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The Sponsors of Energize Connecticut, and in partnership with Connecticut Passive House and BuildGreenCT, are pleased to offer *Passive House & All-Electric Homes Initiative* to support workforce development and help transform the energy efficiency and building construction industries in Connecticut.



BuildGreenCT

For more information, please visit EnergizeCT.com/passive-house
or email PassiveHouseTrainingCT@icf.com

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Take energy efficiency to a new level

Residential New Construction Passive House Multi-family buildings with five units or more



PASSIVE HOUSE INCENTIVE STRUCTURE FOR MULTI-FAMILY (5 UNITS OR MORE)				
Incentive Timing	Activity	Incentive Amount	Max Incentive (Per Unit)	Max Incentive (Per Project)
Pre-Construction	Feasibility Study ¹	Up to 100% of Feasibility Study Costs	N/A	\$5,000.00
	Energy Modeling ²	75% of Energy Modeling Costs (Before 90% Design Drawings)	\$500.00	\$30,000.00
		50% of Energy Modeling Costs (90% Design/50% Construction)	\$250.00	\$15,000.00
Post Construction	Certification ³	Up to 100% of Certification Costs	\$1,500.00	\$60,000.00

1. Feasibility Study will require documentation in the form of a Feasibility Study report and invoice from the Passive House Consultant

2. Incentives will only be awarded prior to 50% Construction Drawings for Passive House projects. No incentives will be granted after 50% Construction Drawing set.

3. Certification may be either through PHIUS, PHI, or EnerPHit certification offerings.

Next steps you can take...

Contact your Energy Efficiency Representative or

Go to [EnergizeCT.com](https://energizeCT.com) or call 1-877-WISE USE for more details.

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The future of high-performance,
all-electric homes starts here.



	LEVEL 1		LEVEL 2	
	Single Family (Detached Dwellings)	Multifamily (Attached Dwellings)	Single Family (Detached Dwellings)	Multifamily (Attached Dwellings)
Total UA Alternative Compliance or HERS Index Score [†]	Total UA \geq 7.5% better than 2021 IECC or HERS Index Score \leq 55		Total UA \geq 15% better than 2021 IECC or HERS Index Score \leq 45	
Heat pump for space heating ^{††}	Required		Required	
Space Conditioning Connectivity & Controls ^{†††}	Optional		Required	
Heat pump for water heating	Required	Optional	Required ^{††††}	
Hot Water Distribution ^{†††††}	Required		Required	
Envelope Infiltration Rate (ACH)	ACH50 \leq 2.5	CFA > 850ft ² : ACH50 \leq 4.0 CFA < 850ft ² : ACH50 \leq 5.0	ACH50 \leq 2.0	CFA > 850ft ² : ACH50 \leq 3.0 CFA < 850ft ² : ACH50 \leq 4.0
Duct Leakage Rate (CFM)	2021 IECC code minimum requirements		All ductwork must be located in conditioned space	
Balanced Ventilation Systems	Optional		Required HRV/ERV (\geq 70% SRE / \geq 40% TRE)	
Induction Cooking	Optional		Required ^{††††††}	Optional
Electric Vehicle Readiness ^{†††††††}	Required		Required	

ALL-ELECTRIC HOME INCENTIVE STRUCTURE		
	Level 1	Level 2
Single Family	\$7,500	\$10,000
Single Family Attached	\$3,000	\$5,000
Multifamily	\$1,500	\$2,500

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High-Performance and Low-Energy Homes for Real Estate Professionals



Agenda

1. Market Opportunity of High-Performance
2. High-Performance Homes Overview
3. Case-Studies
4. Best Practices of Marketing and Valuation High-Performance



Section ONE

Market Opportunity of High Performance



The Growth of HPH's IN MA

source HELIX and Northeast Energy Efficiency Partnership

Massachusetts HELIX specific inventory at the **end of 2020 revealed over 52,855 homes with some type of green certification or energy asset rating** like Leadership in Energy and Environmental Design (LEED), the National Green Building Standard (NGBS), Energy Star Certified Homes, U.S. DOE Zero Energy Ready Homes or the HERS Index Score. This represents a **27% jump from the 2019 numbers.**

<https://us.greenbuildingregistry.com/green-homes> Over 193k homes new construction or homes with green building improvements in MA

HELIX data also plateaued over one hundred thousand homes in the state with **solar PV systems installed on residential homes at 100,054 at the end of 2020**

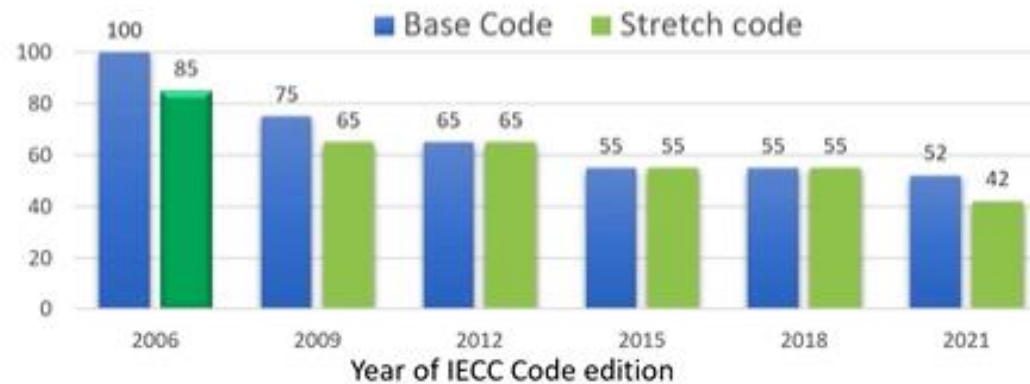
MA DOER New Construction Starts HERS Scores



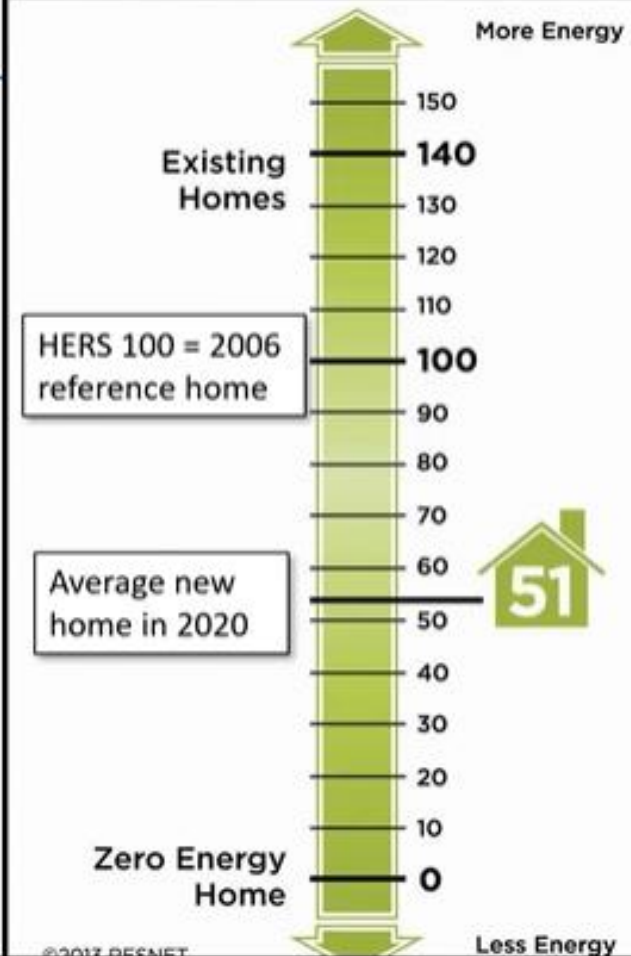
What is HERS?

- HERS (Home Energy Rating System) used in MA energy code since IECC 2006 edition
 - HERS 51 = Average in MA in 2020
 - 87% of new homes used HERS in 2020
 - HERS ratings qualify for Mass Save incentives & Federal tax credits

Max. HERS ratings allowed in MA code over time



HERS® Index



MA DOER New Construction Starts HERS Scores

TABLE 1: CHANGES TO MAXIMUM HERS INDEX (SEE TABLE R406.5)

On-site Clean Energy Application	Maximum HERS Index score (before renewable energy credit)				
	New construction			Alterations, Additions and Change of use	
	Updated Stretch Code July 1, 2024	Updated Stretch Code (Same as base code)	Current Stretch Code	Updated Stretch Code	Current Stretch Code
None (Fossil fuels)	42	52	55	52	65
Solar		55	60	55	70
All-Electric	45	55	60	55	70
Solar & All-Electric		58	65	58	75

MA DOER New Construction Starts HERS Scores

Home Energy Rating Certificate Final Report

Rating Date: 2023-02-28
Registry ID: 843046148
Ekotrope ID: BdNGaXqv



HERS® Index Score:
59
Your home's HERS score is a relative performance score. The lower the number, the more energy efficient the home. To learn more, visit www.hersindex.com

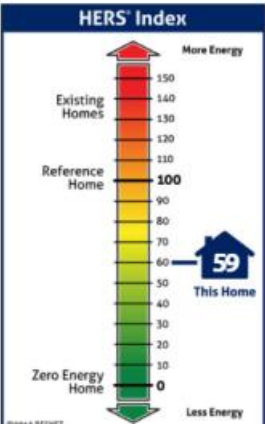
Annual Savings
\$3,711
*Relative to an average U.S. home

Home:
957 Main St Unit 2
Melrose, MA 02176
Builder:
Craig Foley

Your Home's Estimated Energy Use:

	Use [MBtu]	Annual Cost
Heating	18.7	\$1,531
Cooling	0.8	\$67
Hot Water	2.2	\$176
Lights/Appliances	15.7	\$1,287
Service Charges		\$84
Generation (e.g. Solar)	0.0	\$0
Total:	37.4	\$3,145

This home meets or exceeds the criteria of the following:



Home Feature Summary:

Home Type:	Apartment, end unit
Model:	N/A
Community:	N/A
Conditioned Floor Area:	1,753 ft²
Number of Bedrooms:	3
Primary Heating System:	Air Source Heat Pump • Electric • 11 HSPF
Primary Cooling System:	Air Source Heat Pump • Electric • 20 SEER
Primary Water Heating:	Residential Water Heater • Electric • 3.85 UEF
House Tightness:	2163 CFM50 (9.59 ACH50)
Ventilation:	None
Duct Leakage to Outside:	Forced Air Ductless
Above Grade Walls:	R-13
Ceiling:	Vaulted Roof, R-50
Window Type:	U-Value: 0.26, SHGC: 0.2
Foundation Walls:	N/A
Framed Floor:	R-0

Rating Completed by:

Energy Rater: Samuel Kenney
RESNET ID: 0180686

Rating Company: Advanced Building Analysis, LLC
2 Woodlawn St, Amesbury, MA 01913
(978) 270-3911

Rating Provider: Energy Raters of Massachusetts
2 Woodlawn Street Amesbury, MA 01913
978-270-3911

Samuel Kenney, Certified Energy Rater
Date: 2/28/23 at 5:56 PM



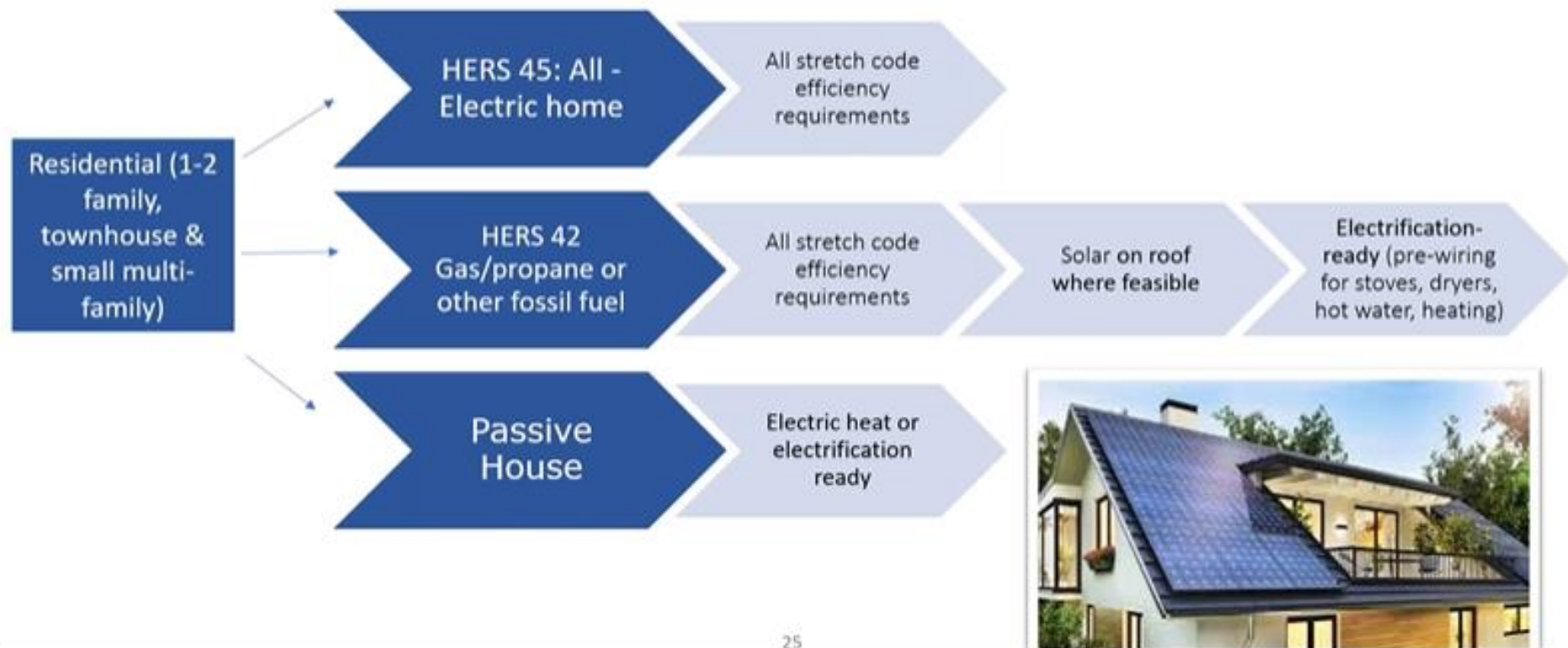
MA DOER New Construction Starts HERS Scores

