

WORCESTER & THE SPECIALIZED STRETCH CODE

October 21, 2024

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Meeting the Specialized Energy Code

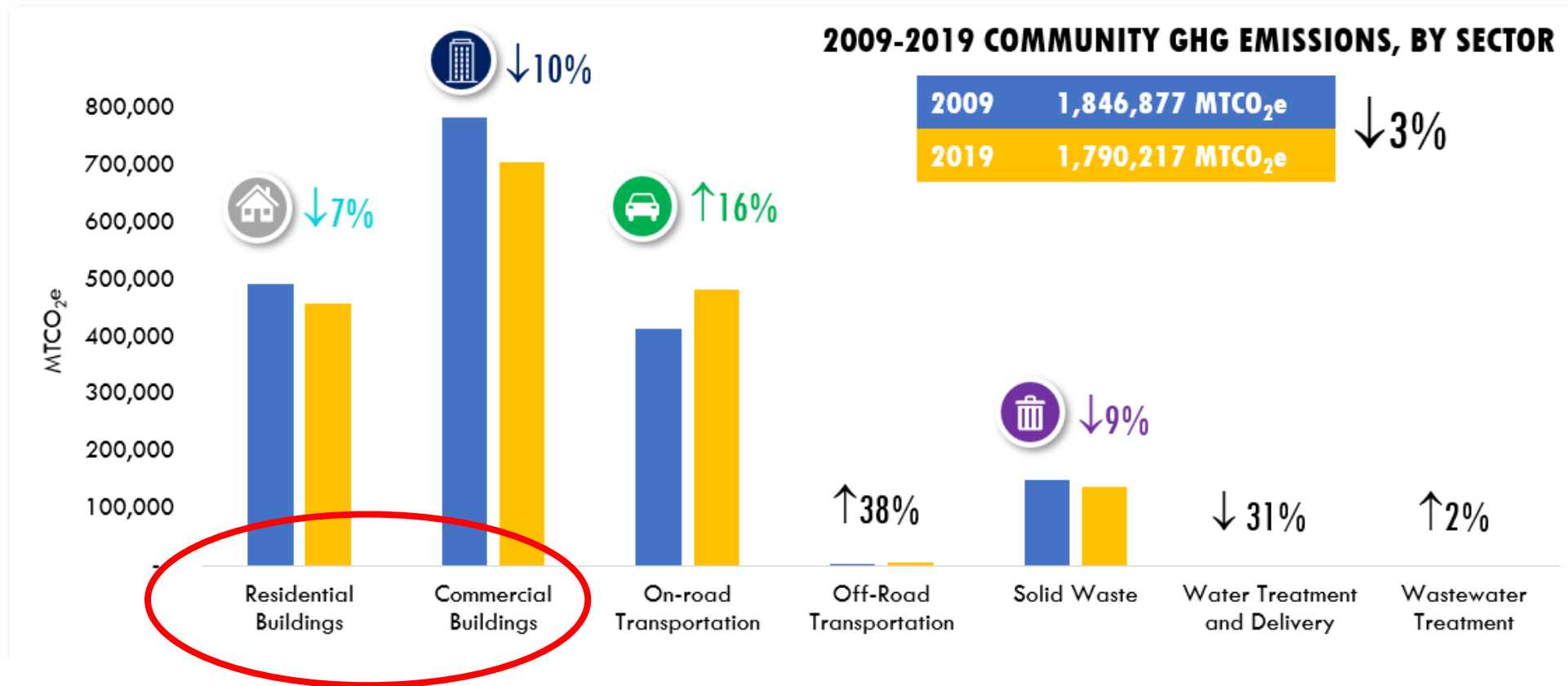


GREEN
WORCESTER

Agenda

- Climate Change and Sustainability in Worcester
- Specialized Stretch Code – Goals and Adoption (effective 7/1/2024)
- Code Compliance Pathways
- How can we help

