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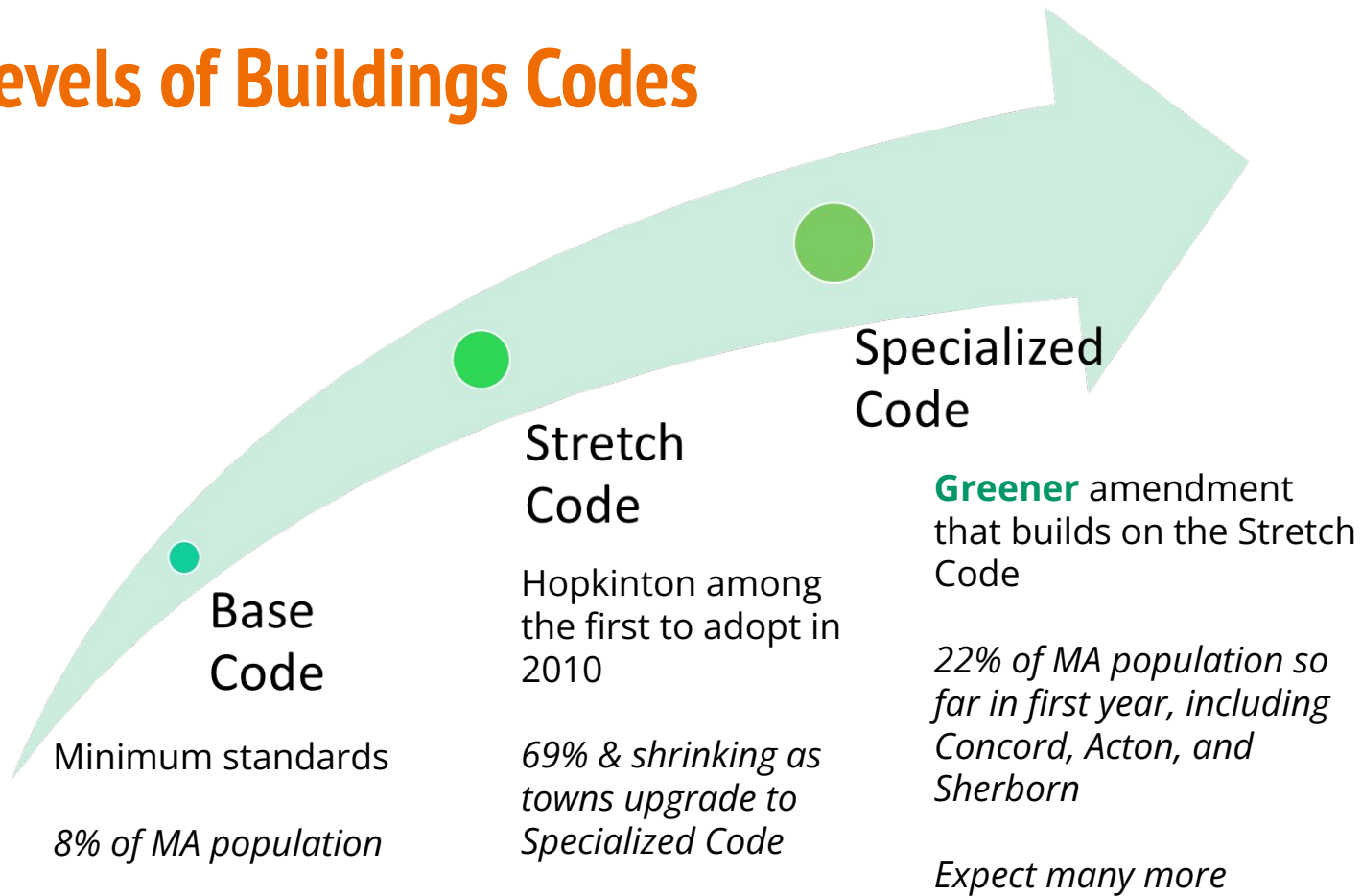
# Specialized Energy Code