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

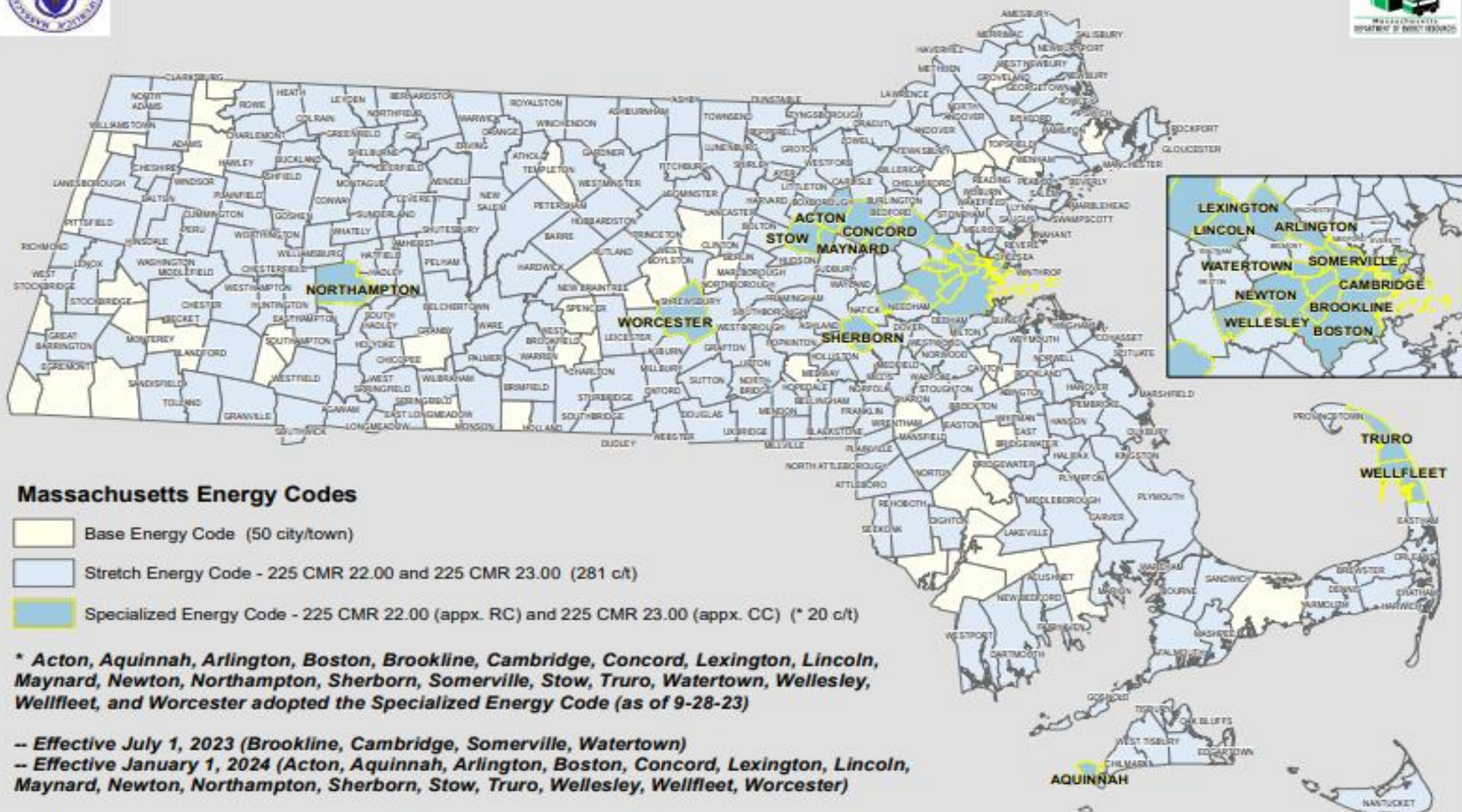
MA DOER New Construction Starts HERS Scores

Specialized Stretch Code (Net Zero) - Residential



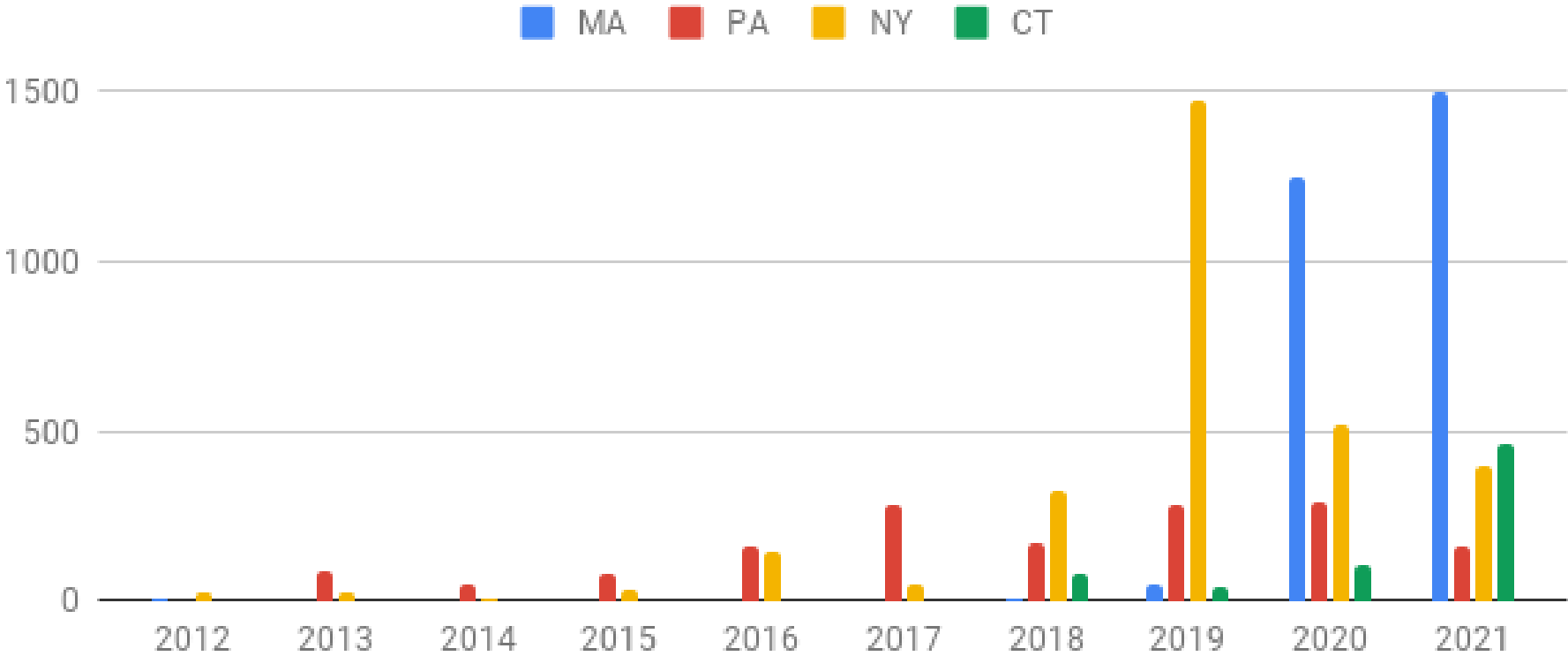


Massachusetts Building Energy Code Adoption by Municipality



The Growth of Passive House

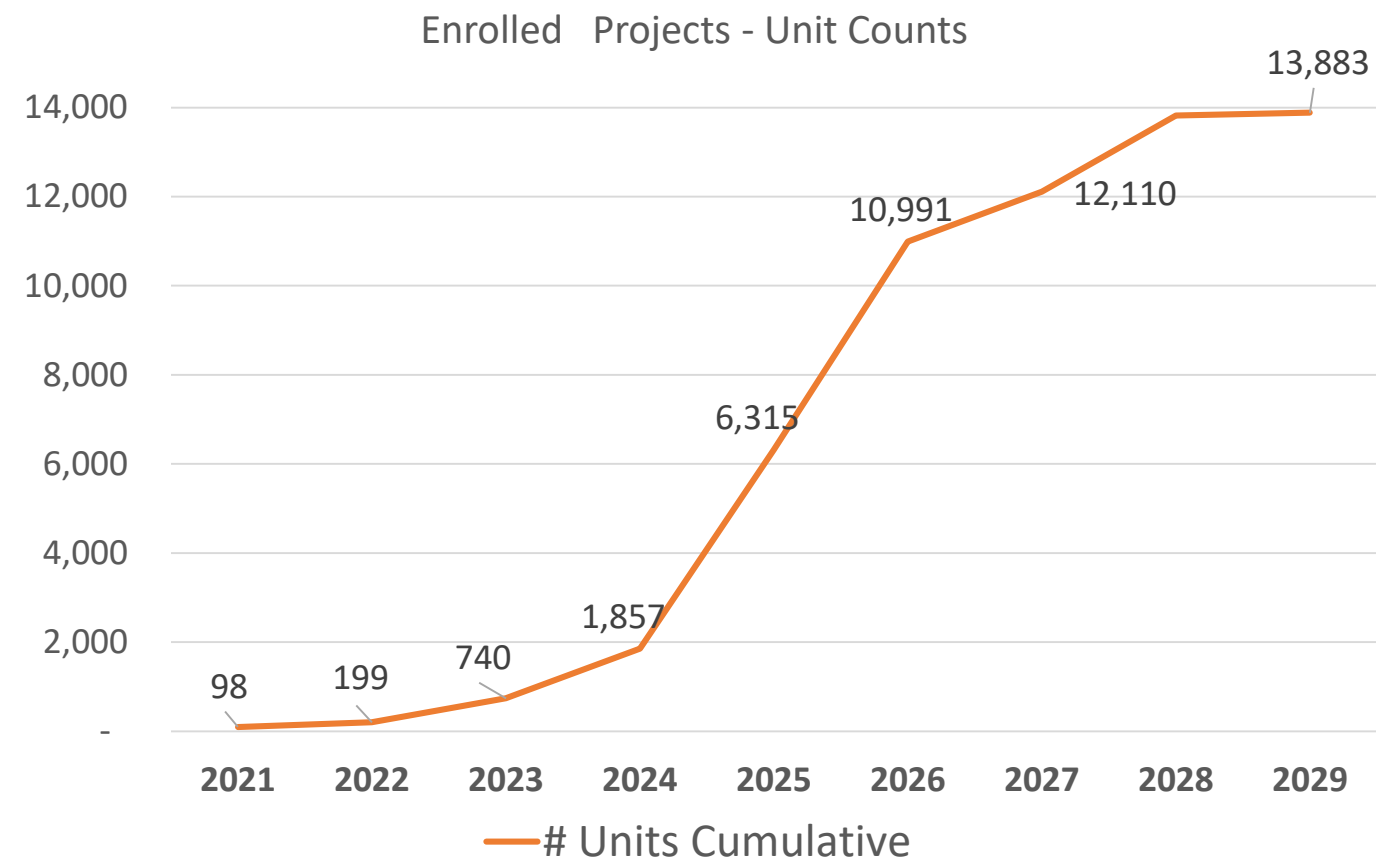
Phius Housing Units (In Process or Complete)



Data from PHIUS projects database

The Growth of Passive House

State incentives have helped fuel this growth in Massachusetts



Mass Save Passive House Incentive Program, 2023 data



Data from Mass Save Incentive program

The Incremental Cost of Achieving Passive House



The Incremental Cost of Achieving Passive House

PA was the first state to award extra consideration to Passive House projects in affordable housing financing applications.

In the first year, the PH projects had 2% more costs compared to the non-PH projects.

By 2018, PH projects were 2% less on average.



If the Incremental Cost of Achieving an NZE Home is LOW, What about the homes operating costs?