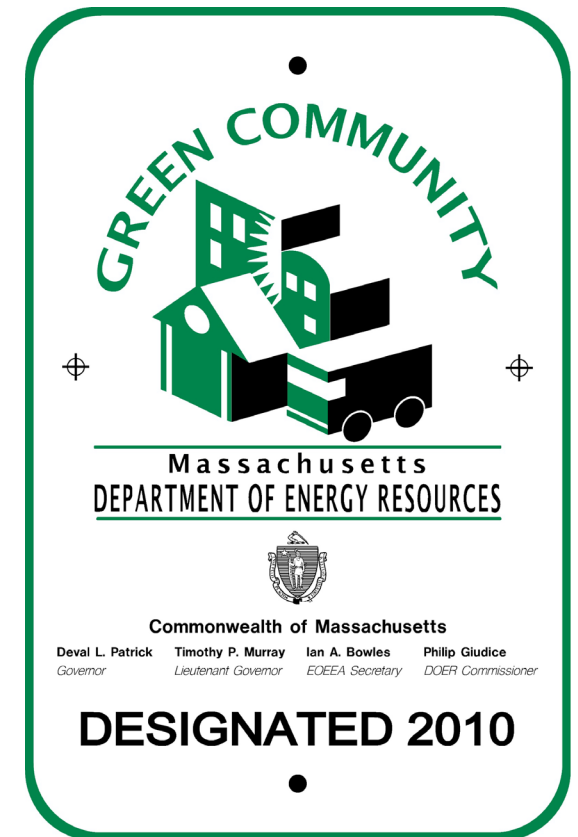
Worcester: 2009-2019 Community GHG EMISSIONS Trends by Sector



Though building emissions are trending down since 2009, buildings continue to be the single largest contributor to our greenhouse gas emission.