— Hopkinton Special Town Meeting —

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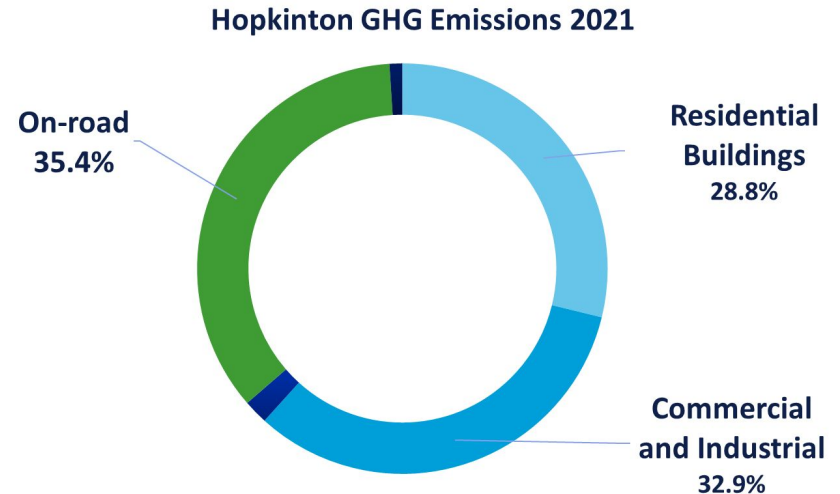
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# 3 Levels of Buildings Codes



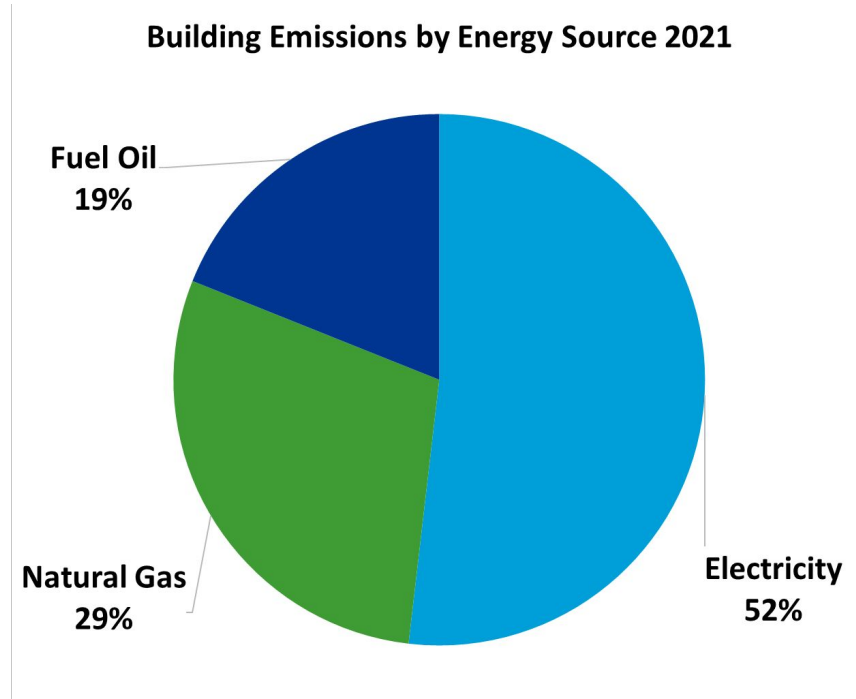
# Why does it matter?

- Hopkinton voted to pursue **Net Zero emissions by 2045.**
- **~50% of Hopkinton's emissions** come from buildings, especially heating and cooling.
- **Net zero** can only be achieved by reducing emissions from homes and businesses.
- If adopted for July 2024, by 2045 **greater than 10% of housing stock** to be built under Specialized Code.