These homeowners spent \$434 for the entire year to cover all their heating a cooling costs, powering all their gadgets and appliances, and running one EV



This 4,500 square foot Passive House in Wayland uses the equivalent of a single-burner stove top for heat





buildings consume **48%** of U.S. energy
EIA 2012





NATIONAL
ASSOCIATION *of*
REALTORS®

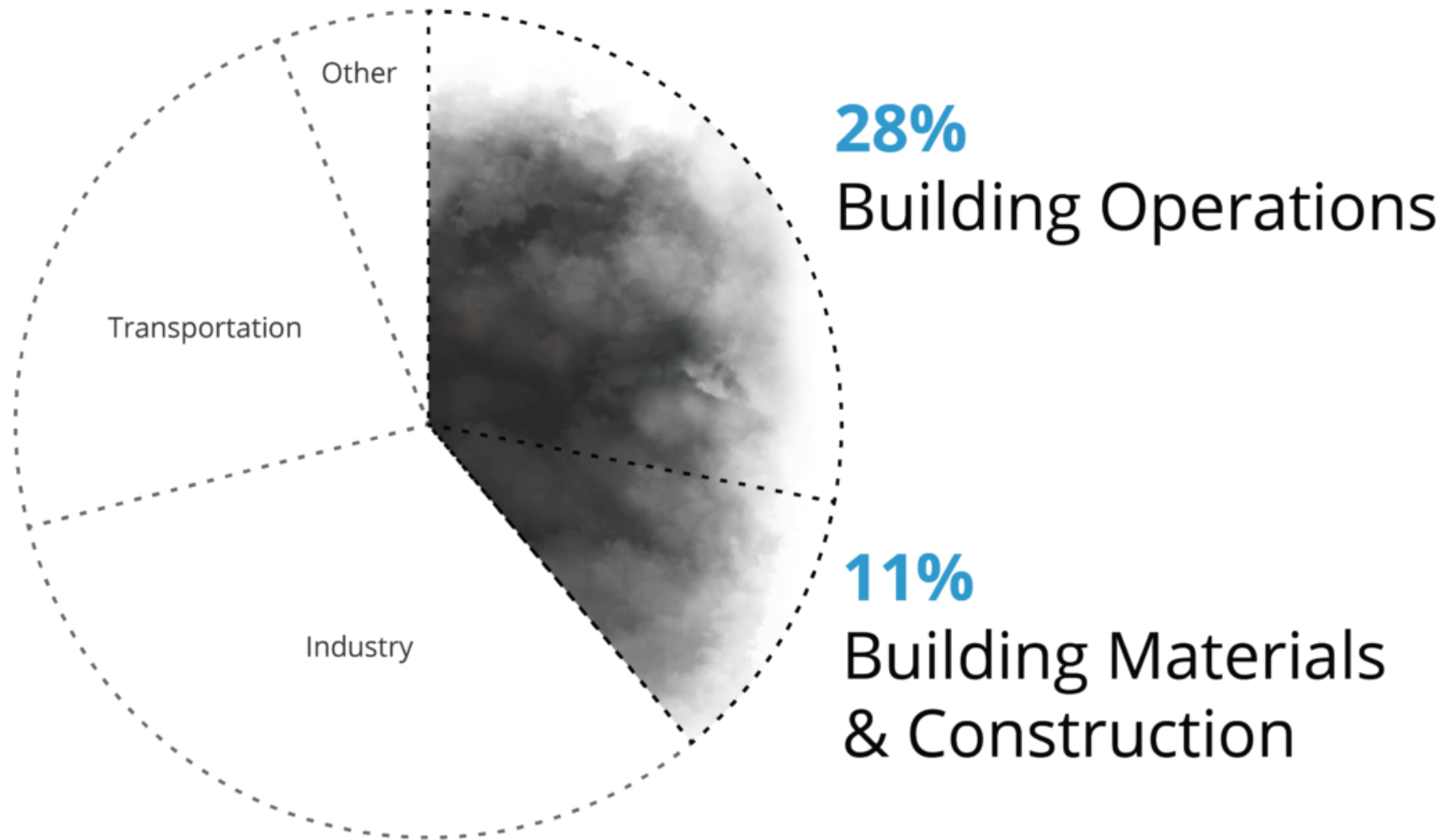
NAR's view on climate change:

Recent flooding, wildfire, and sea-level rise events have many Americans fearing natural disasters. **Climate change has made the chances of extreme weather events, such as hurricanes, rain and droughts, more frequent and severe.** As a result of these changes, **unprepared properties and communities are losing value. Sixty-three percent of people who have moved since the pandemic began say they believe climate change is—or will be—an issue in the place they currently live.** As such, homeowners are concerned that climate change could influence their housing preferences, like increasing flood insurance rates for at-risk properties.

<https://www.nar.realtor/climate-change>



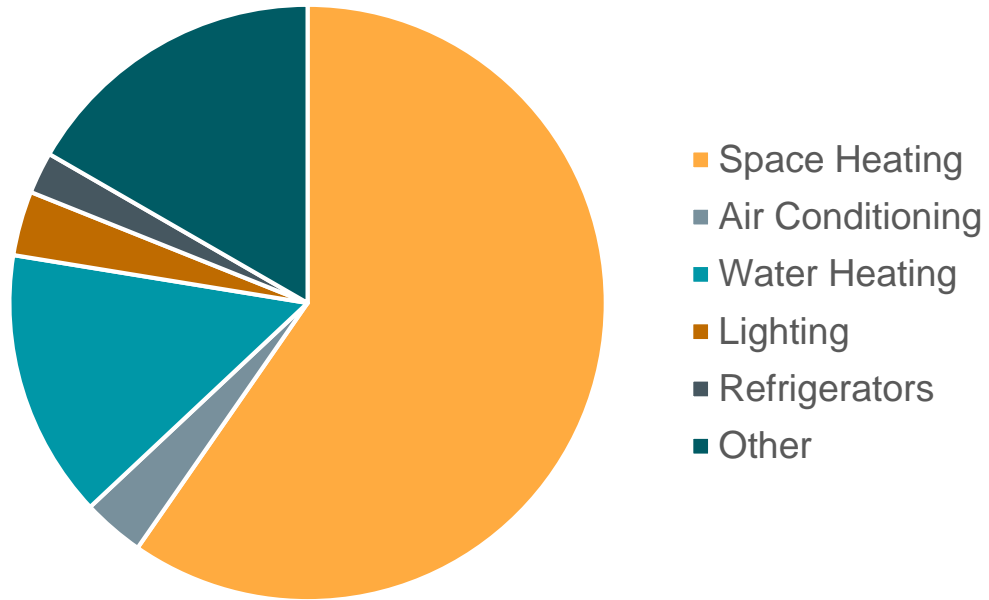
Annual Global CO₂ Emissions



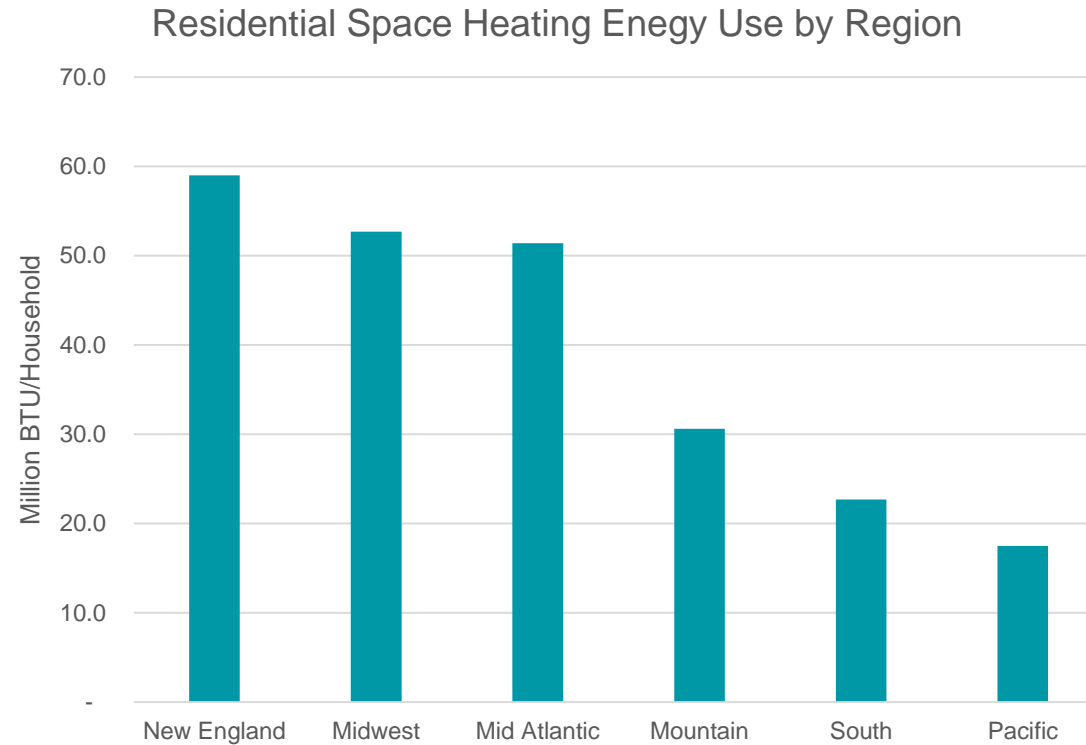
© Architecture 2030. All Rights Reserved.
Data Sources: Global ABC Global Status Report 2018, EIA

How Homes Use Energy

Residential Single-Family Energy Use in the Northeast by End Use



How Homes Use Energy



Source: EIA Residential Energy Consumption Survey



High-Performance Standards and Rating Systems

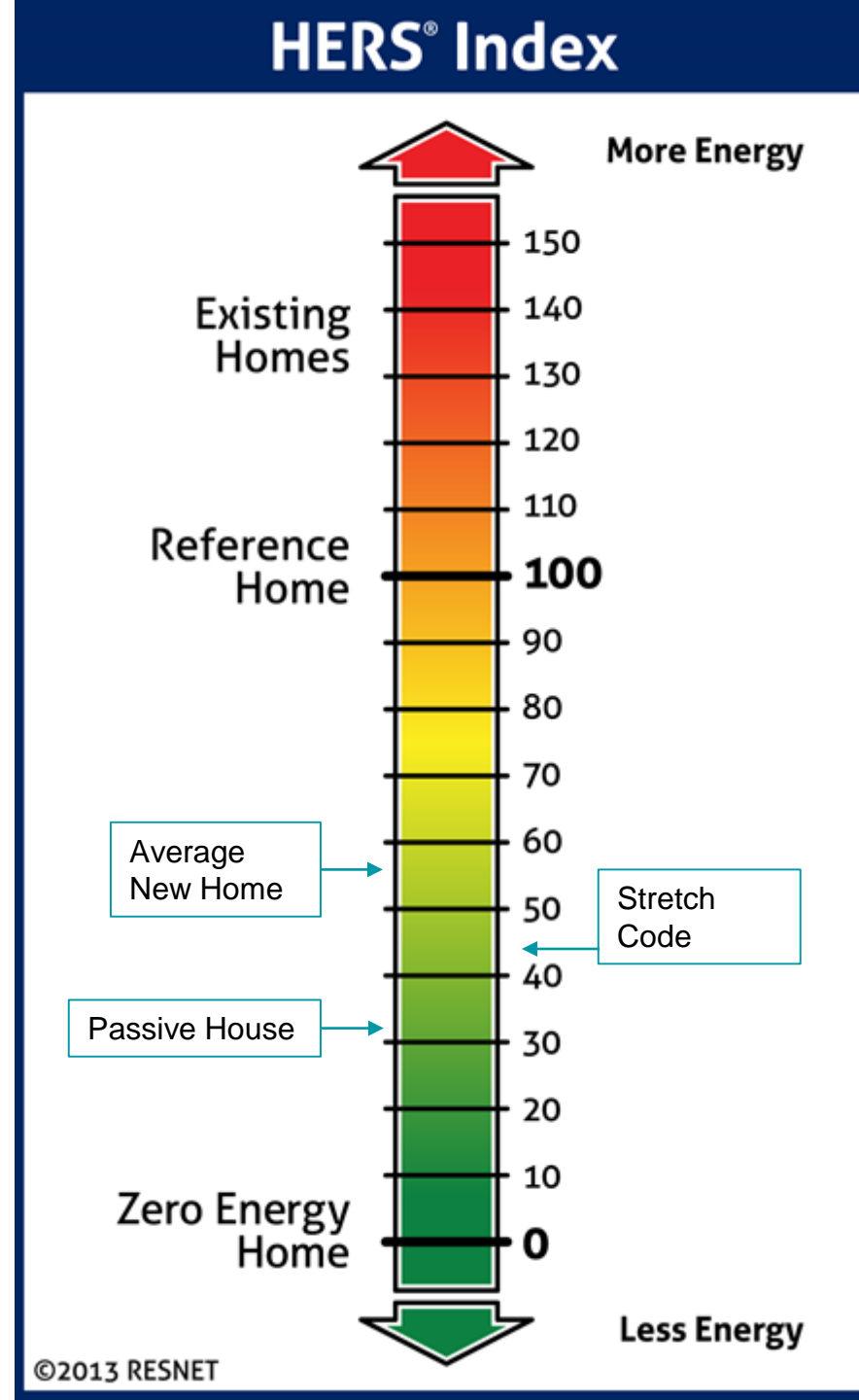


Home Energy Rating System (HERS)

- Score of 100 is a standard “Reference Home”
- Score of 65 is 35% more efficient
- Score of 0 is a Net-Zero home

HERS Rater scores:

- All exterior walls (both above and below grade)
- Floors over unconditioned spaces (like garages or cellars)
- Ceilings and roofs
- Attics, foundations and crawlspaces
- Windows and doors, vents and ductwork
- HVAC systems, water heating system, and your thermostat



LEED (Leadership in Energy and Environmental and Design)

- Prescriptive rating system
- Uses a point-based checklist to determine certification level
- Focuses on a wide-range of building sustainability areas



Sustainable
Sites



Water
Efficiency



Indoor
Environmental
Quality



Materials &
Resources



Energy &
Atmosphere



Innovation &
Design



Awareness &
Education

Passive House

- Performance-based standard
- Focuses on the reduction of energy use
- Incorporates occupant comfort and ventilation
- Uses third-party verification

Performance Criteria

- Annual Heating & Cooling Demand
- Whole Building Airtightness
- Source Energy Demand (Overall Energy Use)