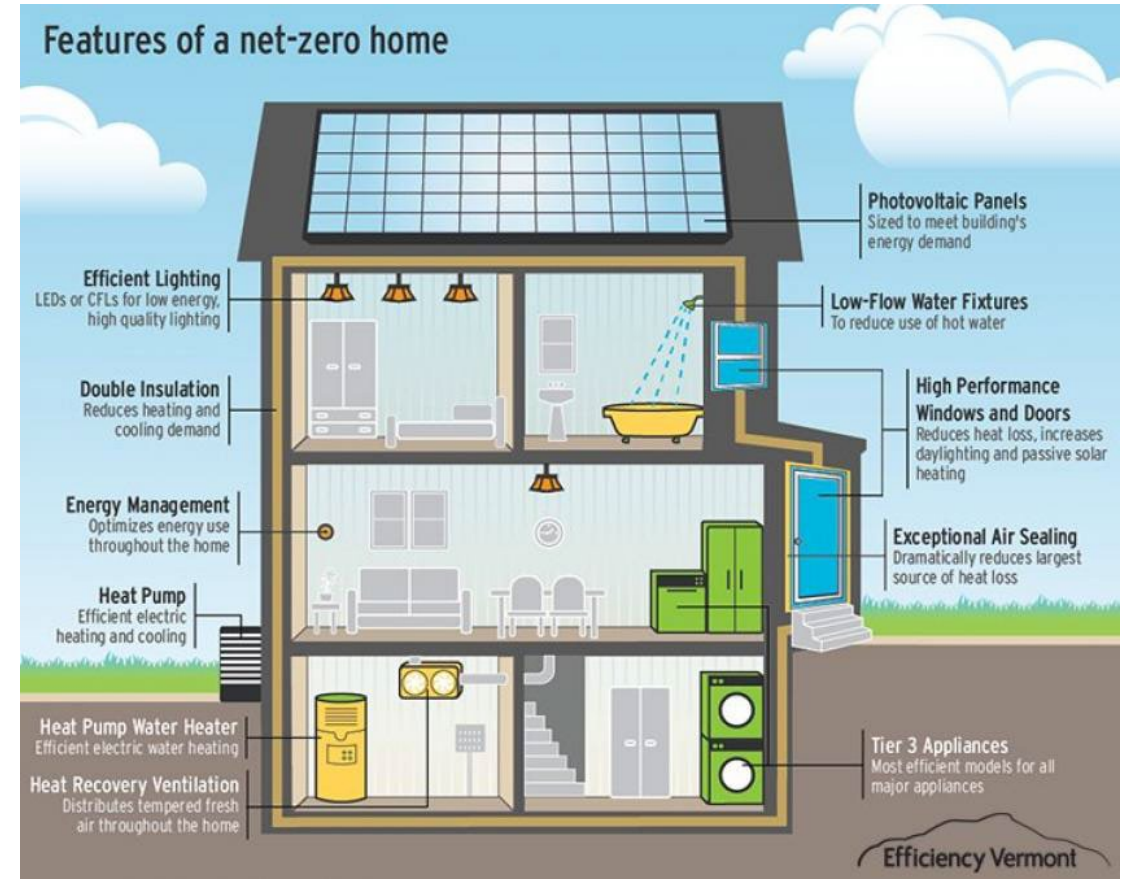
History of Dedication to Sustainability

- ✓ 2009: Adopted the Stretch Code and have remained a Stretch Code community since
- ✓ 2019: City Council Declaration of a Climate Emergency
- ✓ 2019: Municipal Electricity Aggregation – additional local green electricity in the mix! (currently 40% but with a plan to reach 100%)
- ✓ 2021: Green Worcester Plan, strongly supported by the community:
 - ✓ By 2030: 100% renewable energy for municipal facilities
 - ✓ By 2035: 100% renewable electricity citywide
 - ✓ By 2045: 100% renewable energy that includes heating and transportation
- ✓ Over a decade of investments in the municipal buildings' energy efficiency



GWP Goal: Net-Zero and Climate Resilient Buildings

- Require new buildings to be net zero and climate-resilient, and to promote deep energy retrofits of existing buildings.
- Strategies:
 - Use no fossil fuels as primary source of building energy in new City buildings
 - Renewable electricity rather than fossil fuels for building energy systems
 - Promote energy retrofits for existing buildings





THE SPECIALIZED STRETCH CODE

The Specialized Stretch Code

- Developed by the Commonwealth in 2022 as an option for municipalities
- A more rigorous set of regulations that build upon the state's existing codes for making buildings more energy-efficient
- Use of fossil fuels such as gas and propane or biomass is permitted but comes with additional requirements for on-site solar generation and pre-wiring for future electrification of any fossil fuel using equipment

Specialized Stretch Code Goals

- All compliance pathways are designed to ensure new construction that is consistent with a net-zero Massachusetts economy in 2050, primarily through deep energy efficiency, reduced heating loads, and efficient electrification
- The code requires builders to meet high performance standards, prepare buildings for all-electric heating and cooling (if not going all-electric from the outset), and make parking ready for electric vehicle chargers

Specialized Stretch Code Co-Benefits

Financial Benefits

- Reduced energy demand
- Reduced maintenance costs
- Climate resilient construction

