

MA Stretch Code Update & New Specialized Code

DOER Overview

November 2, 2022

Maggie McCarey, Paul Ormond & Ian Finlayson

Agenda

- Three levels of code (base, stretch, municipal opt-in)
- **Stretch code:** Timeline
- Key modifications in the updated Stretch Code
- **Specialized code:** Timeline & adoption process
- Key modifications in the new Specialized code
- Resources, Next Steps, your Questions

Base, Stretch, and Specialized – 3 Options

Base Code (IECC 2021)

- New construction in towns & cities not a green community
- **52 communities**

Expected from BBRs:
July 2023

Stretch Code (2023 update)

- New construction in towns & cities that are a green or stretch community
- **299 communities**

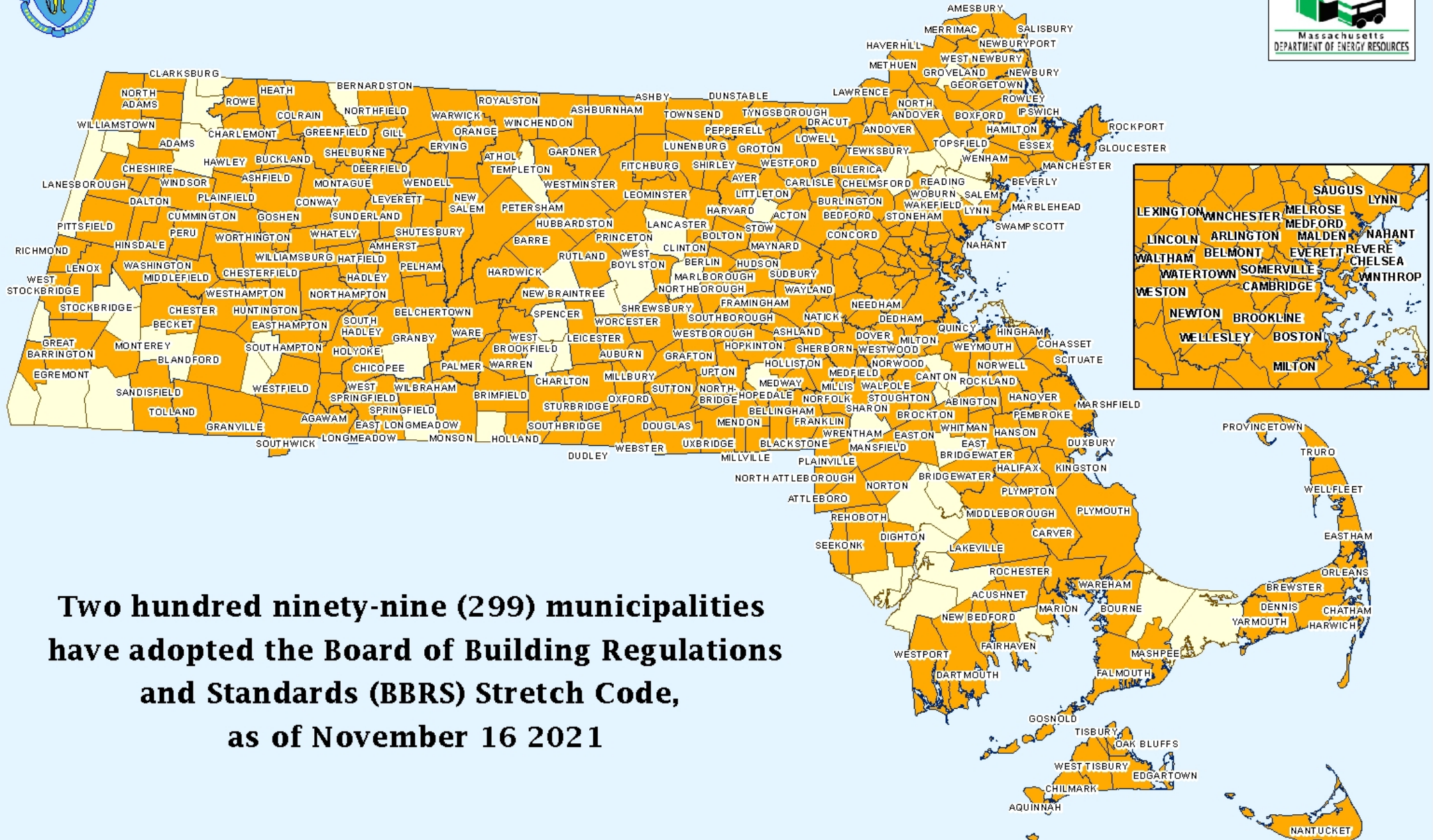
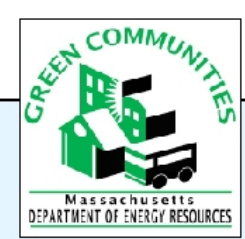
Residential : Jan 2023
Commercial: July 2023