Passive House Timeline



*Super-Insulated
Homes*



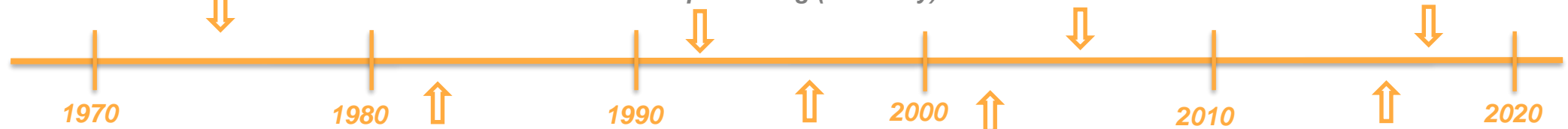
First PH concept building (Germany)



*PHIUS is
founded*



First MF PH in Mass



1970

1980

1990

2000

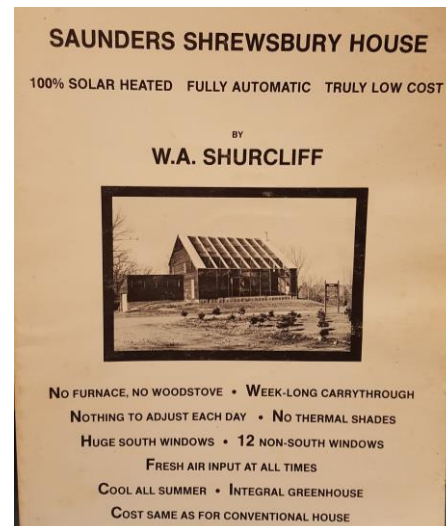
2010

2020

“passive house” in print

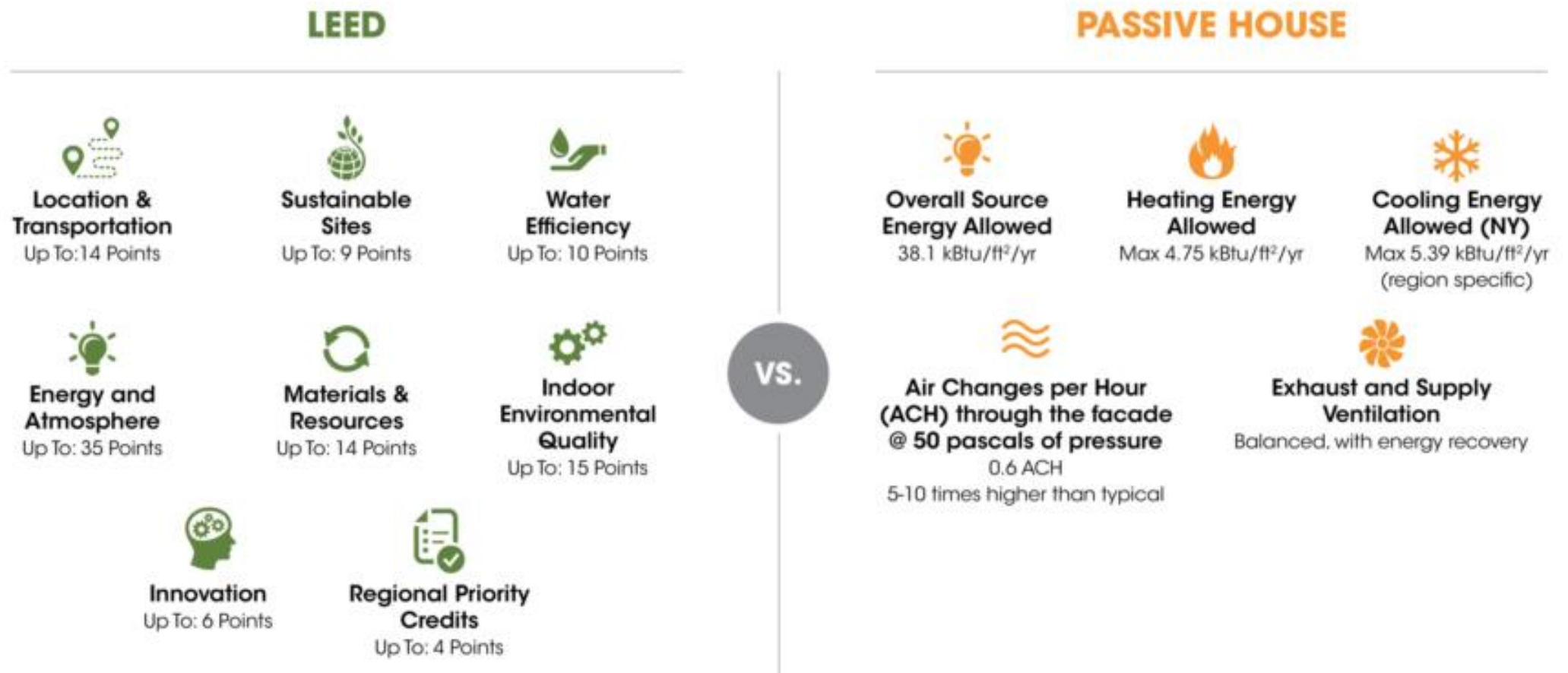
PHI is founded

First certified PH in US



Passive House and LEED

- PH focuses on energy use and indoor air – meeting many of the LEED requirements in those categories
- PH Certification can earn automatic points for some LEED versions











Passive House (PHIUS) and Other Standards

- PH incorporates common standards and code requirements

Passive House (PH) and Other Standards

- PH incorporates common standards and code requirements

						Source Zero Renewable Energy System
						Balanced Ventilation HRV/ERV
					SOLAR READY Depends on climate	SOLAR READY ALWAYS
					Eff. Comps. & H ₂ O Distrib	Eff. Comps. & H ₂ O Distrib
					 EPA Indoor airPLUS	 EPA Indoor airPLUS
					Ducts in Condit. Space	Ducts in Condit. Space
		HVAC QI w/WHV	HVAC QI w/WHV	HVAC QI w/WHV	Micro-load HVAC QI	Micro-load HVAC QI
		Water Management	Water Management	Water Management	Water Management	Water Management
		Independent Verification	Independent Verification	Independent Verification	Independent Verification	Independent Verification
IECC 2009 Enclosure	IECC 2012 Enclosure	IECC 2009 Enclosure	IECC 2012 Enclosure	IECC 2012/15 Encl./ES Win.	Ultra-Efficient Enclosure	Ultra-Efficient Enclosure
HERS 85-90	HERS 70-80	HERS 65-75	HERS 55-65	HERS 48-55	HERS 35-45	HERS < 0
 IECC 2009	 IECC 2012	 ENERGY STAR v3	ENERGY STAR v3.1	 ZERH	 PHIUS+ PHIUS+	 PHIUS+ SourceZero

3rd Party Verified Performance Testing

Air Tightness Standard

Building
Energy Code

3

ACH50

(air changes per hour at 50
Pascals)

Passive
House*

0.6

ACH50

(air changes per hour at 50 Pascals)
*Passive House International (PHI)

*above numbers are for general use only, consult PHIUS/PHI for specific project targets

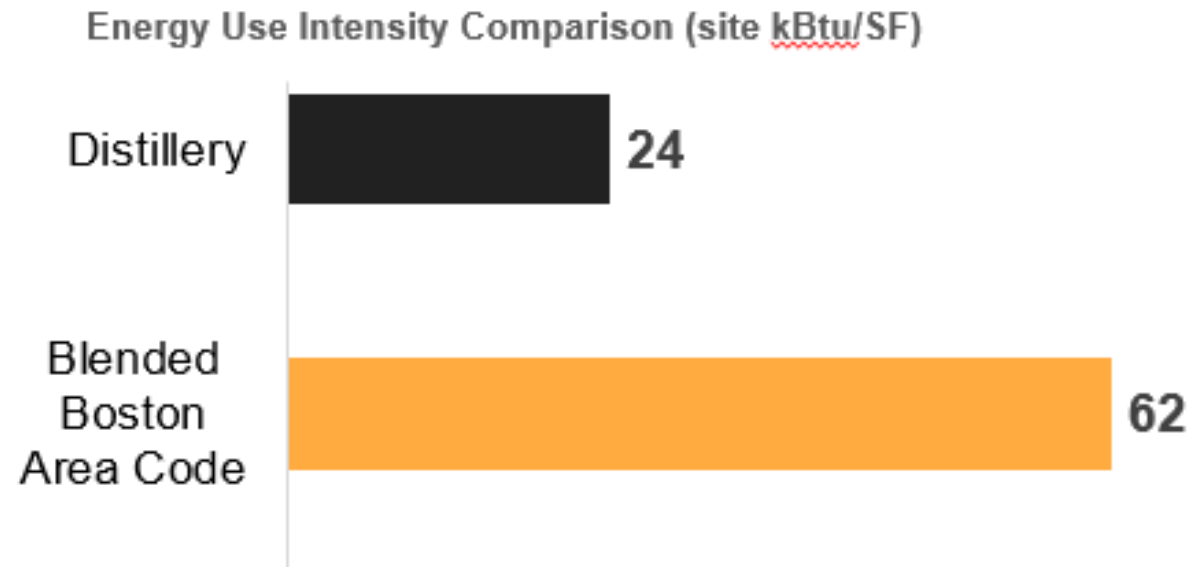
PHIUS: phius.org/phius-certification-for-buildings-products/project-certification/

PHI: passiv.de/en/03_certification/02_certification_buildings/08_energy_standards/08_energy_standards.html



Performance Comparison Mid-Rise Construction

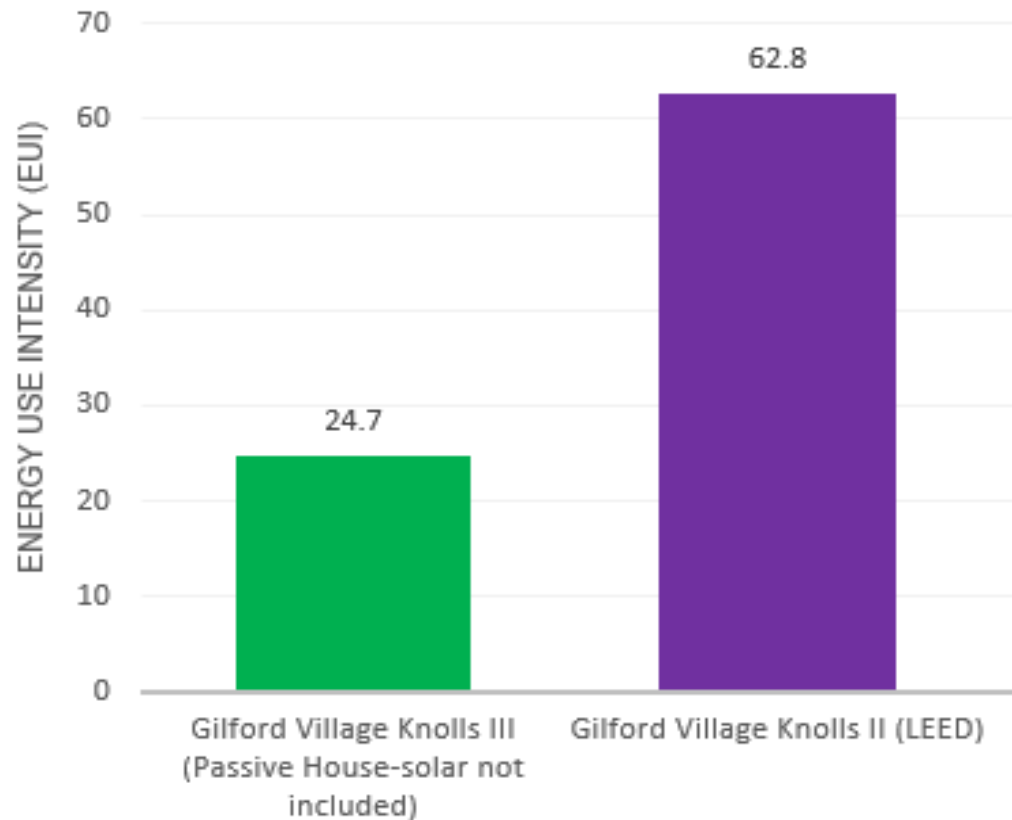
Distillery: Uses 60% less energy/sq. ft. than typical Boston Area Code Built