Health & Comfort Benefits

- Improved indoor air quality
- Consistent temperature
- Quieter acoustics

Environmental Benefits

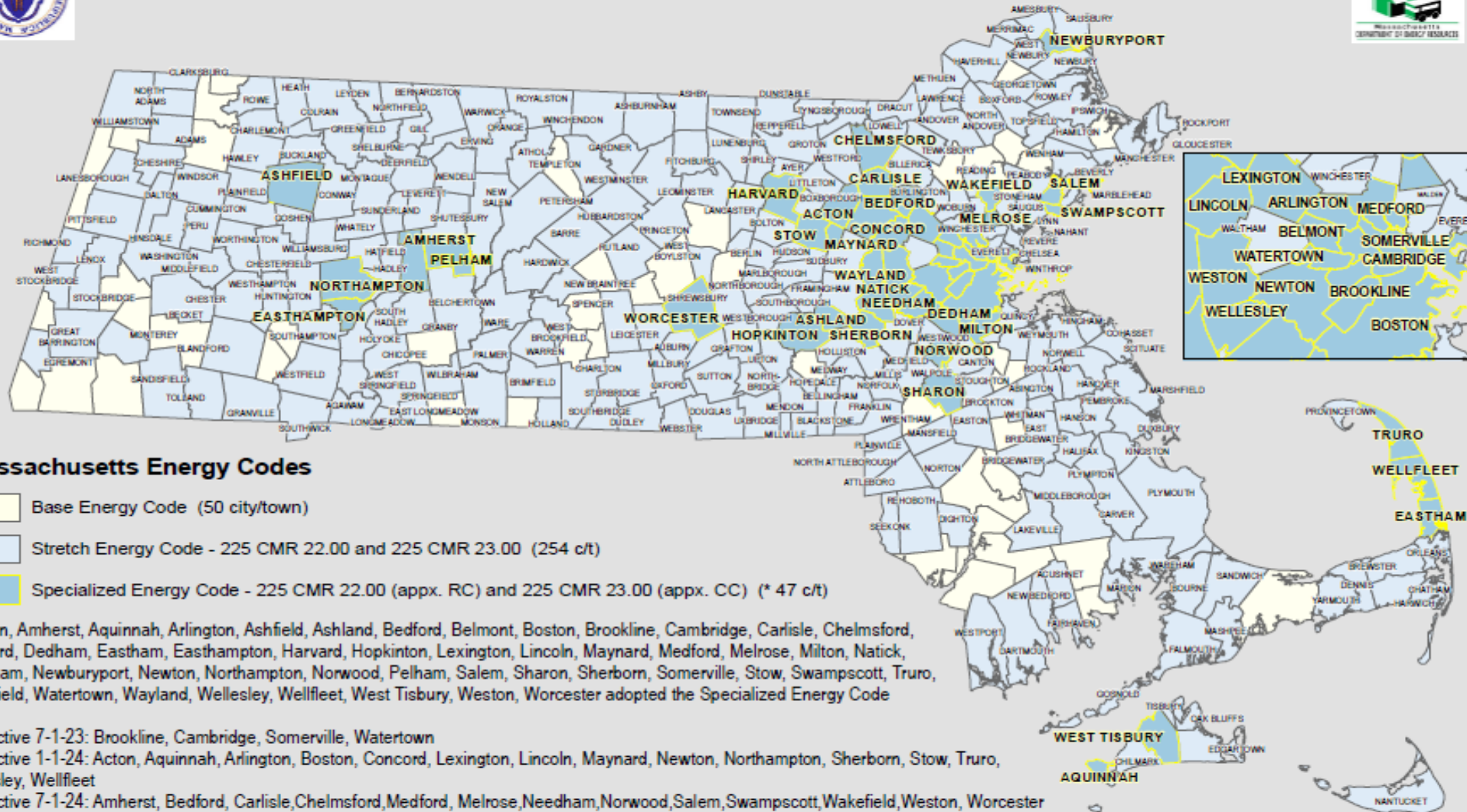
- Reduced carbon emissions
- Climate resilient building
- Focus on embodied carbon reduction

Adoption of the Specialized Stretch Code

- The Worcester City Council voted to adopt it on September 26, 2023.
- **The SSC went into effect on July 1, 2024.**
- Aligned with the broad public support, City Council commitments, and Green Worcester Plan goal of bringing our greenhouse gas emissions to zero by 2045.



Massachusetts Building Energy Code Adoption by Municipality





CODE COMPLIANCE PATHWAYS

Specialized Stretch Code vs Stretch Code

- The Specialized Stretch Code:
 - has accelerated adoption of more efficient HERS rating thresholds (HERS 42 and 45)
 - provides three paths for low rise residential compliance, including a zero-energy pathway (with solar PV)
 - requires new homes over 4,000 sq ft to follow the all-electric or zero energy pathway
 - solar PV is required for any new construction utilizing fossil fuels for heating
 - For additions and alterations there are NO CHANGES from the Stretch Code. **The SSC applies only to new construction.**