Specialized Code ("Net-Zero")

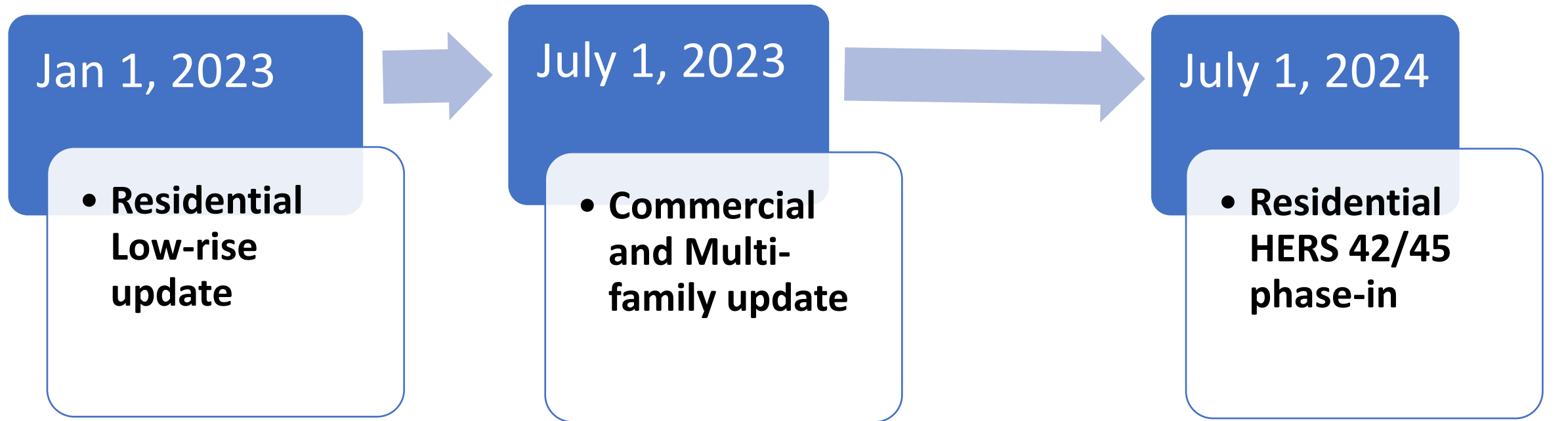
- New Construction in towns & cities that vote to opt-in to this code
- **Effective date:**
Typically 6-11 months after Town/City vote



Stretch Code Adoption, by Community



Timeline: Stretch code update





**STRETCH CODE
RESIDENTIAL
LOW RISE**

What changes on January 1, 2023?

Only Residential Low-Rise: 1 & 2 family and Town-houses

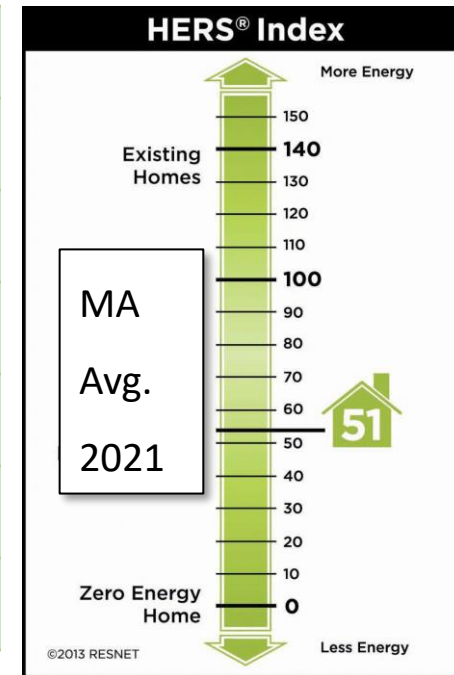
- New construction
 - Slightly lower HERS ratings
 - Energy Star 3.1 no longer an option for these homes
- Large Additions & Level III Alterations (Over 1,000 sf)
 - Required to meet HERS rating