Distillery North, Boston

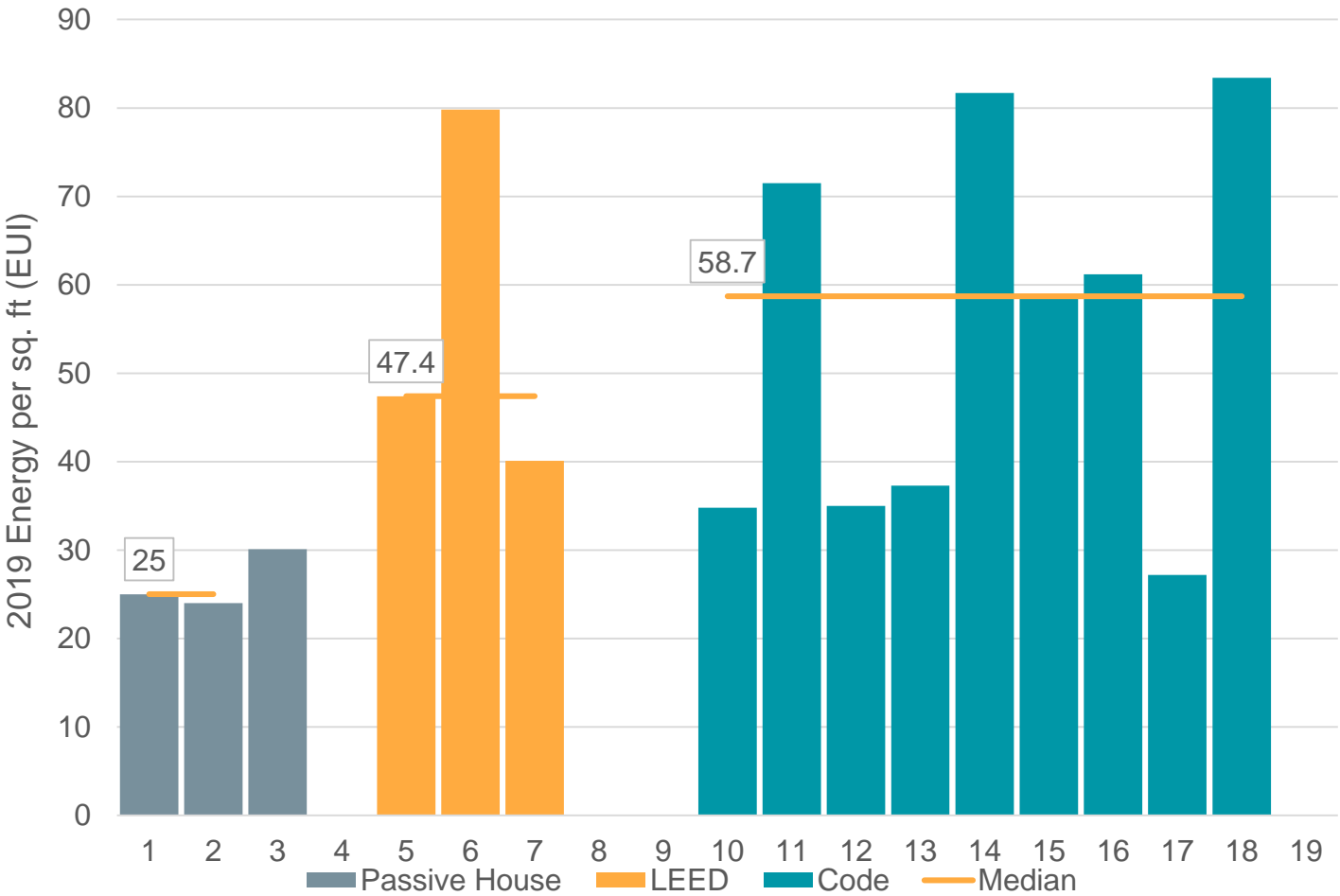
Performance Comparison

Gilford Village: PH uses 61% less energy than earlier LEED built (similar design otherwise)



Performance Comparison

Philadelphia: PH Median is 57% less energy per sq. ft. than Code Built



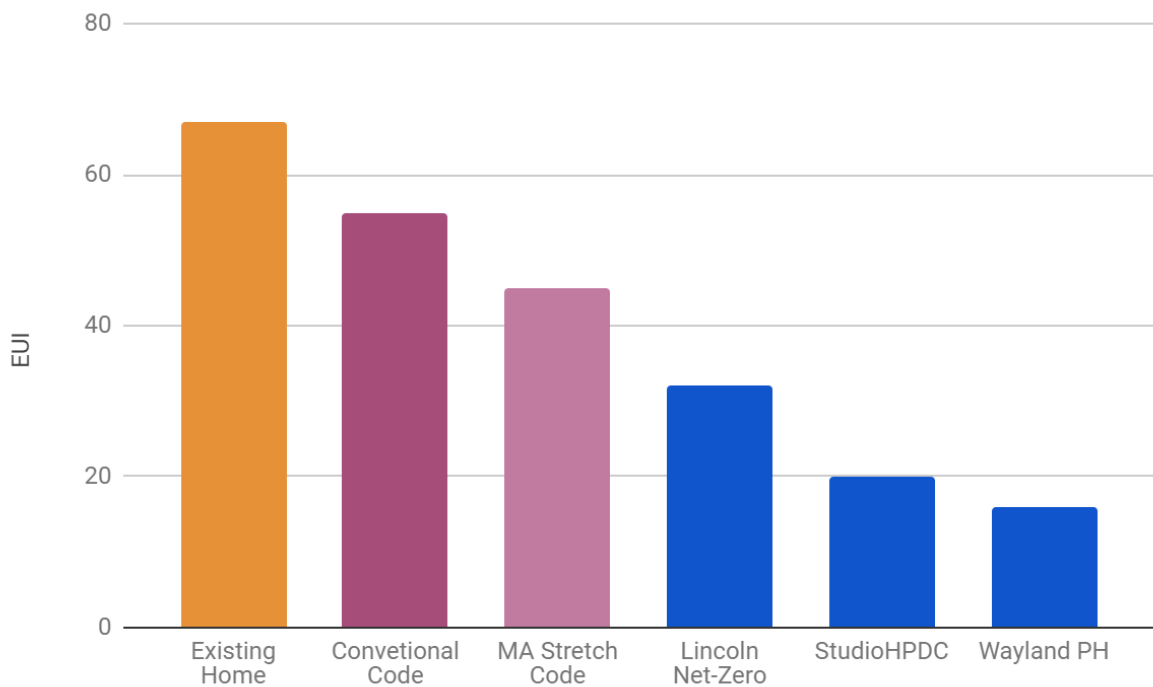
Stable Flats (Onion Flats)

Data from Philadelphia Energy Disclosure 2019 cross checked for LIHTC multifamily; Credit to Green Building United, Katie Bartolotta

Performance Comparison

Massachusetts: Single-family projects

Comparison of EUI (source) of buildings in MA



Data from PHMass Project Database



Durability & Resilience

- **Shelter in Place**

Maintain consistent indoor temps during extreme weather and power outages

- **Durable & Long Lasting Construction**

Resists mold, rot, pests & water intrusion

- **Passive Not Active**

Lower reliance on mechanical systems

Durability & Resilience

How A Texas Passive House Survived the 2021 Deep Freeze

Monday morning at 1:00 a.m., the power went out, and when they woke that morning, it was 9°F outside and 62°F inside.

At our neighbor's house, which was identical to ours [before the Passive House retrofit], it was 36°F. They may as well have been living in a tent."



Air Quality, Health, and Comfort

- Increased ventilation of filtered air
- Increased use of low & non-toxic materials
- Consistent comfortable room temps
- Elimination of air drafts
- Increased natural lighting
- Quieter acoustic conditions



Federal Incentives for Solar Power

In December 2020, Congress passed an extension of the ITC, which provides a **26% tax credit** for systems installed in 2020-2022, and 22% for systems installed in 2023.

The tax credit expires starting in 2024 unless Congress renews it



Section 2:

High-Performance Homes

Overview



What is a High-Performance Home?

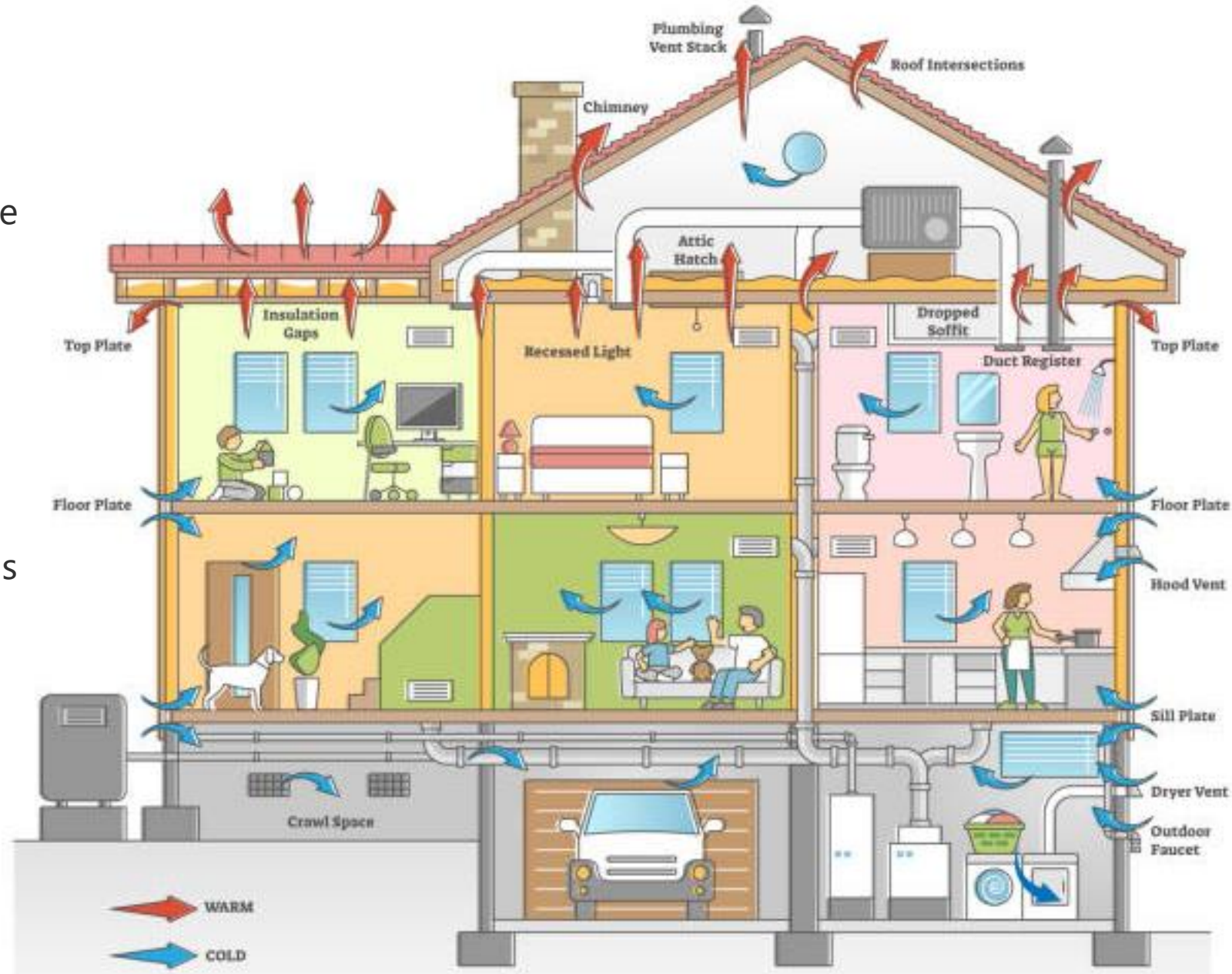
- Uses significant less energy than a conventional home
- Produces significantly fewer carbon emissions
- Provides a higher level of air quality and occupant health & comfort
- Has greater durability and resilience
- Built better and lasts longer



How Conventional Homes Fail

In winter:

- Hot Air rises and escapes the house through leaks in the attic, roof, and top floors
- Cold air is drawn in through leaks in the basement and lower floors
- Heat also conducts outwards through materials with low thermal resistance (like wall studs)

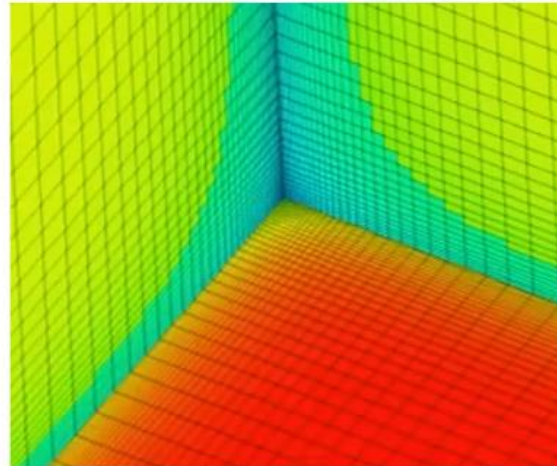


How Conventional Homes Fail

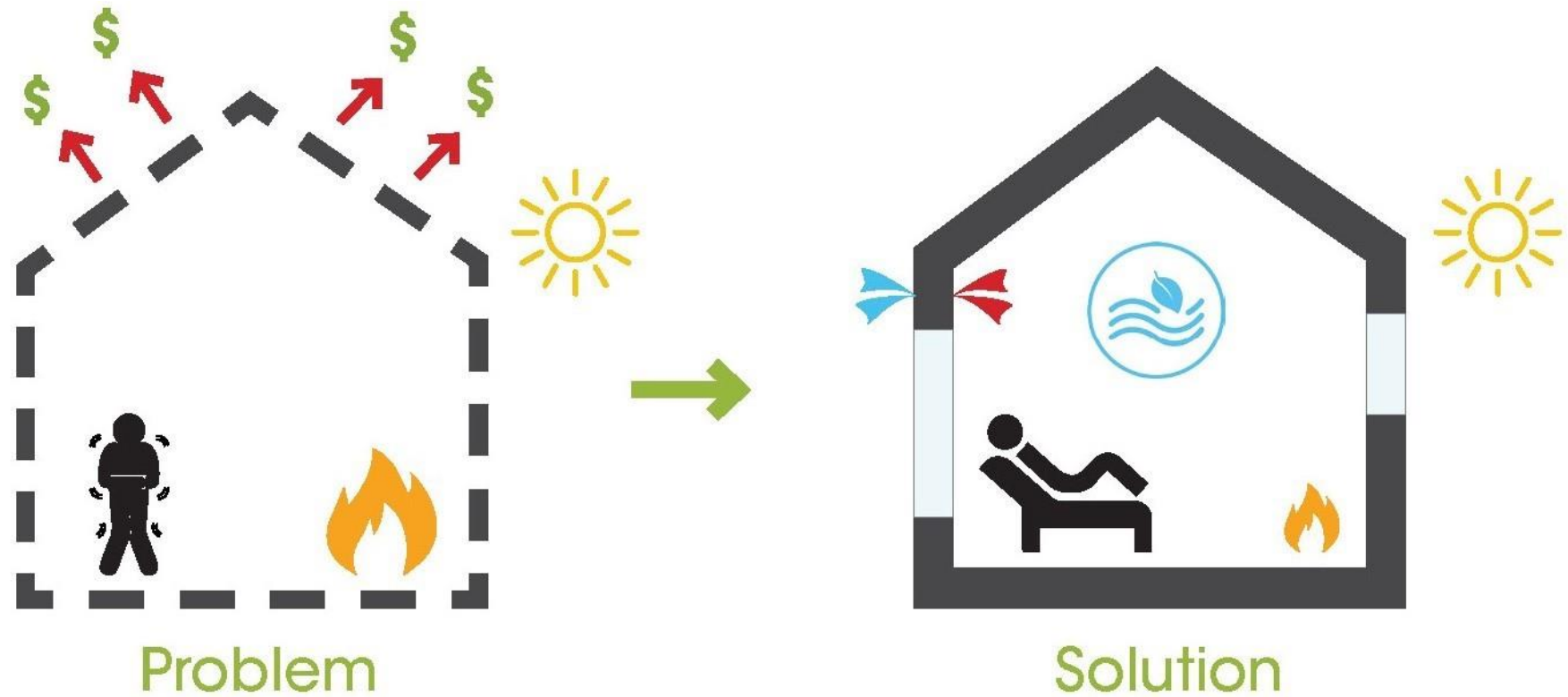
Ice Dams from attic heat loss
melting snow