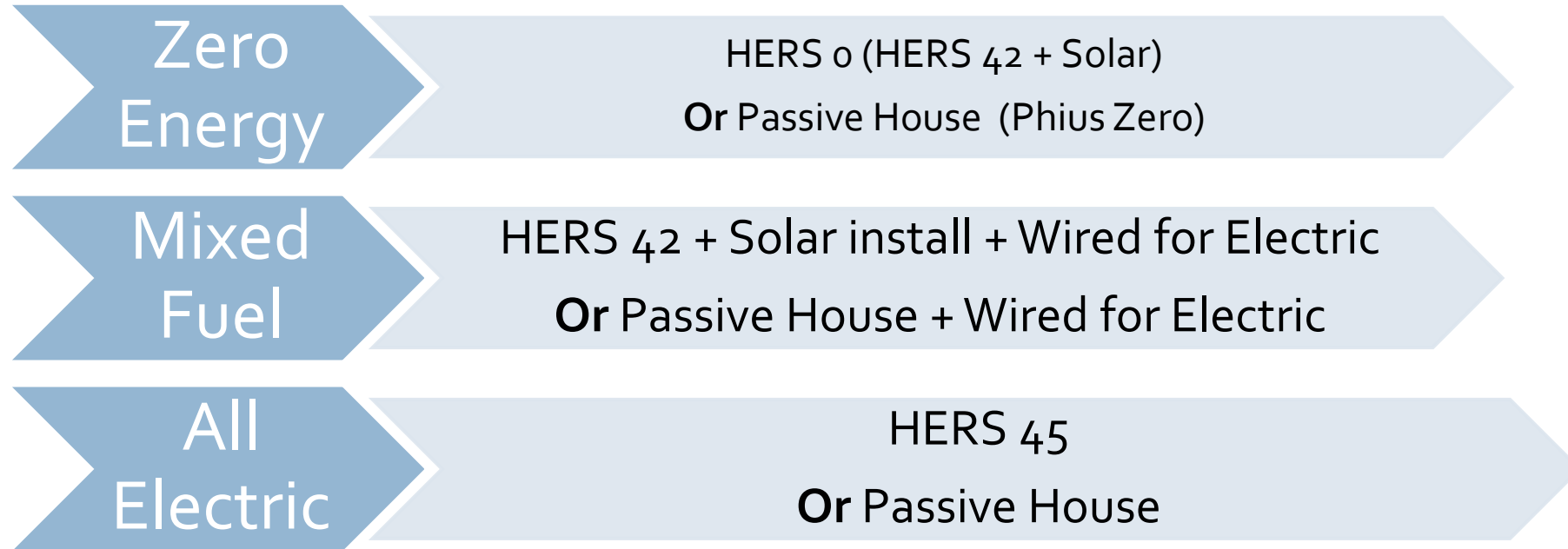
Additions, Alterations and Change of Use

Application for new/current Stretch and the proposed Specialized Stretch Code:

Scenario	Code Requirement
Additions up to 100% of existing building size; or, up to 20,000 SF	Follow Stretch Code Requirements
Alteration of existing building	Altered portions: follow Stretch Code Requirements
Change of use	Follow Stretch Code requirements