New requirements for New construction:

- EV ready wiring: 1x 240volt, 50-amp circuit per home
- Heat/Energy recovery ventilation

Residential low-rise: New Construction

New Construction			
	Max. HERS index (before solar credit)		
On-site Clean Energy application	2017-2022	Jan 1, 2023	July 1, 2024
Mixed-fuel	HERS 55	HERS 52	HERS 42
Mixed-fuel & Solar	HERS 60	HERS 55	HERS 42
All-Electric	HERS 60	HERS 55	HERS 45
All-Electric & Solar	HERS 65	HERS 58	HERS 45



- Energy Star 3.1 option goes away
- Passive House option updates from Phius2018 to Phius2021 or PHI

Residential low-rise: Large Additions & Level III Alterations >1,000 sf

Additions, Level III Alterations and Change of Use - Over 1,000 sf		
On-site Clean Energy application	Max. HERS index (before solar credit)	
	2017-2022	Jan 1, 2023
Mixed-fuel	HERS 65	HERS 52
Mixed-fuel & Solar	HERS 70	HERS 55
All-Electric	HERS 70	HERS 55
All-Electric & Solar	HERS 75	HERS 58

Increased Incentives for builders & developers

- All-electric homes are generally cheaper to build
Heat Pump replaces both Central A/C + Furnace
- Mass Save 1-4unit all-electric incentives
\$15,000 for HERS 45
\$25,000 for HERS 35 / Passive House
- Federal IRA:
45L tax credit: \$2,500 or \$5,000/home (aligned with HERS)
179D tax credit: up to \$6/sqft for commercial & multi-family

<https://www.masssave.com/saving/residential-rebates/all-electric-home>

<https://www.masssave.com/saving/residential-rebates/passive-house-incentives>



STRETCH CODE - COMMERCIAL

Key Changes to Commercial Stretch Code

Current Stretch Code

Site energy reduction

10% reduction

Buildings over 100,000-sf
No add'tns, alt'ns

Replaced with



New Stretch Code

Heating and cooling
demand reduction

up to 90% reductions

all building sizes
Includes add'tns, alt'ns

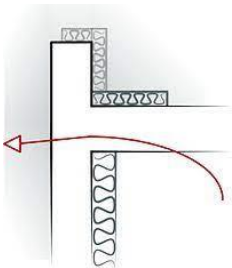
New Provisions for Demand Reduction



**Quality envelop +
air-leakage testing**



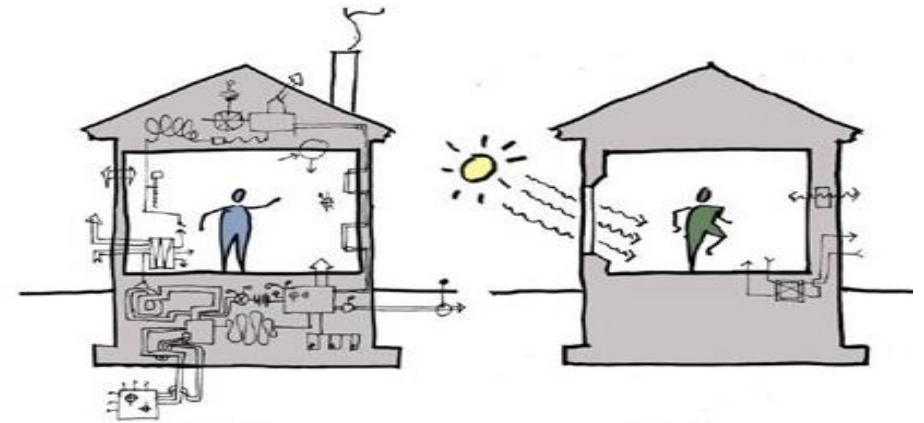
**Ventilation energy
recovery**



**Mitigating thermal
bridges**



Result: Better Buildings



The old way

The new way

- Less equipment
- Improved durability
- Easier electrification
- More comfort
- Enhanced resilience