Mold growth from condensation on wall area with poor
insulation and/or thermal bridging



How Conventional Homes Fail

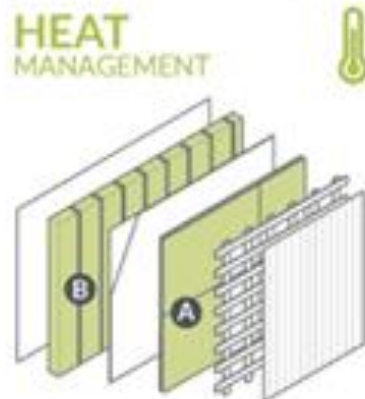


High Performance Home Principles

1. Use the Building Envelope to create a Thermal and Air Barrier, reducing heat loss and air movement



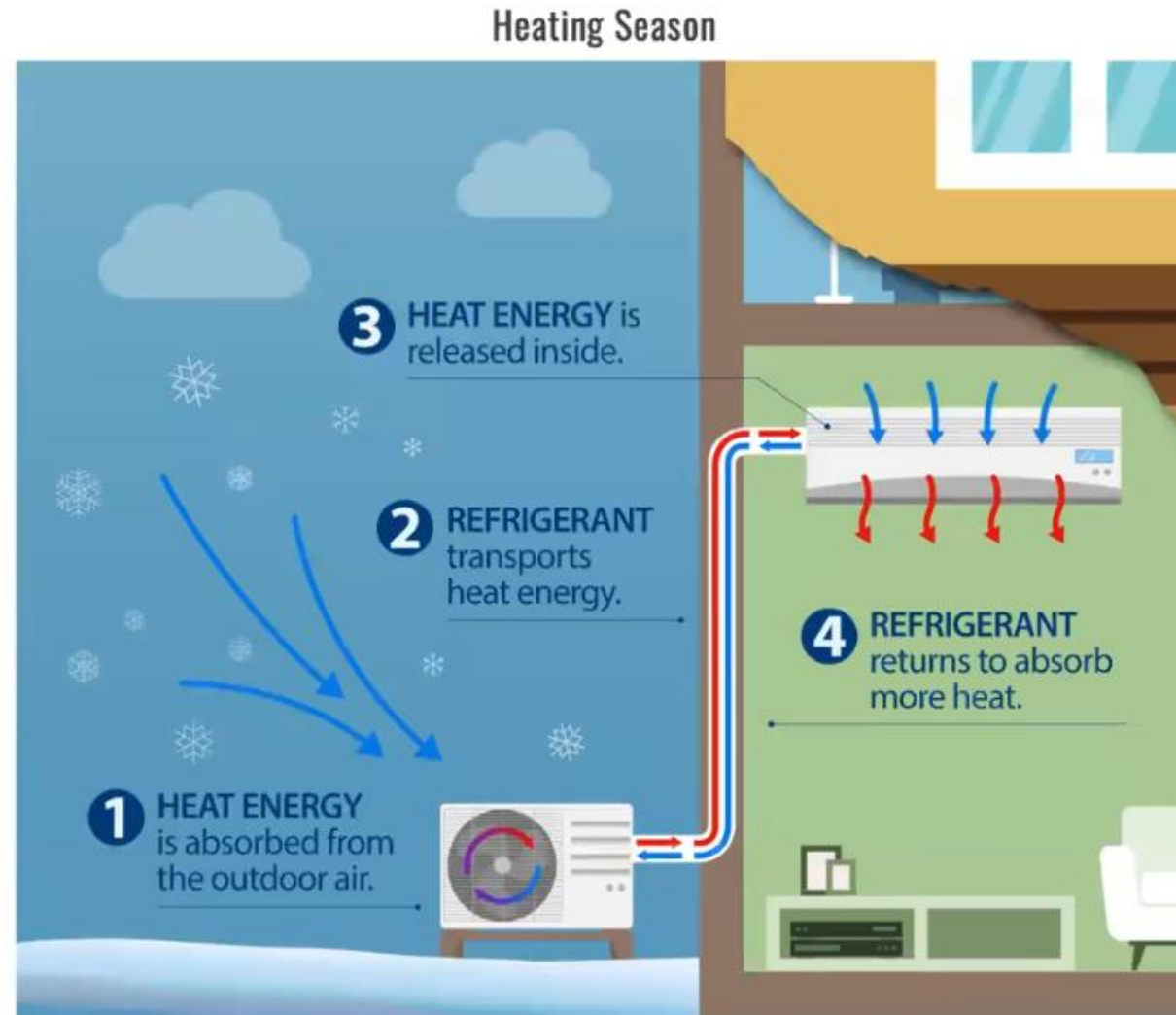
- Ⓐ Air Barrier membrane over sheathing



- Ⓐ Dense packed cavity insulation (fiberglass, cellulose)
- Ⓑ Continuous exterior insulation (foam boards, mineral wool, polyiso)

High Performance Home Principles

2. Use efficient heating and cooling equipment to provide necessary space conditioning



High Performance Home Principles

3. Use a whole home ventilation system to provide balanced air exchange and filtration

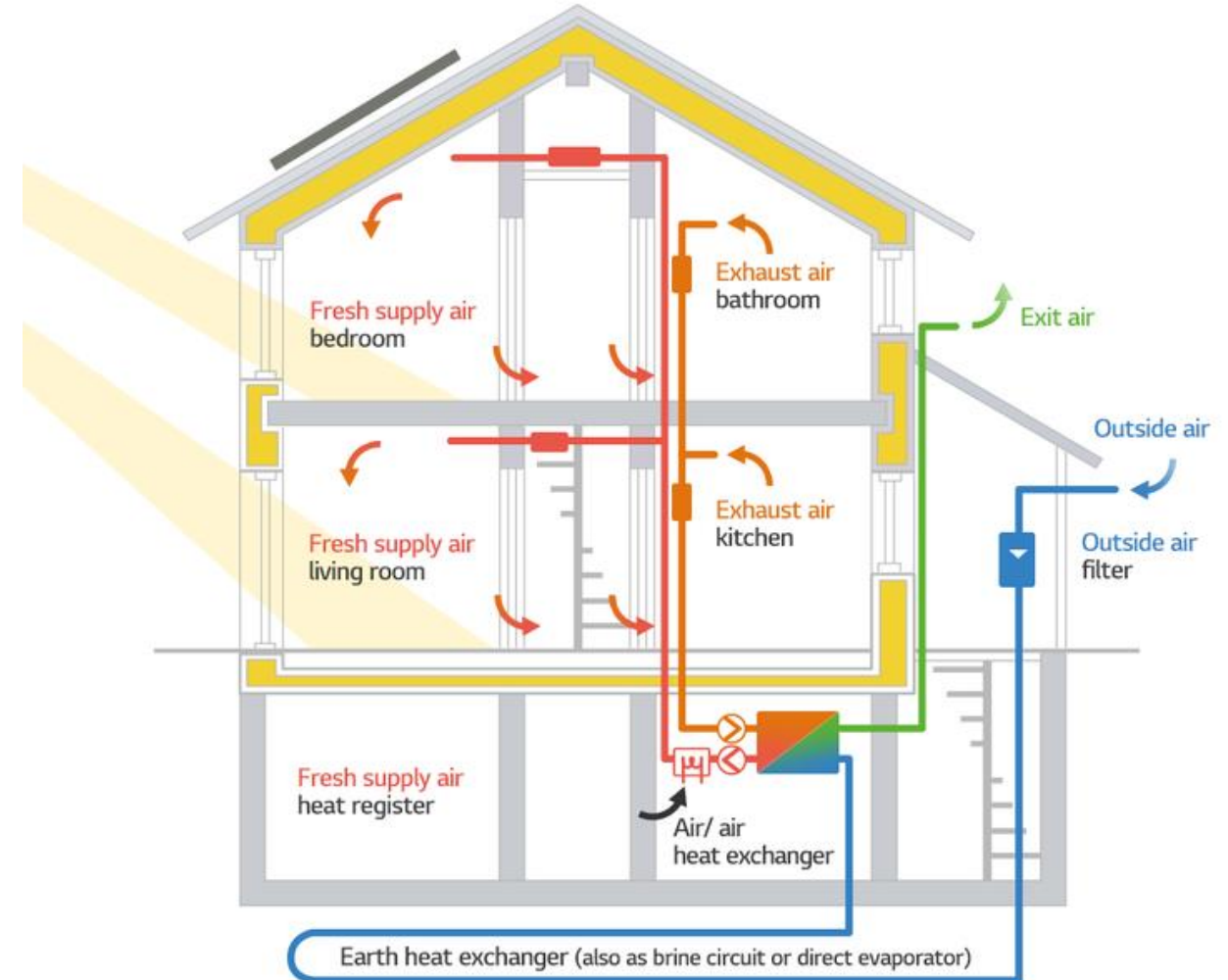
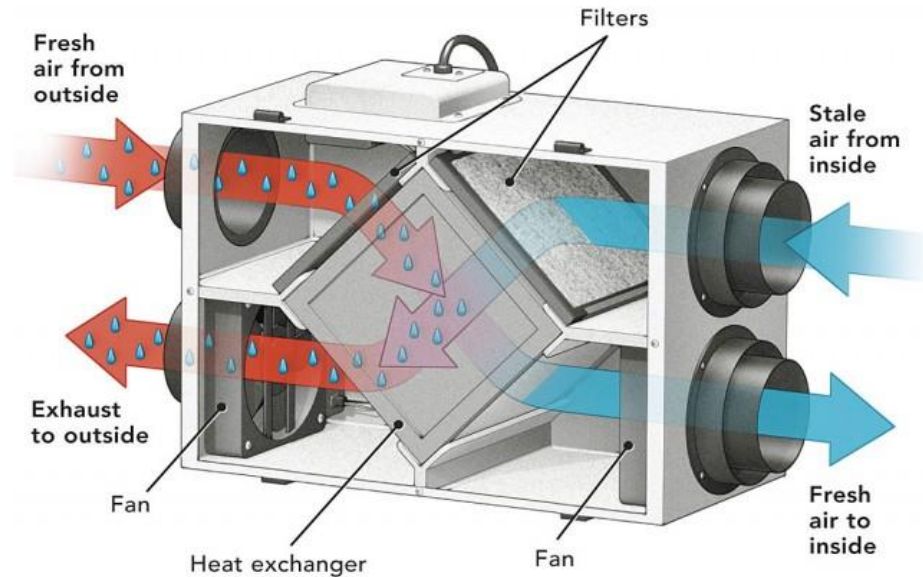




Photo Credit: www.SGBUILD.com

Building Envelope

Main Principles:

Provide a thermal barrier around the entire building

- Advanced framing techniques
- Dense-packed cavity insulation
- Continuous insulation layer outside of frame
- Reduction of thermal bridging through envelope
- Air-tight envelope with dedicated air barrier system

The Distillery, South Boston

- 2x8 studs w/ dense packed cellulose
- Zip System Air Barrier
- Mineral Wool insulation



Building Envelope

Main Principles:

Provide a thermal barrier around the entire building

- Advanced framing techniques
- Dense-packed cavity insulation
- Continuous insulation layer outside of frame
- Reduction of thermal bridging through envelope
- Air-tight envelope with dedicated air barrier system

Wayland Home

- Double stud wall
- Siga air membrane
- Mineral wool insulation



Air Tightness

Main Principles:

- Continuous air barrier around building
- Eliminate air gaps, holes, etc. in barrier
- Taped seems, penetrations, etc
- Target metric is measured with blower door test



Elm Place

Huber Zip System sheathing (green) and tape (black)



Bellis Circle

Pro Clima Intello (white) and tape (blue)



Finch Cambridge

Siga Majvest 500 (blue) and tape (white)

Air Tightness

Main Principles:

- Continuous air barrier around building
- Eliminate air gaps, holes, etc. in barrier
- Taped seems, penetrations, etc
- Target metric is measured with blower door test

