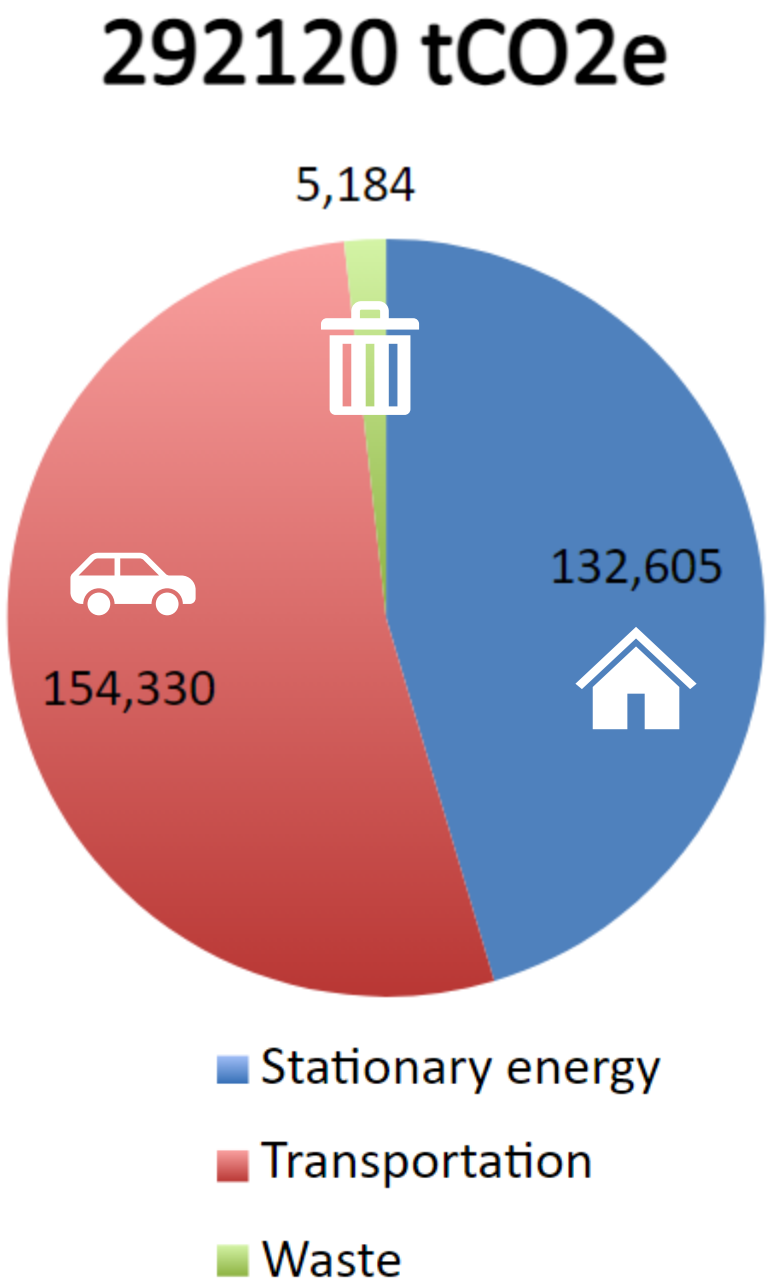
Municipal Opt-in Specialized Stretch Energy Code

225 CMR 22.00 and 225 CMR 23.00

Why Adopt the Specialized Code Now?

- Buildings account for about 45% of Milton's emissions. The Town's Climate Action Planning Committee has been charged with developing a plan to achieve Net Zero emissions by 2050, which will require efficiency upgrades and electrification of heating in all residential and commercial buildings
- The Opt-In Specialized energy code will accelerate the transition to clean energy transition and avoid cost premiums to convert these buildings to all-electric in the future
- As MBTA Communities zoning progresses, potential for new development will increase and ought to be done at the highest level of energy efficiency



Energy Code Timeline

2008 Green Communities Act

- Base Energy Code: "To adopt and fully integrate the latest International Energy Conservation Code (IECC) and any more stringent amendments thereto as part of the state building code, in consultation with DOER."
- Created DOER Green Communities Program and Stretch energy code: "minimize, to the extent feasible, the lifecycle cost of the facility by utilizing energy efficiency, water conservation and other renewable or alternative energy technologies."
- Milton becomes a Green Community in 2010 and adopts Stretch Energy Code

2021 Climate Act

- 50% emission reduction in 2030
- DOER to update the Stretch Code from time to time
- DOER to develop a municipal opt-in specialized stretch energy code that includes:
  - net-zero building performance standards
  - a definition of net-zero building
  - designed to achieve MA GHG emission limits and sub-limits