Improved Life Cycle Cost

Our 2021 study team (below) found that reducing energy demand:

- Lowered LCC for all building types
- Lowered first cost for some building types

<https://www.mass.gov/lists/stretch-energy-code-development-support-documentation>



Demand reduction means less equipment and equipment elimination

What about the grid?

Our 2021 study team (below) found the following:

- The same or lower peak electric use for most building types
- Modest peak electric increases in residential
- Across Massachusetts: about 5% increase in peak electric
- Key is demand reduction, which is key priority in new code

<https://www.mass.gov/lists/stretch-energy-code-development-support-documentation>



What happens to the grid when we “electrify everything”

Thermal Energy Demand Intensity (TEDI)

Stretch code now directly regulates heating and cooling demand for office, muni buildings, schools, and residential buildings:

Heating TEDI

*Total annual energy **delivered to** the building for space conditioning and conditioning of ventilation air, normalized by area (kBtu/sf-yr)*

Cooling TEDI

*Total annual energy **removed from** the building for space conditioning and conditioning of ventilation air, normalized by area (kBtu/sf-yr)*



**Important: even though they have the same units, TEDI is not the same as energy use intensity (EUI)
TEDI is demand while EUI is consumption**

TEDI Limits – by Building Size and Type

Building type	Heating TEDI limit (kBtu/sf-yr)	Cooling TEDI limit (kBtu/sf-yr)
K-12 school	2.2 - 2.4	12 -20
Office, fire & police station, library, post office, town hall	1.5 - 2.5	21 - 23
Multi-family	2.8 – 3.2	15 - 22

The same models currently used for stretch code compliance also produce TEDI information