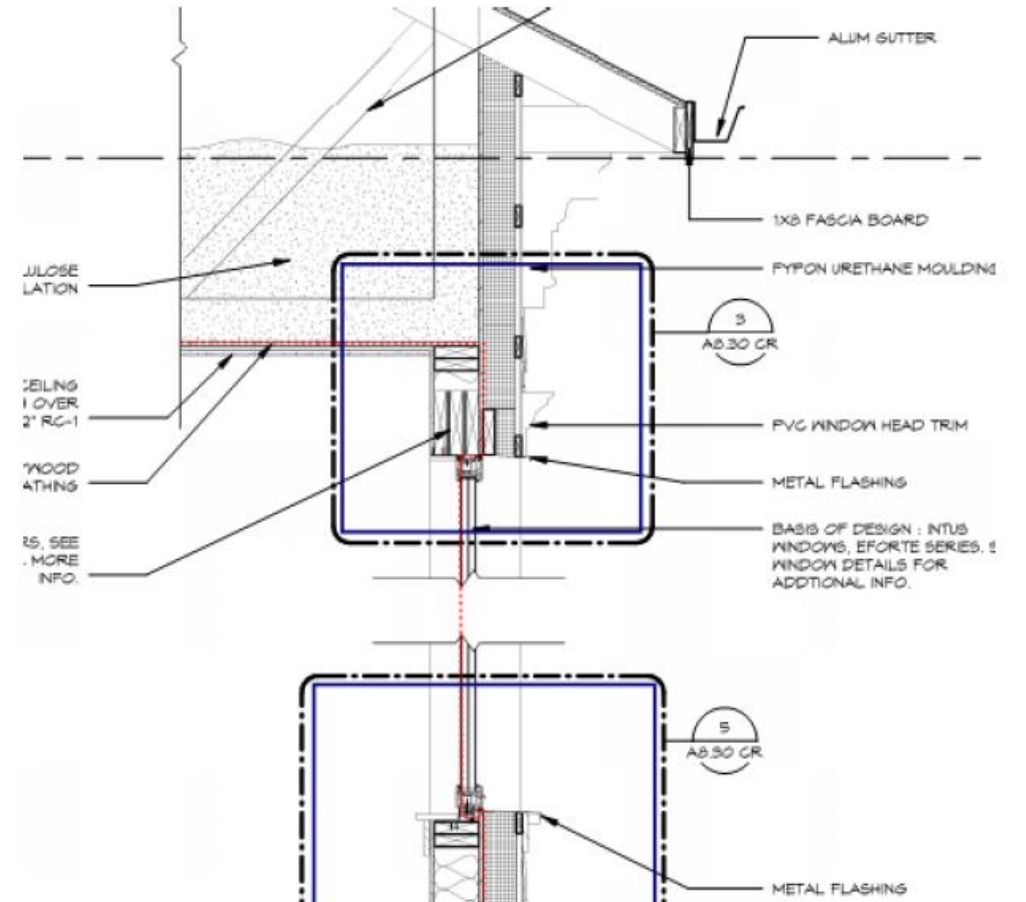
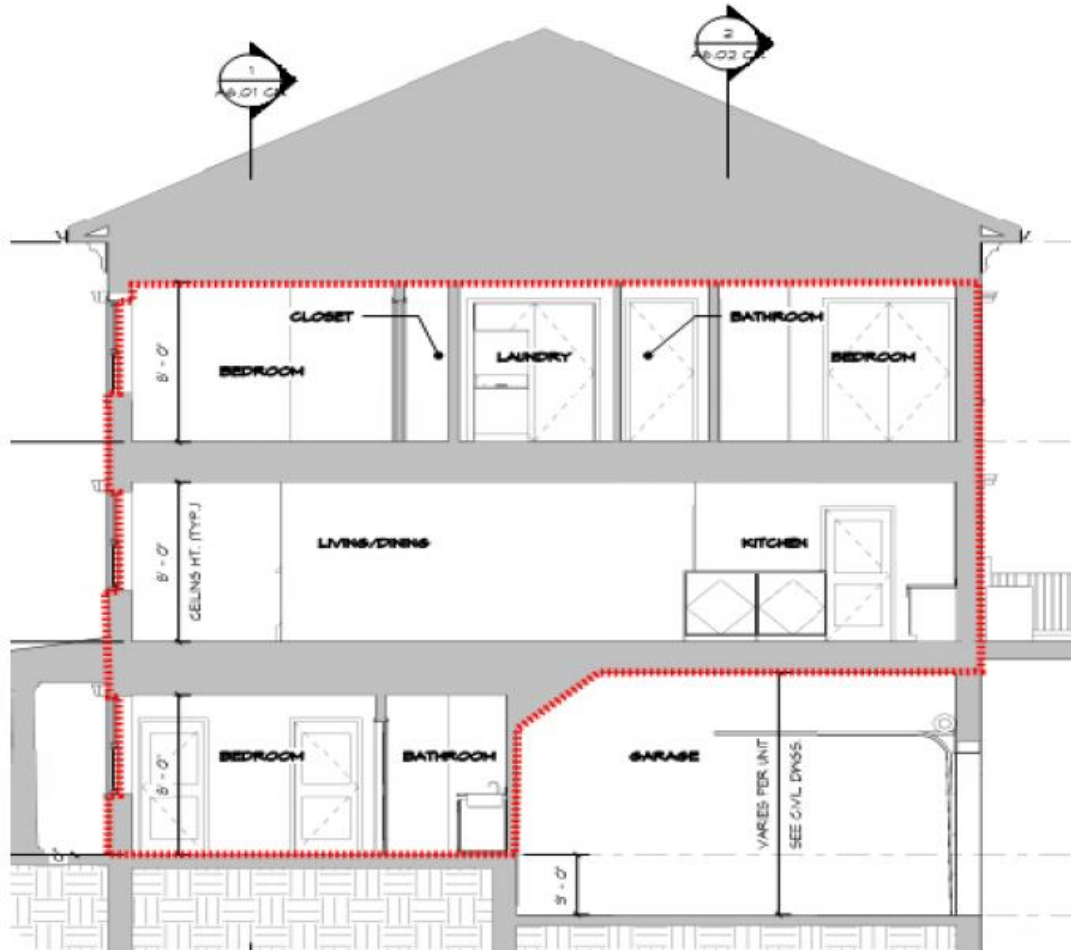


Finch Cambridge

Air sealing around windows and penetrations

Air Tightness

Red Line Test



Thermal Bridging

Heat transfers through materials with higher thermal conductivity (wood studs, steel, metal fasteners, plumbing lines, etc)

Thermal Bridges lead to:

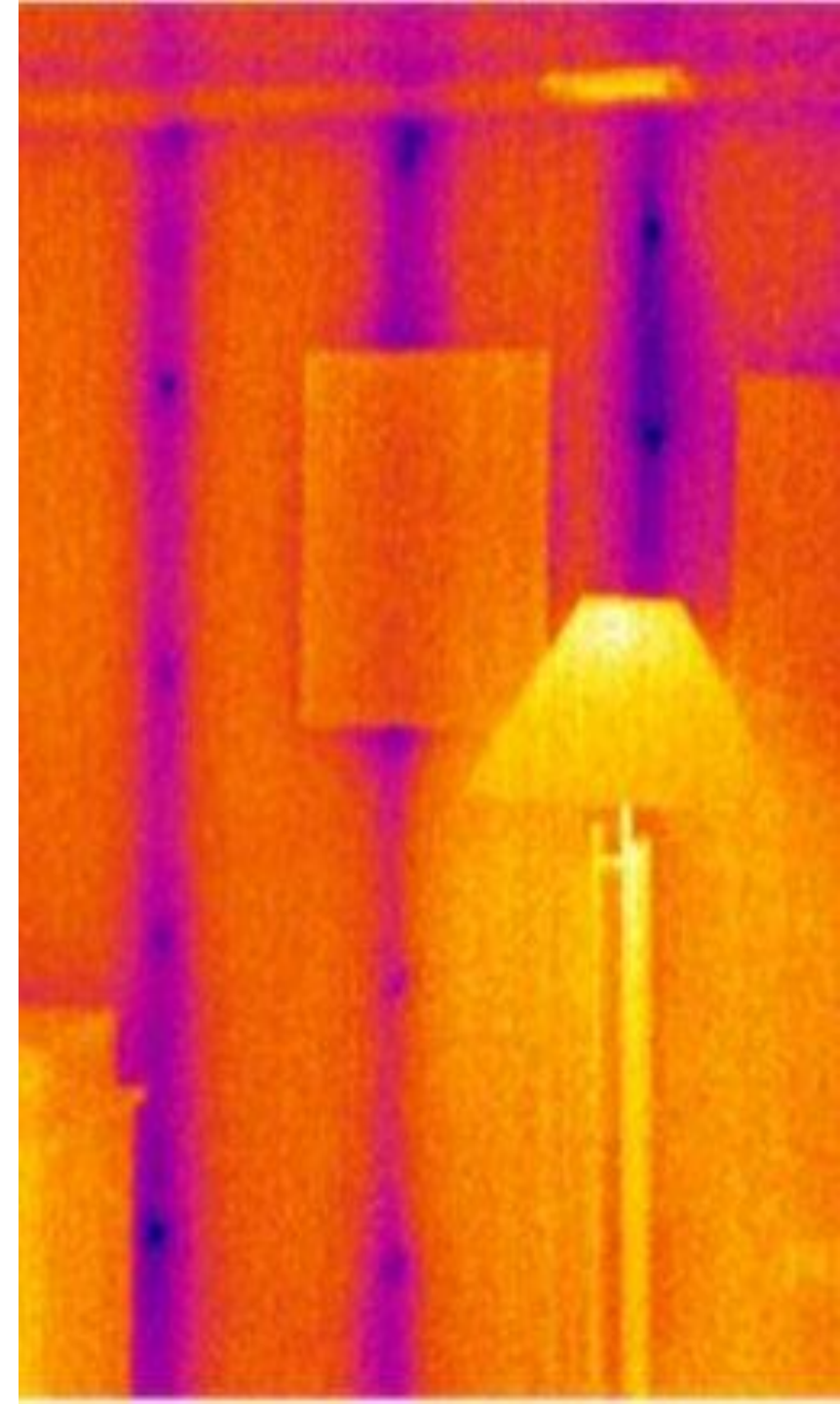
- Heat loss
- Low surface temps
- Impaired thermal comfort
- Risk of condensation
- Risk of mold growth

Thermal bridges need to be mitigated or removed

- Insulation outside frame
- Thermal breaks
- Advanced framing to reduce frame use

Areas of Concern:

- Weak points in insulation (studs)
- Wall penetrations (plumbing, electrical)
- Beams that meet or pass through a wall
- Outside features attached to wall (balcony, awning)
- Corners
- Window frames



Thermal Bridging

Before continuous insulation



Finch Cambridge

After continuous insulation



Heating & Cooling

Air-Sourced Heat Pumps (and VRF Heat Pump)

- Provides efficient electric heating and cooling
- Can be centralized or unitized, ducted or ductless
- Operate at 200%-400% efficiency (compared to 100% for electric baseboard and 98% for new gas furnace)
- New models now work well in cold temperatures



Outdoor condensers

Wall mount



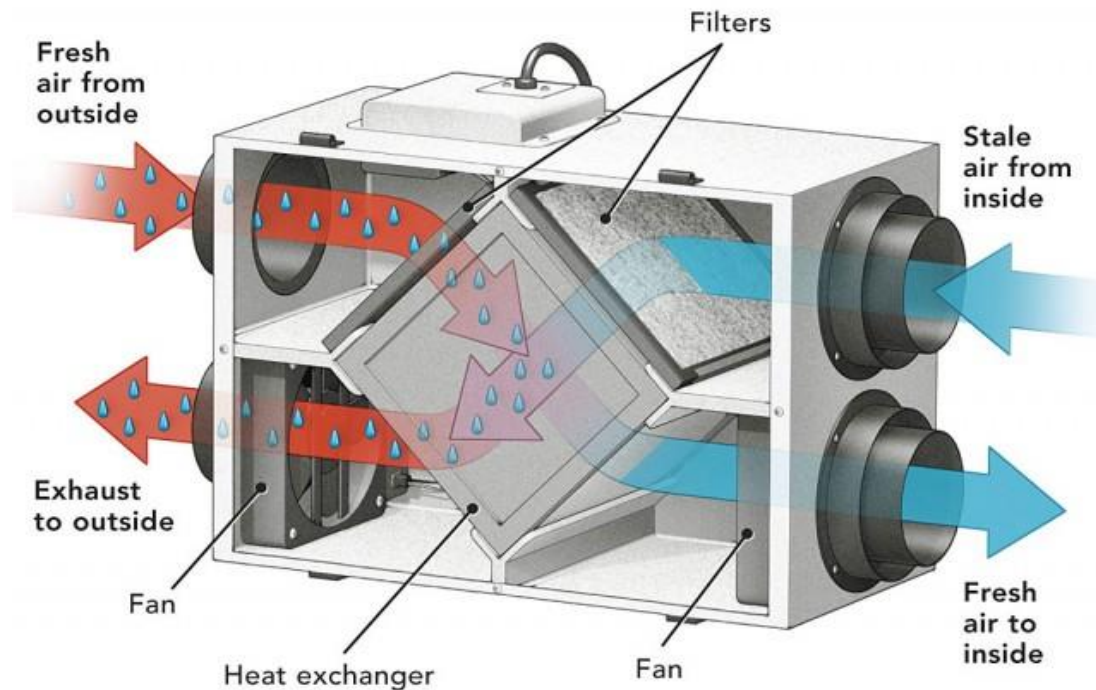
Ceiling mount



Balanced Ventilation

Heat/Energy Recovery Ventilators (HRVs and ERVs)