Specialized Stretch Code Key Requirements

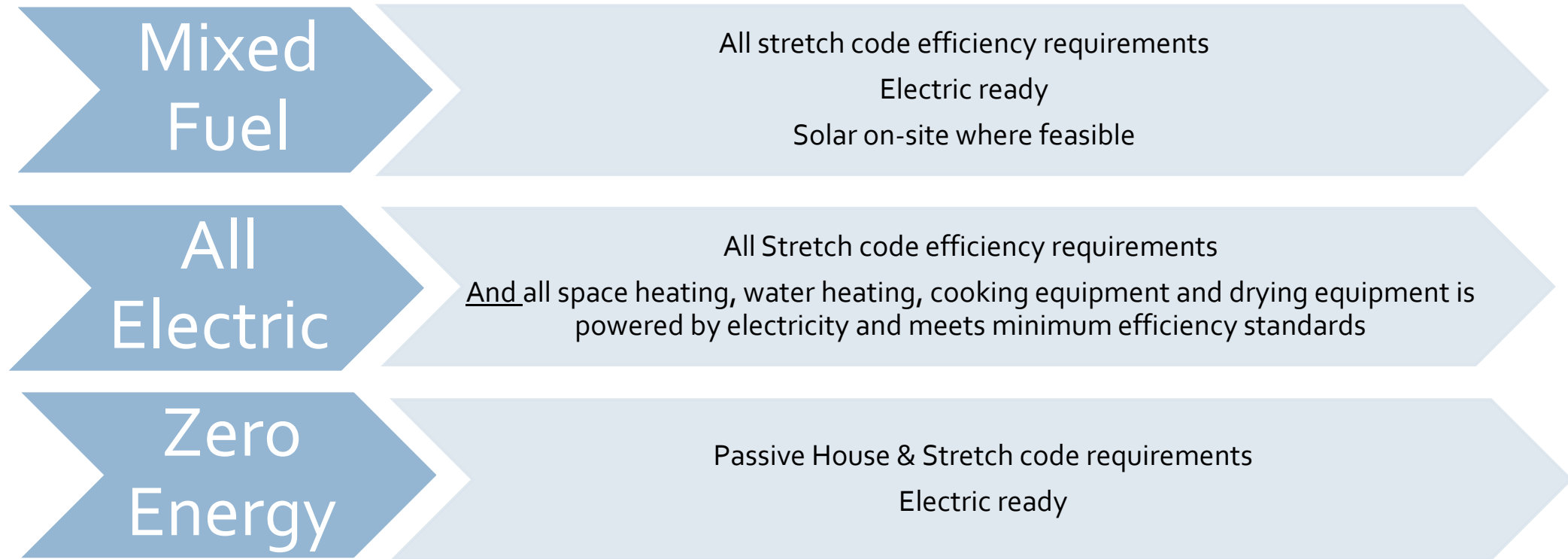
Residential buildings



- New homes over 4,000 sf must use *All-Electric* or *Zero Energy*
- Additions & Alterations: same as Stretch Code, i.e., no additional requirements beyond the Stretch Code
- Parking: both levels of code (Stretch and Specialized Stretch Code) require that any parking must be wired for at least one EV charger in small buildings, or 20% of spaces in multifamily buildings
- Multifamily buildings over 12,000 sq. ft. must meet: Passive House standards or Net-zero home performance scores

Specialized Stretch Code Key Requirements

Commercial buildings



- Requirements depend on building type
- Parking: both codes (Stretch and Specialized Stretch Code) require 20% of residential and business parking spaces to be wired for electric vehicle charging.

Take-aways – Plan Ahead

- Identify compliance pathway for your project (easier to do in advance than try to fix later in the project).
- Contract with a reputable Building Performance/Building Energy Consultant at the beginning of the process, to streamline and optimize building design.
- Contact National Grid for assistance – determine possible incentives.

Proposed Code Updates

- Last month, Massachusetts Department of Energy Resources released proposed changes to the updated stretch and specialized stretch code language after receiving feedback from the building community.
- Stay up to date on the code by visiting
 - mass.gov/info-details/building-energy-code

How can we help?

The City wants to support our building community.

Please fill out a short survey that asks questions about your experience with the new Code, and what additional resources would be helpful.



THANK YOU & SURVEY

Your feedback is appreciated – please fill out our short post-event survey.

greenworchester@worcesterma.gov

Worcesterma.gov/DSR



Other Resources

- [Stretch Energy Code Development Support Documentation | Mass.gov](#)
- [Stretch Energy and Municipal Opt-In Specialized Building - Frequently Asked Questions](#)



CODE DETAILS

Updated Stretch vs. Specialized: COMMERCIAL

Comparison of updated Stretch and Municipal Opt-in Specialized Energy Codes for New Commercial Buildings (1)