Other Key Modifications



Envelope backstop

Add'l stringency



Tenant spaces

Treated like new construction



Electrification of space heating

Highly ventilated: partial

Highly glazed: full



Mixed-use

Treat each use independently



EV ready parking

Wire 20% of new Business & Residential spaces

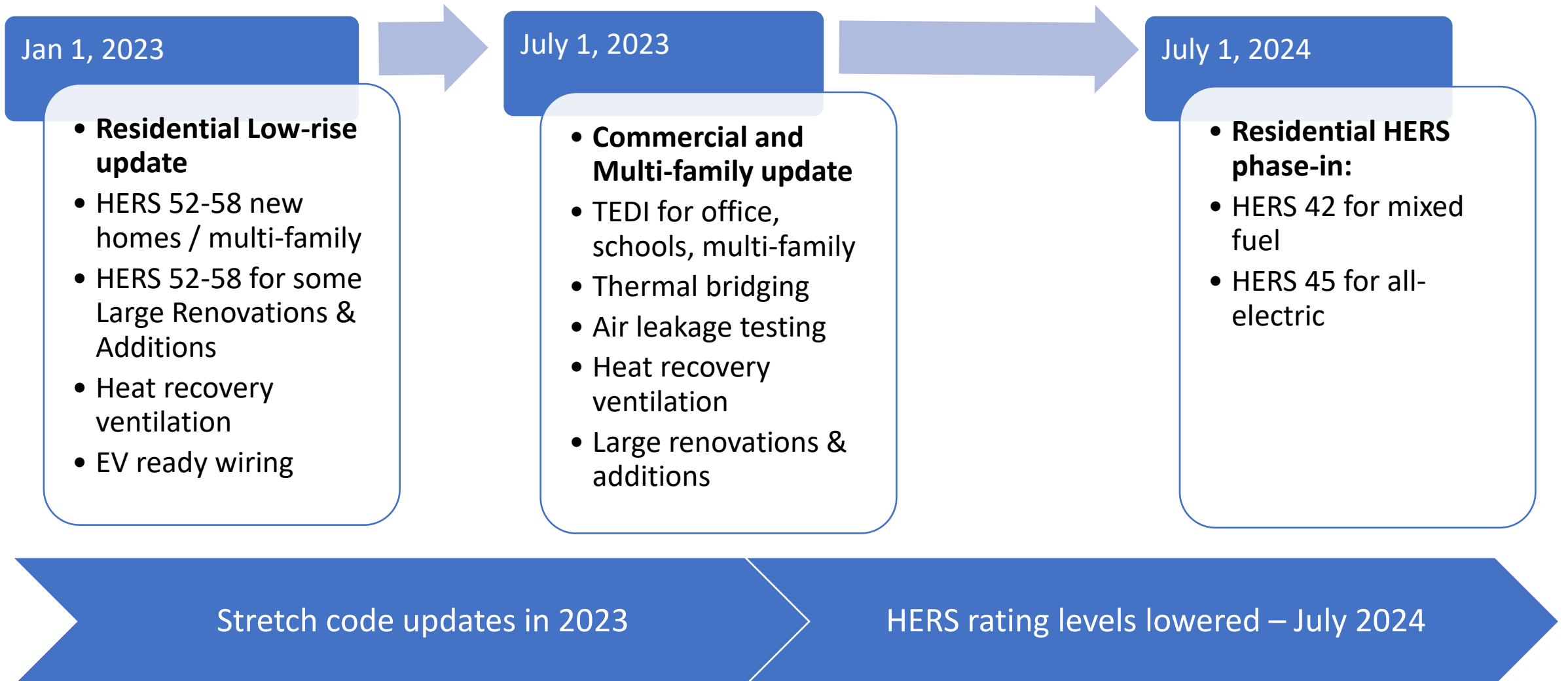
Wire 10% of spaces for other uses

Additions, Alterations, Change of Use

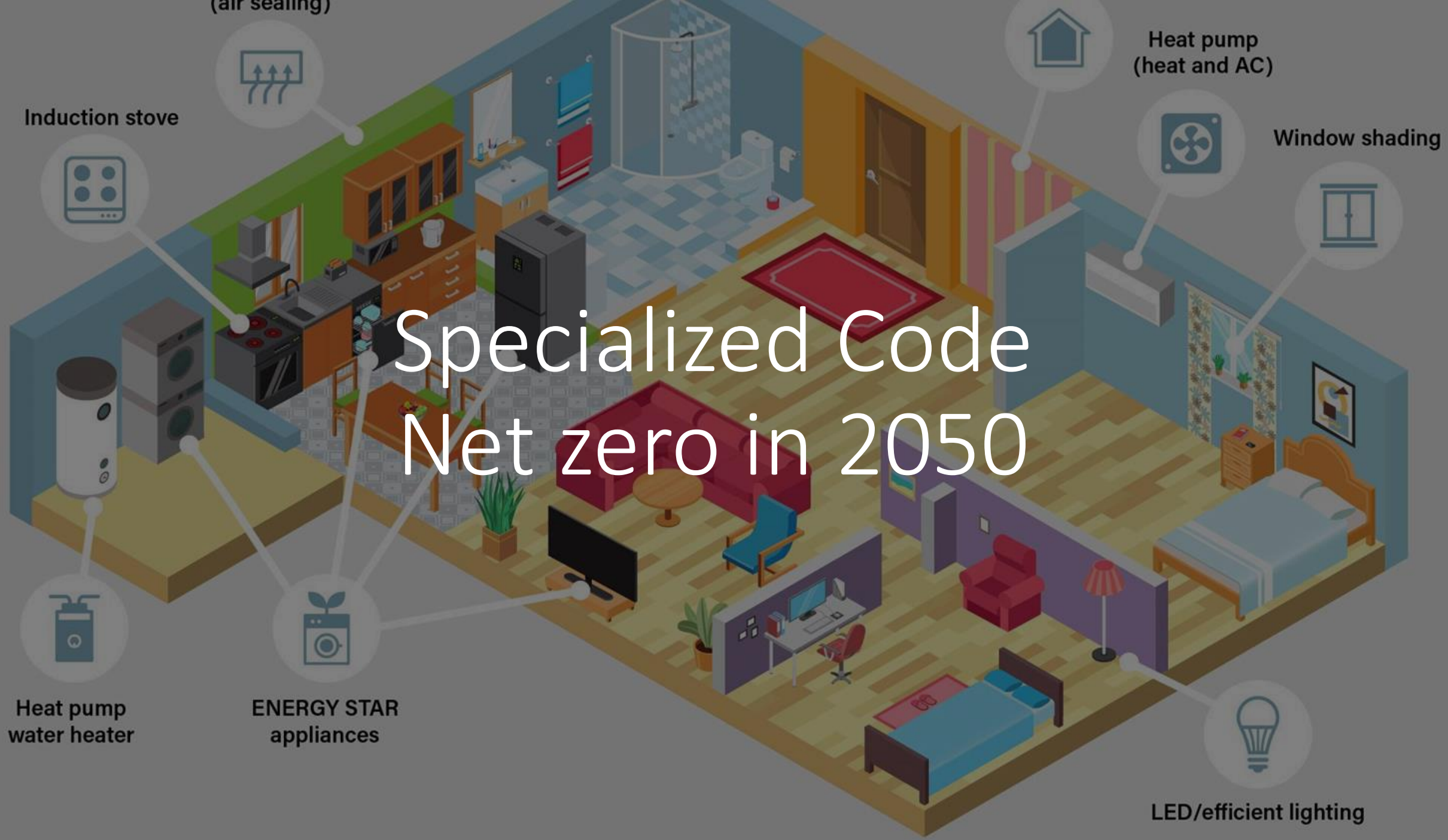
***Additions and alterations are explicitly exempted from the current stretch code.
Starting in July 2023, the new stretch code will require:***