Statutory Timeline

- July 2022: EEA must establish specific 2025 and 2030 emissions reduction targets for the buildings sector
- December 2022: DOER must promulgate new specialized opt-in code
- January 2023: New Base Energy Code goes into effect
- 2030: Massachusetts must achieve at least 50% reduction in GHG emissions

- May 2024: Milton Town Meeting votes on adopting Specialized Code
- January 2025: If adopted, Specialized Code goes into effect

Energy Code Options

Base Code: 60 municipalities
Stretch Code: 291 Green Communities
Specialized Code: 29 Adopted, 16 currently in effect

BBRS:
Expected July 2023

Residential: Jan 2023
Commercial: July 2023

Green Community to "Opt-In"
Typically 6-11 months after Town/
City vote

Application of Codes

- The Stretch Code applies to both residential and commercial new construction, as well as large renovations and additions – generally those above 1,000sf
- The Specialized Code applies only to new residential and commercial construction
- The Specialized Code also applies a Solar PV or a Passive House requirement for all mixed-fuel Municipal or School buildings. Fossil Fuel emergency generators do not trigger mixed-fuel designation.

Specialized Code Low-rise Residential Compliance

1. Zero Energy: Net zero energy consumption over the course of a year via high efficiency and on-site renewables. HERS 0 or Phius ZERO efficiency
2. All-Electric: No on-site combustion of fossil fuels. HERS 45 or Phius CORE efficiency
3. Mixed-Fuel: Pre-wiring to allow for all-electric retrofits, on-site renewable. HERS 42 or Phius CORE or PHI efficiency

Applies to single family buildings and multifamily buildings 3 stories or less.

Homes less than 4,000sf may use all three pathways. Homes 4,000sf and greater must be either Zero Energy or All-Electric. If fossil fuel combustion is present, must meet Zero Energy requirements

Definition of Net-zero Building

"A building which is consistent with achievement of MA 2050 net zero emissions, through a combination of highly energy efficient design together with being an all-electric or Zero Energy Building, or where fossil fuels are utilized, a building fully pre-wired for future electrification and that generates solar power on-site from the available Potential Solar Zone Area"

Large Multi-Family & Commercial Compliance

- For Multi-Family housing 4+ stories & 12,000sf or larger, Passive House standards (Phius CORE or PHI) are required for both All-Electric and Mixed-Fuel construction
- For Commercial properties, expands requirements for on-site solar energy and wiring for electrification if Mixed-Fuel

Building Type	Fuel Type	Stretch code	Specialized Code
Schools, Offices, Municipal buildings	All Electric	TEDI or Passivehouse	
	Mixed Fuel	TEDI or Passivehouse	TEDI **+ Solar PV** or Passivehouse **+ wiring for electrification**
Other Commercial (over 20,000 sf)	All Electric	ASHRAE or TEDI or Passivehouse	
	Mixed Fuel	ASHRAE or TEDI or Passivehouse	ASHRAE **+ Solar** or TEDI **+ Solar** or Passivehouse **+ wiring for electrification**

Code Application Table

Building Size	Fuel Type	Minimum Efficiency		Electrification	Onsite Solar
		Stretch Code	Specialized Code		
Home under 4000 sq ft	All Electric	HERS 45 or Passive House	Same	N/A	Optional
Home under 4000 sq ft	Mixed Fuel	HERS 42 or Passive House	Same	Pre-wiring	Required (except shaded sites)
Home more than 4000 sq ft	All Electric	HERS 45 or Passive House	Same	N/A	Optional
Home more than 4000 sq ft	Mixed Fuel	HERS 42 or Passive House	HERS 0 or Phius ZERO	Pre-wiring	Required (except shaded sites)
Multi-family >12k sq ft	All Electric	HERS 45 or Passive House	Passive House	N/A	Optional
Multi-family >12k sq ft	Mixed Fuel	HERS 42 or Passive House	Passive House	Pre-wiring	Optional
Commercial	All Electric	Per Stretch Code	Same	N/A	Optional
Commercial	Mixed Fuel	Per Stretch Code	HERS 0 or Phius ZERO optional	Pre-wiring	Required (except shaded sites)

Electric Vehicle Infrastructure

- Single and two-family buildings require 1 parking spot with Level II EV charging per unit
- Multifamily buildings require at least 20% of spots to have EV chargers
- Exception: EV parking requirements do not exceed local parking requirements. E.G. MBTA Communities districts with parking maximums are not required to add any parking, but if they do, that must meet the EV requirements.