Building Type	Fuel Type	Minimum Efficiency Pathway		Electrification		Minimum EV Wiring	Renewable Generation	
		Stretch Code	Specialized Opt-in Code	Stretch Code	Specialized Opt-in Code		Stretch Code	Specialized Opt-in Code
Offices and Schools >20,000 sf	All Electric	Thermal Energy Demand Intensity (TEDI) or Passive House pathways	Thermal Energy Demand Intensity (TEDI) or Passive House pathways	Full	Full	20% of parking spaces for residential and business uses, 10% for other uses	Optional	Optional
Offices and Schools >20,000 sf	Mixed-fuels	TEDI or Passive House pathways	TEDI or Passive House pathways	Optional ^o	Pre-wiring required	20% of parking spaces for residential and business uses, 10% for other uses	Optional	On-site solar PV: Minimum of 1.5W/sf for each sq foot of the 3 largest floors or 75% of Potential Solar Zone Area
High Ventilation (Hospitals, Labs, etc.)	All Electric	TEDI, 10% better than 2019 ASHRAE Appendix G, or Passive House pathways	TEDI, 10% better than 2019 ASHRAE Appendix G, or Passive House pathways	Full	Full	20% of parking spaces for residential and business uses, 10% for other uses	Optional	Optional
High Ventilation (Hospitals, Labs, etc.)	Mixed-fuels	TEDI, 10% better than 2019 ASHRAE Appendix G [‡] , or Passive House pathways	TEDI, 10% better than 2019 ASHRAE Appendix G [‡] , or Passive House pathways	Optional ^{‡o}	Pre-wiring required	20% of parking spaces for residential and business uses, 10% for other uses	Optional	On-site solar PV: Minimum of 1.5W/sf for each sq foot of the 3 largest floors or 75% of Potential Solar Zone Area
Multi-family >12,000 sf	All Electric	TEDI, HERS 45*, Passive House pathways, or (until July 1, 2024) 10% better than ASHRAE Appendix G	Passive House pathways or HERS 0 [§]	Full	Full	20% of parking spaces	Optional	Optional
Multi-family >12,000 sf	Mixed-fuels	TEDI, HERS 42*, Passive House pathways, or (until July 1, 2024) 10% better than ASHRAE Appendix G	Passive House pathways or HERS 0 [§]	Optional ^o	Pre-wiring required	20% of parking spaces	Optional	Optional
Small Commercial (<20,000 sf, except multi-family)	All Electric	Prescriptive pathway plus Stretch Code amendments	Prescriptive plus Stretch Code amendments	Full	Full	20% of parking spaces for residential and business uses, 10% for other uses	Optional	Optional
Small Commercial (<20,000 sf, except multi-family)	Mixed-fuels	Prescriptive pathway plus Stretch Code amendments	Prescriptive plus Stretch Code amendments	Optional ^o	Pre-wiring required	20% of parking spaces for residential and business uses, 10% for other uses	Optional	On-site solar PV: Minimum of 1.5W/sf for each sq foot of the 3 largest floors or 75% of Potential Solar Zone Area

Updated Stretch vs. Specialized: RESIDENTIAL

Comparison of updated Stretch and Municipal Opt-in Specialized Energy Codes for New Low-rise Residential Buildings (1)

Building Size	Fuel Type	Minimum Efficiency		Electrification		Minimum EV Wiring	Renewable Generation	
		Stretch Code	Specialized Opt-in Code	Stretch Code	Specialized Opt-in Code		Stretch Code	Specialized Opt-in Code
Dwelling units up to 4,000 sf	All-electric	HERS 45* or Passive House pathways	HERS 45* or Passive House pathways	Full	Full	1 parking space	Optional	Optional
Dwelling units up to 4,000 sf	Mixed-fuels	HERS 42* or Passive House pathways	HERS 42* or Passive House pathways	Optional	Pre-wiring required	1 parking space	Optional	Solar PV: ≥4 kW for single family and ≥0.75 W/sf for multi-family (except shaded sites and Passive House certified buildings)
Dwelling units >4,000 sf	All-electric	HERS 45* or Passive House pathways	HERS 45* or Passive House pathways	Full	Full	1 parking space	Optional	Optional
Dwelling units >4,000 sf	Mixed-fuels	HERS 42* or Passive House pathways	HERS 0 or Phius ZERO	Optional	Pre-wiring required	1 parking space	Optional	Solar PV or other renewables to meet the Zero energy building definition

TABLE 2: Residential Specialized code requirements summary by building/dwelling unit size

Building Size	Fuel Type	Minimum Efficiency	Electrification	Min. EV wiring	Renewable Generation
Dwelling units up to 4,000 sf	All Electric	HERS 45 or Phius CORE or PHI	Full	1 parking space	Optional
Dwelling units up to 4,000 sf	Mixed-fuel	HERS 42 or Phius CORE or PHI	Pre-wiring	1 parking space	Solar PV (except shaded sites)
Dwelling units > 4,000 sf	All Electric	HERS 45 or Phius CORE or PHI	Full	1 parking space	Optional
Dwelling units > 4,000 sf	Mixed-fuel	HERS 0 or Phius ZERO	Pre-wiring	1 parking space	Solar PV or other renewables
Multi-family >12,000 sf	All Electric	Phius CORE or PHI	Full	20% of spaces	Optional
Multi-family >12,000 sf	Mixed-fuel	Phius CORE or PHI	Pre-wiring	20% of spaces	Optional