# Why prepare for electrification?

- **80% of MA home energy use** is from HVAC & water heating.
- **48% of Hopkinton building emissions** are from gas & oil.
- HVAC installed now will run for the next 20 years. **Choices today matter for emissions goals.**
- Specialized Code offsets but does **not** ban fossil fuel usage, and ensures preparation for the electric transition.



# What does the Specialized Code add?



## 1 Pre-wiring

New buildings using fossil fuels must pre-wire for future electrification

## 2 Solar

New buildings using fossil fuels must install a certain amount of onsite solar

## 3 Exemplary Performance for Large Homes

New single-family homes greater than 4,000 sq ft must be all-electric or certified Zero Energy (solar to offset energy usage)

## 4 Exemplary Performance for Large Multi-family

New multi-family homes greater than 12,000 sq ft must use Passive House pathway (highly efficient by design)

**Note:** This does **not** affect additions / renovations on existing homes.

# Cost Impact

## Town of Hopkinton

Neutral

- **No cost to town.** Small change in scope of inspections.
- Free training available.
- **Elmwood School replacement already complies.**

## Developers

Neutral

- MA Net Zero Ready construction has **<1% cost premium.**
- Heat pump replaces both A/C + Furnace.
- **Thousands of dollars in state and federal incentives.**

## Residents

Savings

- **Cost savings on energy usage.**
- Heat pumps are highly efficient and use less energy.
- **No retrofit** for electrification needed.

# Summary



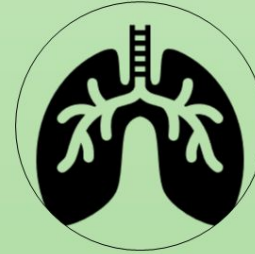
**Pre-wiring** avoids expensive retrofits for homeowners in the future



Key action for **reducing carbon emissions in buildings**



**Cost savings** to new homeowner both short and long term



Encourages building **healthier homes** that don't rely on fossil fuels



Still allows **market choice** for developers and home buyers



# Supplementary Slides



# Article Text

Simple majority vote

## Adopt the Municipal Opt-in Specialized Stretch Energy Code

To see if the Town will vote 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, by accepting the provisions of 225 CMR 22, Appendix RC and 225 CMR 23, Appendix CC, with such acceptance to take effect **July 1, 2024**. Pass any vote or take any act relative thereto.

**(Sustainable Green Committee)**

# Process for Adoption

## Vote at Town Meeting

- Article will be in the warrant at the Special Town Meeting on **November 13th.**
- Simple majority vote is required.
- Decided by registered Hopkinton voters who attend Town Meeting.

## Town Staff Receives Training

- Town inspectors would train to the Specialized Building Code through **free training sessions.**
- Since there are other municipalities that have adopted for July 2023 and January 2024 dates, this training is already available.

## Effective After 6+ Months

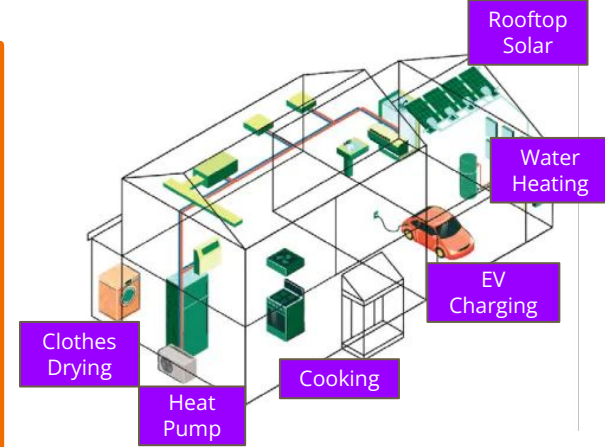
- If adopted, effective date for Hopkinton is **July 1, 2024.**
- This would be in the 3rd wave of MA municipalities to apply the Specialized Code.

