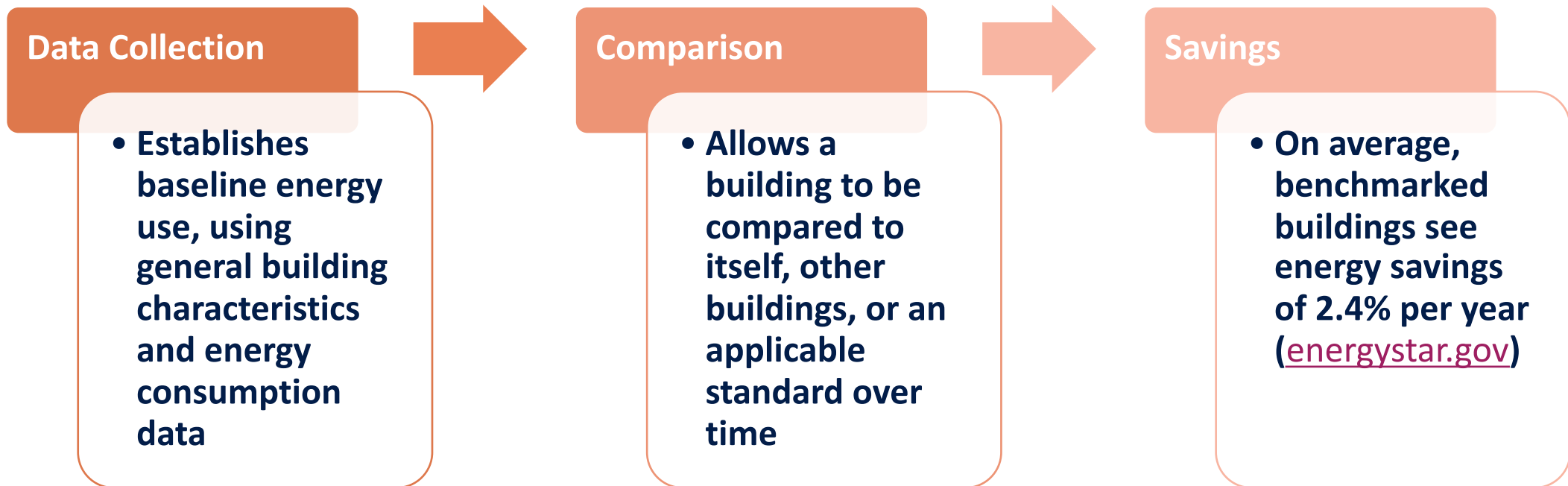
- Ongoing review of energy performance of existing buildings with the goal of informing and motivating performance improvement
- Data collection of commercial buildings
- Comparison of Energy Use Intensity (EUI) to other

Building Performance Standards

- Typically follows benchmarking policy
- Requires low-performing buildings to take action to reduce energy use

BPS - Benchmarking

Benchmarking a policy that requires building energy use to be measured and compared to itself over time, the energy use of similar buildings, or an energy standard.



Building Performance Standards

Definition of BPS*

- Set of standards designed to reduce carbon emissions in buildings by improving energy, gas and water use, and peak demand.
- Become stricter over time, driving continuous, long-term improvement in the building stock, and complementing building energy codes.

*from Institute for Market Transformation

Interaction with Benchmarking

- Benchmarking often adopted first to inform BPS targets and standards
- Benchmarking required for tracking compliance with BPS

State of Building Performance Standards in US

March 2023



Key Policy Considerations

Regulated Buildings

- Size of buildings covered (e.g. above 10,000)
- Type of buildings covered (e.g. office, retail, etc.) and exemptions

Reporting

- Frequency of reporting (usually annual)
- Reporting tool (usually EnergyStar Portfolio Manager)
- Requirements for verifications

Metrics and Targets

- Metrics to use as measurement – energy, emissions, EnergyStar Score
- Targets for improvements over time to use for BPS

Setting Targets

Set two types of targets:

- 1. Final performance standard:** set for 15 to 30 years in the future. Allows all buildings to encounter one capital cycle for large-scale EE investment. Typically set as a percent reduction in energy or greenhouse gas emissions
- 2. Short-term standards:** set interim goals for every 3 to 6 years to ensure buildings are making progress toward final goals.

City	Metric	Long-term Target
Boston	Annual GHG emissions (tCO ₂ /sq. ft)	50% emissions reduction by 2030; 100% by 2050
Denver CO	Site energy use intensity	Hit maximum site EUI by 2030
Maryland	Onsite greenhouse gas emissions	Achieve 20% reduction in GHG by 2030; net-zero by 2040
New York City	Annual GHG emissions (tCO ₂ /sq. ft)	Reduce the emissions by 40 percent by 2030 and 80 percent by 2050
Washington DC	EnergyStar Score	Reduce carbon emissions and energy consumption by 50% by 2032

Getting Started with Benchmarking/BPS

Start with a benchmarking ordinance

- Helps gather necessary data to set targets for BPS
- Lower time requirement for building owners and city staff
- Often leads to first steps in energy savings

Key first steps

- Analyze building stock and determine regulated buildings - building size and type
- Engage with stakeholders (building owners, city staff, policymakers) to educate on potential benchmarking ordinance and benefits
- Develop language and assess viability of adoption

How We Can Help

Technical assistance

- Building stock analysis and choosing buildings the policy covers
- Policy/ordinance development
- Eventual data jams and support with implementation

Stakeholder engagement

- Identification of stakeholder engagement plan
- Presentations to key stakeholder groups
- Creation of fact sheets or other materials to share publicly



ABEEP Next Steps

Additional Technical Resources: What Else Do You Need?

What would you like us to share in future ABEEP meetings?

What documents or resources do you need created or shared?

How can we serve as an ongoing source of information?

Upcoming Items

Meetings and Technical Resources

- Next meeting planned for Q3 2023 – September or October
- Technical materials will continue to be developed
- Opportunity for 1-on-1 technical assistance – reach out if you want a one-off or ongoing meetings

Energy Saving Estimates

- Goal to understand likelihood of adoption across state, barriers, etc.
- Our team may reach out to municipalities for surveys or interviews in next few months

Slipstream and MEEA contacts



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