Scenario	Stretch Code Requirement
Additions up to 100% of existing building size; or, up to 20,000-sf	Follow stretch code prescriptively
Additions which exceed either of above	Treat addition like new construction
Alteration of existing building	Altered portions: follow stretch code prescriptively Unaltered portions: no updates required
Change of use	Follow stretch code prescriptively

Timeline: Stretch code update



Specialized Code Net zero in 2050



Specialized Code: Adoption process & Timeline

Adoption Process: Similar to the Stretch code

- Warrant article
- Town Meeting Bylaw vote or City Council vote

Timeline: Published in State Register – Dec 2022

- Town meeting / city council vote
- Effective date: Jan 1, or July 1
- recommend 6-12 months



ANNUAL TOWN MEETING 2020 Warrant Article Guide

ARTICLE 1 - TOWN REPORTS

Through this article, the Town accepts the reports of many departments and committees for the previous calendar year.

ARTICLE 2 - OPERATING BUDGET

This article approves the operating budget for the Town, Salisbury Public Schools and Middlebury Regional High School for the year starting on July 1, 2020. The budget includes all personnel, contractual services, goods and other payments. For additional information on the budget or the warrant visit our Town Manager's Proposed POC Budget: <https://www.salisburyvt.gov/2020/07/01/budget>

ARTICLE 3 - POB CAPITAL BUDGET

This article includes capital needs for the town that are under \$200,000. For more information visit our website: <https://www.salisburyvt.gov/2020/07/01/budget>

Specialized Code: Low Rise Residential

Builds on Stretch Code with 3 paths:

- **All-Electric:** HERS 45
Or Passive House
- **Mixed Fuel:** HERS 42 + Solar install + Wired for Electric
Or Passive House + Wired for Electric
- **Zero Energy:** HERS 0 (HERS 42 + Solar)
Or Passive House (Phius Zero)