Cost Estimates

- At HERS 42, both gas and electric heat are cost effective to build and cheaper to operate.
- MassSave incentives and rebates, Federal tax credits, and MA state programs have been designed to financially support these new codes
- The Department of Energy Resources (DOER) states that after incentives home the homeowner would save $ 20,000 when building for a 2500 square foot home
- Low-rise residential buildings built with all electric heating and cooling (via heat pumps) will typically cost less to build and operate than those built with fossil fuel heating. One reason for this is that heat pumps can be used for both heating and central air conditioning, whereas fossil fuel heated new homes typically require a separate air conditioning system.

HERS Index (ERI)

52 Base | **42** Stretch

Electric Heat Pump

2030 Annual Greenhouse Gas

0.75 Stretch Tons | 2.56 Tons Saved

CO_2

Home Details

- 2,100 sq.ft.
- Small Single Family
- 3 Bedrooms

MA 10th Edition Building Code | 2023

Small Single Family - Electric

Costs and Benefits to Meet Stretch Code

	COSTS		BENEFITS	NET
BUILDER	-$11,597 Total Adjustments		$17,000 Rebates & Tax Rebates[1]	-$28,597 Cost Compared to Base Code
HOME BUYER	-$5,719 Change to Downpayment[3]	-$1,244 Change to Annual Mortgage Payment[3]	-$191 Estimated Energy Cost Savings per Year[2]	-$1,053 Buyer Annual Net

https://www.mass.gov/doc/residential-stretch-code-costs-and-benefits-case-studies/download

HERS Index

52 Base | **42** Stretch

Gas

2030 Annual Greenhouse Gas 2.92 Stretch Tons | 0.38 Tons Saved

CO_2

Home Details

- 2,100 sq.ft.
- Small Single Family
- 3 Bedrooms

MA 10th Edition Building Code | 2023

Small Single Family - Gas

Costs and Benefits to Meet Stretch Code

	COSTS		BENEFITS	NET
BUILDER	**$14,064** Total Adjustments		**$6,157** Rebates & Tax Credits[1]	**$7,907** Cost Compared to Base Code
HOME BUYER	**$1,581** Change to Downpayment[3]	**$344** Change to Annual Mortgage Payment[3]	**-$153** Estimated Energy Cost Savings per Year[2]	**$496** Buyer Annual Net

https://www.mass.gov/doc/residential-stretch-code-costs-and-benefits-case-studies/download

HERS Index

52 Base | **42** Stretch

Electric Heat Pump

2030 Annual Greenhouse Gas

1.19 Stretch Tons | **4.43** Tons Saved

CO_2

Home Details

- 4000 sq.ft.
- Large Single Family
- 5 Bedrooms

MA 10th Edition Building Code | 2023

Large Single Family - Electric

Costs and Benefits to Meet Stretch Code

	COSTS		BENEFITS	NET
BUILDER	-$3,062 Total Adjustments		$17,000 Rebates & Tax Rebates[1]	-$20,062 Cost Compared to Base Code
HOME BUYER	-$4,013 Change to Downpayment[3]	-$873 Change to Annual Mortgage Payment[3]	-$325 Estimated Energy Cost Savings per Year[2]	-$548 Buyer Annual Net

https://www.mass.gov/doc/residential-stretch-code-costs-and-benefits-case-studies/download

HERS Index

52 Base | **42** Stretch

Gas

2030 Annual Greenhouse Gas **4.13** Stretch Tons | **1.49** Tons Saved

CO_2

Home Details

- 4000 sq.ft.
- Large Single Family
- 5 Bedrooms

MA 10th Edition Building Code | 2023

Large Single Family - Gas

Costs and Benefits to Meet Stretch Code

	COSTS		BENEFITS	NET
BUILDER	**$10,892** Total Adjustments		**$7,708** Rebates & Tax Rebates[1]	**$3,184** Cost Compared to Base Code
HOME BUYER	**$637** Change to Downpayment[3]	**$139** Change to Annual Mortgage Payment[3]	**$440** Estimated Energy Cost Savings per Year[2]	**-$302** Buyer Annual Net

https://www.mass.gov/doc/residential-stretch-code-costs-and-benefits-case-studies/download

Proposed Warrant Article

To see if the Town will vote to enact Chapter ___ of the Town of Milton's General Bylaws, entitled "Specialized 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, with an effective date of January 1, 2025, a copy of which is on file with the Town Clerk, or take any other action relative thereto.

Additional details are not required to be in the warrant article, but would be expected in the Warrant Committee's recommendation

Departmental Support

- Departments of Planning, Engineering, and Inspectional Services have committed to hosting a public information session on the importance and impacts of the Specialized Code
- Collaboration with Sustainable Milton
- Dedicated Energy Code webpage on TownOfMilton.org