# What does Pre-Wiring of Buildings Mean?

Adequate electrical service to the building, designated circuits, and appropriate outlets for:

- **HVAC:** cold weather rated air source or ground source heat pump for both heating and cooling
- **Water Heating**
- **Cooking:** induction stovetop and electric oven
- **Clothes Drying**
- **Electric Vehicle Charging** (already included in Stretch Code)

Electric appliances are complemented with onsite **solar** electricity generation to further lower emissions and saves money for the homeowner.



***The technology all exists.***

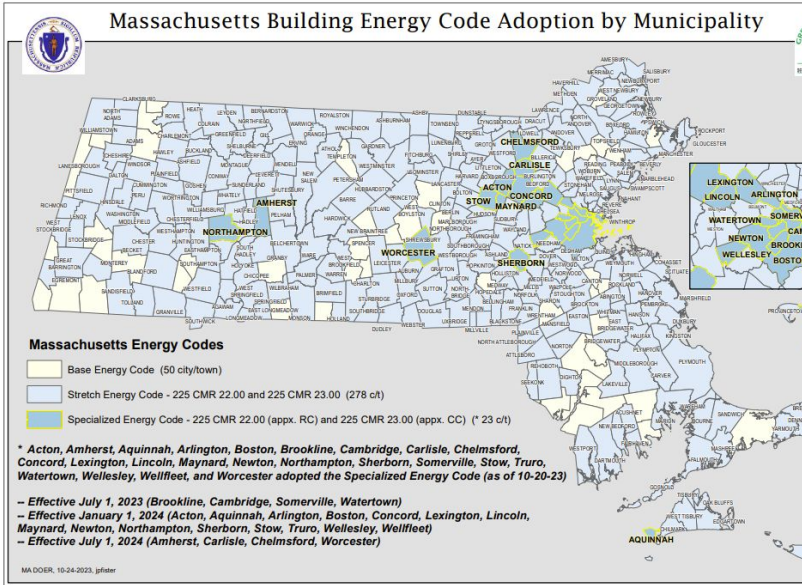
The HVAC system makes the biggest difference because it is so much more efficient, and it is the largest contributor to home energy use. While a gas furnace can have a 97% efficiency, **a heat pump has about a 300% efficiency** because it transfers heat rather than generates it. Combined with a well insulated building (Stretch Code), energy needs for home heat are significantly reduced!

# Detailed Pathways for Compliance

Building Size	Fuel Type	Minimum Efficiency	Electrification	Onsite Solar
Home less than 4000 sq ft 🏠	All Electric ☐	HERS 45 (same as Stretch code July 2024)	Full	Optional
Home less than 4000 sq ft 🏠	Mixed Fuel 🔥	HERS 42 (same as Stretch code July 2024)	Pre-wiring ⚡	Solar ☀️ (except shaded sites)
Home greater than 4000 sq ft 🏠	All Electric ☐	HERS 45 (same as Stretch code July 2024)	Full	Optional
Home greater than 4000 sq ft 🏠	Mixed Fuel 🔥	HERS 0 or Pplus ZERO (zero energy with HERS 42 + solar)	Pre-wiring ⚡	Solar ☀️
Multi-family greater than 12,000 sq ft 🏢	All Electric ☐	Passive House	Full	Optional
Multi-family greater than 12,000 sq ft 🏢	Mixed Fuel 🔥	Passive House	Pre-wiring ⚡	Optional
Commercial 🏢	All Electric ☐	Per Stretch Code	Full	Optional
Commercial 🏢	Mixed Fuel 🔥	Per Stretch Code (HERS 0 or Pplus ZERO optional)	Pre-wiring ⚡	Solar ☀️ (except shaded sites)