New homes over 4,000 sf must use *All-Electric* or *Zero Energy*

Additions & Alterations – same as Stretch code

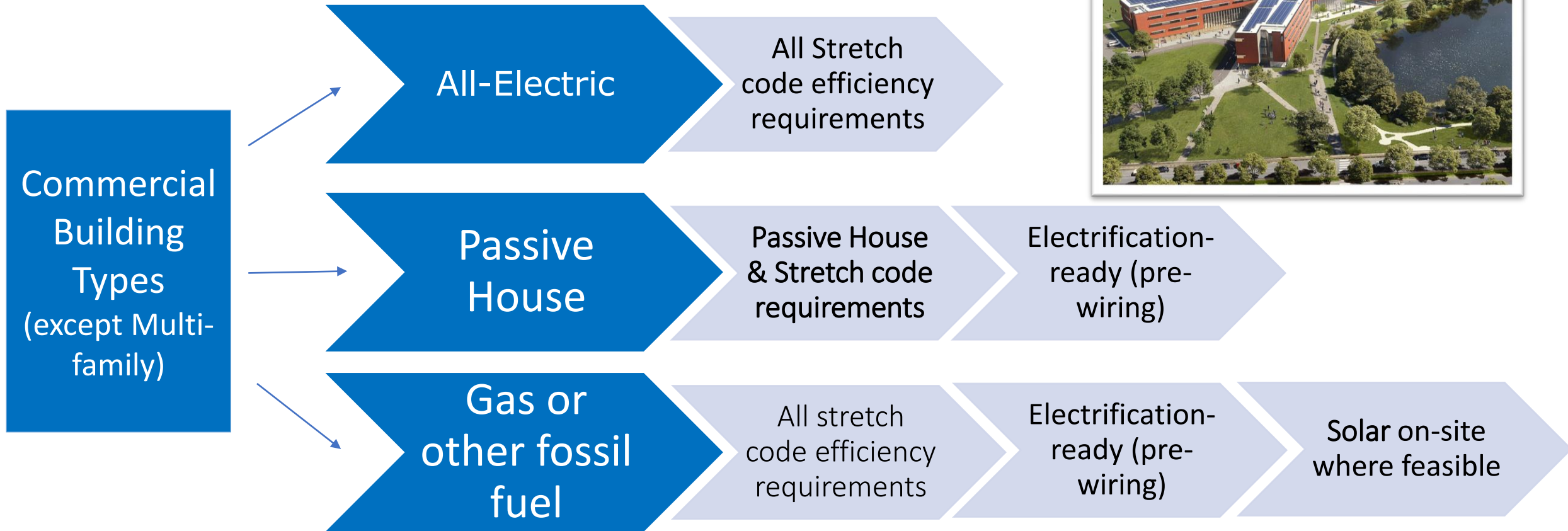


Specialized Code Multi-Family Passive House

- **January 2023:** Passive House required for 5 stories or less, if over 12,000 sf
- 6+ Stories choose TEDI or HERS 42/45 or ASHRAE App. G
- **January 2024:** Passive House required for all Residential over 12,000 sf



Specialized Code - Commercial



Solar PV

- Required:
 - Using Fossil fuels
 - Using Net Zero path
- Optional:
 - All-electric building
- Exceptions for shaded sites can reduce min. size



Next Steps & Resources

Stay in touch

Sign up for DOER energy code email updates:

<https://app.e2ma.net/app2/audience/signup/1965182/1356542/>

Code language, case studies, detailed technical information here:

<https://www.mass.gov/info-details/stretch-energy-code-development-2022>

Contact your local Green Communities Coordinator

<https://www.mass.gov/service-details/contact-gc-coordinator>

Energy Code Training (free via Mass Save®)

- <https://www.masssave.com/en/learn/partners/energy-code-training-and-events>

Contractor Training

- <https://www.masssave.com/en/saving/residential-rebates/passive-house-training>

Questions?

Contact DOER:

Stretchcode@mass.gov

Paul Ormond

Ian Finlayson

**BYLAW AMENDMENT TO ADOPT THE MUNICIPAL OPT-IN
SPECIALIZED STRETCH ENERGY CODE**

To see if the Town will vote to amend Title VI, Article 3 of the Bylaws of the Town of Arlington, entitled “Building Code,” to adopt the Municipal Opt-In Specialized Stretch Energy Code for the purpose of regulating the design and construction of buildings for the effective use of energy and reduction of greenhouse gas emissions, pursuant to the entirety of 225 CMR 22 and 23 including Appendices RC and CC, including future editions, amendments or modifications thereto; or take any other action relative thereto.

(Inserted at the request of the Clean Energy Future Committee)

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