# Municipality Adoption of Specialized Code

22% of state population



Our nearby peers

Municipality	Status	Gov type	Effective Date	County	Population
Cambridge	Approved	City council / Mayor	Jul-23	Middlesex	118,403
Somerville	Approved	City council / Mayor	Jul-23	Middlesex	81,045
Watertown	Approved	City council / Mayor	Jul-23	Middlesex	35,329
Newton	Approved	City council / Mayor	Jan-24	Middlesex	88,923
Boston	Approved	City council / Mayor	Jan-24	Suffolk	675,647
Northampton	Approved	City council / Mayor	Jan-24	Hampshire	29,571
Worcester	Approved	City council / Mayor	Jul-24	Worcester	206,518
Amherst	Approved	City council / Mayor	Jul-24	Hampshire	39,263
Brookline	Approved	Representative Town Meeting	Jul-23	Norfolk	63,191
Wellesley	Approved	Representative Town Meeting	Jan-24	Norfolk	29,550
Lexington	Approved	Representative Town Meeting	Jan-24	Middlesex	34,454
Arlington	Approved	Representative Town Meeting	Jan-24	Middlesex	46,308
Chelmsford	Approved	Representative Town Meeting	Jul-24	Middlesex	36,392
Truro	Approved	Open Town Meeting	Jan-24	Barnstable	2,454
Wellfleet	Approved	Open Town Meeting	Jan-24	Barnstable	3,566
Aquinnah	Approved	Open Town Meeting	Jan-24	Dukes	439
Concord	Approved	Open Town Meeting	Jan-24	Middlesex	18,491
Acton	Approved	Open Town Meeting	Jan-24	Middlesex	24,021
Sherborn	Approved	Open Town Meeting	Jan-24	Middlesex	4,401
Lincoln	Approved	Open Town Meeting	Jan-24	Middlesex	7,014
Maynard	Approved	Open Town Meeting	Jan-24	Middlesex	10,746
Stow	Approved	Open Town Meeting	Jan-24	Middlesex	7,174
Carlisle	Approved	Open Town Meeting	Jul-24	Middlesex	5,237
Hopkinton	Nov. 13th Town Meeting	Open Town Meeting	Jul-24	Middlesex	18,758

# Glossary

**All-Electric Building:** A building that uses electricity only and has no capacity for fossil fuel use in heating the building, water heating, cooking, or drying appliances.

**HERS:** Home Energy Rating System (lower score is better). The higher the score, the worse the energy performance.

**Mixed-Fuel Building:** A building that partially uses fossil fuel for heating, and/or has appliances that use fossil fuel, or includes piping for such equipment.

**Net Zero Building:** A building that, over the course of a year, uses clean, renewable energy sources to generate energy onsite that is equal to or greater than the energy consumed.

**Passive House:** Passive House is a highly energy-efficient building. Some of the principles of Passive House design are superior windows, mechanical ventilation with heat recovery, quality insulation, and airtight construction.

**PHIUS:** Passive House Institute of the US. PHIUS oversees the Passive House standards and reviews and certifies project design and documentation.

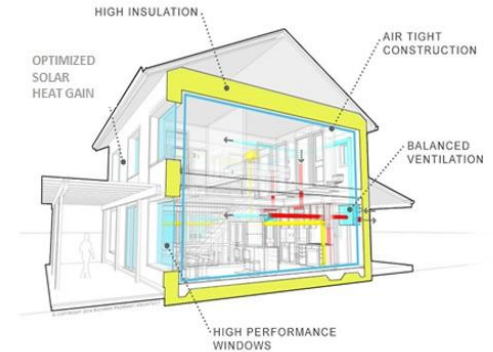
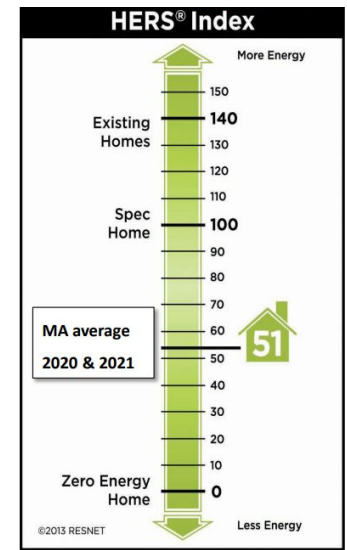


Figure 2: Passive House, Richard Pedranti Architect

# 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 (Plus 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