- Balanced ventilation system (supply and exhaust air is equal in volume)
- Continuously running (with variable fan speed options)
- Provides fresh supply air passed through air-filter
- Recovers heat energy from outgoing exhaust air
- Does not mix incoming/outgoing air (using heat exchanger core instead)



A Note on Windows

- High Performance Homes still use operable windows
- They tend to be double or triple paned and have thermal breaks and insulated frames



Section 3:

Case-Studies



Cambridge Victorian



Location: North Cambridge

Completed: 2021

Type: Residential Single-Family

Architect/Builder: Group Design Build

Developer: Betsy Harper

- Certified Passive House
- All-electric systems
- Designed to be Net-Zero with on-site PV
- Electric vehicle charger installed in driveway



Built using prefabricated panelized construction

- Panel sections made by Ecocor
- Assembled on-site in 10 days
- Panels have preinstalled windows, air barrier, and continuous insulation



- Insulated concrete form foundation
- Finished basement
- Wood frame above ground



- Air-sourced heat pumps
- Ductless in-ceiling
- Provides all-electric heating & cooling
- Two to three times more efficient than a traditional gas boiler



- Energy Recovery Ventilator
- MERV 13 filters provide high IAQ
- Ducted to constantly bring fresh air to living spaces and bedrooms



- Hybrid electric water heater (heat pump)
- Recirculation pump set-up on user activated switch
- Insulated hot water pipes



- Rooftop solar system provides all modeled energy use
- Electric vehicle charged station installed in back driveway



Marketed as a both a Passive House and a Net-Zero house

Asking Price: \$4,500,000

Sale Price: \$4,778,000

Days on Market: 7



We're unveiling the
first **passive,**
net-zero,
Victorian home
in the **nation.**

—
Currier, Lane & Young
currierlaneyoung@compass.com
617.871.9190
currierlaneyoung.com

compass.com



Currier, Lane & Young is a team of real estate agents affiliated with Compass, a licensed real estate broker, and abide by Equal Housing Opportunity laws.

Roxbury Single Family



Location: Roxbury (Boston)

Completed: 2014

Type: Residential Single-Family

Architect/Builder: Placetaylor

- A shallow frost-protected slab insulated with 8 inches of expanded polystyrene (EPS) for an R-value of 32. The sides of the footings are insulated with 4 inches of EPS (R-16).
- Above-grade walls are balloon-framed on the outside, 24 inches on center, with a second framed wall inside of that carrying floor joists for the second story. The walls are connected with gusset plates and spanned by window wells. Exterior walls are insulated with 17 inches of blown-in cellulose (R-59).
- The truss-framed roof is insulated with 2 feet or more of cellulose for an R-value of 84.
- Windows are triple-glazed Schuco units with a U-factor of 0.176 and a solar-heat gain coefficient of 0.50.



Location: Roxbury (Boston)

Completed: 2014

Type: Residential Single-Family

Architect/Builder: Placetaylor

- Domestic hot water is provided by a Kingspan FPW30 solar thermal system with a 119-gallon tank.
- Space heating and cooling are provided by a pair of Mitsubishi Mr. Slim ductless minisplits, each with a capacity of 9,000 BTU/h. A Zehnder Comfoair 350 heat-recovery ventilator provides fresh air.
- Airtightness was measured at 0.33 air changes per hour at a pressure difference of 50 pascals. Placetaylor used Siga Wigluv tape to seal the sheathing seams and Siga Corvum tapes to reduce air leakage around the window frames

Photos provided by Group Design Build



Marketed as a both a Passive House

First Sold in 2014: \$572,500

Resold in 2019: \$815,000 (vs \$749,000 asking)

This ground-breaking green building was designed to use 90% less heating energy than a typical home and is expected to become one of only a few Passive House projects in the whole state.



West Roxbury Homes



Location: Wes Roxbury (Boston)

Completed: 2022

Type: Residential Single-Family

Architect: RODE Architects

But the main reason they paid \$1.4 million for the 2,500-square-foot home was the technology.

This winter it got freezing, and we were in our shorts

-The Wall Street Journal, 2023

<https://www.wsj.com/articles/passive-home-design-massachusetts-2c89a18d>



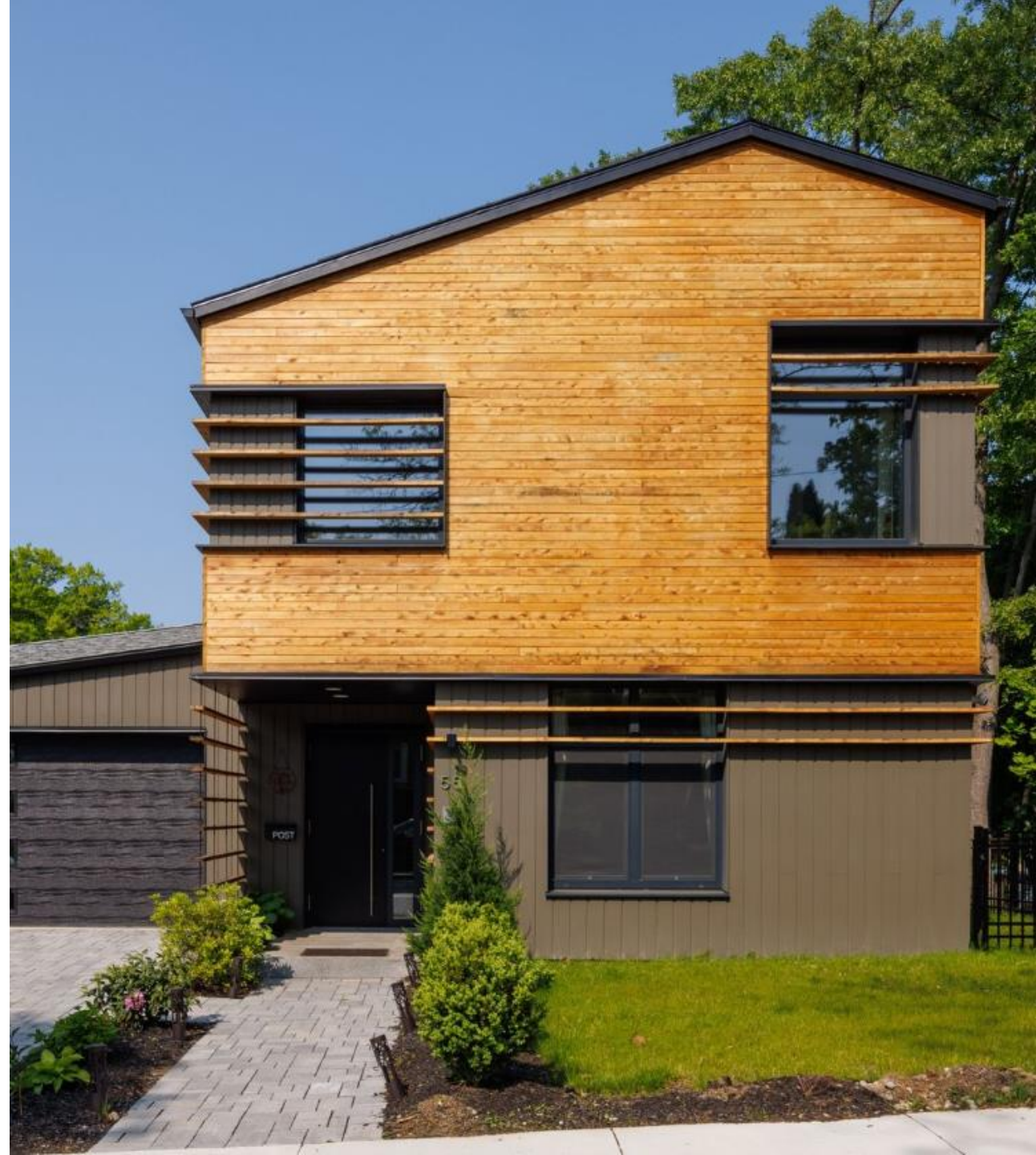
This summer, the house has remained at 72 to 75 degrees with only a few hours of air conditioning each day, despite the triple-digit heat that hit the city.

In fact, their electricity bill currently has a negative balance of about \$1,000, meaning the electric company owes them

<https://www.wsj.com/articles/passive-home-design-massachusetts-2c89a18d>



All three 4-bedroom, 2,500 ft², homes sold before they were completed: [63 Brucewood St](#) sold for \$1,500,000 and [55 and 59 Brucewood St.](#) for \$1,400,000 apiece.



The Tyler

Location: East Haven, CT

Completed: 2020

Type: Senior housing – retrofit

Size: 104,971 sq ft, 70 units

Developer: WinnDevelopment

Architect: The Architectural Team (TAT)

PH Consultant: Steven Winter Associates

Notes: adapted retrofit of high school building
(EnerPhit)



Hotel Marcel

Location: New Haven, CT



Two Passive Home Properties Are Now for Sale in Stamford

December 09, 2015 by Diane di Costanzo



Passive homebuilding was all the buzz this year after the White House announced its Passive House Initiative. So-called passive homes are built for 90-percent improved efficiency over traditional construction, thanks to special heating and cooling systems, super-insulated building envelopes and sites designed to take advantage of natural sunlight, to both warm and light the interiors. The news came as Stamford announced its first passive house project, with two under-construction properties now on the market, including a modern home that's listed for \$1,695,000 (rendering shown here) and a traditional farmhouse that's offered at \$1,779,000. They are listed with Walter Block of **William Pitt Sotheby's International Realty** in Stamford. 203-561-2527.

Section 4:

Best Practices of Marketing and Valuation High-Performance



Rule #1:

Know the Science, Sell the Benefit

**Let's review, what are the benefits to
homebuyers of purchasing a HPH?**



Benefit: A Healthy Home

The air a child breathes is as important as the food that they eat.



Benefit: Durability

**A HPH is built to withstand a
changing climate.**



Benefit: Resilience

**A HPH maintains a consistent
temperature during power outages**



Benefit: Comfort

Include in your first buyer meetings, “You have told me a lot about what you need for your new home, but out of curiosity what are some of the things you have hated about the homes you grew up in or rented right out of college?”



Benefit: Peace and Quiet

Insulation is used for sound dampening.

Better insulation – less sound.



Benefit: What can we take to the bank?

Lower operating costs



Know the Science **SELL THE BENEFITS**

- BEST OF BREED – High-Performance Homes are 3rd Party Verified
- LOWER OPERATING COSTS - Energy & Water Efficiency
- HEALTHY HOME – Indoor Air Quality (IAQ), ERV
- PEACEFUL – Superior Insulation & Airsealing Noise Reduction
- DURABILITY – Resilient Homes More Durable to a Changing Climate
- COOL FACTOR – Who doesn't like to show off the latest tech has to offer?
- BE A GOOD NEIGHBOR & COMMUNITY LEADER
- TAX BENEFITS – 30% Investment Tax Credits under the IRA
- RESALE VALUE – IF knowledgeable & competent REALTOR (Article 11 CoE)

Benefit: What can we take to the bank?

Resale value bump

HOMEBUYERS ARE PAYING

9-13%
MORE




FOR HIGH-PERFORMANCE HOMES.

Source: www.nocommerce.com/news/press-releases?udt_4733_param_detail=12474
and www.usgbc.org/articles/benefits-green-homebuilding

Valuation. The process

Appraisal Institute Valuation of Sustainable Buildings, Residential and Commercial

 Appraisal Institute®

Welcome [login]

Valuation of Sustainable Buildings: Residential

Professional Development Program Registry

NOTE: This Registry lists the names of Designated Members, Candidates, Practicing Affiliates, Affiliates and other individuals not in one such category who have successfully completed (attended and passed the examinations) the courses in this section of the *Valuation of Sustainable Buildings Professional Development Program* examinations.

There may be other qualified Appraisal Institute Designated members who may handle green/sustainability assignments but have not taken the *Valuation of Sustainable Buildings Professional Development Program*.

AI	Name	Company	Address	City	State	Zip	Assignments
Registrant	Robert S. Abelson, PhD	BSBM Abelson Enterprise					
Registrant	David G. Adams	Caltrans	464 W. 4th Street	San Bernardino	CA	92401	No
Candidate for Designation	Wasiu Adedeji		PO Box 509	Lorton	VA	22199	No

Valuation. The process

We cannot not pick a specific appraiser, but we can demand a qualified one.

<https://green.realtor/green-resources/guide-appraisals>

FOR LENDERS

Dear lender,

The new home located at: _____ is a special property type. It is an energy efficient, high-performing home that meets the stringent energy efficiency requirements of the code checked below:

- ☐ 2012 International Energy Conservation Code (2012 IECC)
- ☐ 2015 International Energy Conservation Code (2015 IECC)

A copy of the Green and Energy Efficient Addendum form, and the HERS report (if available) should be included with the appraisal engagement letter. Fannie Mae, Freddie Mac and FHA guidelines require lenders to choose competent appraisers who have the requisite knowledge required to perform a professional quality appraisal for the specific geographic location and particular property type. As a high-performing, energy efficient home, it requires an appraiser that is competent to assess the value of the green and/or energy efficiency features in the local real estate market.

You can access a list of qualified appraisers at the *Valuation of Sustainable Buildings Professional Development Program Registry*, available at: http://www.myappraisal institute.org/indagator/ber/green_sustainability_residential.aspx. These specially trained appraisers have completed 28 hours of education and passed three exams. If the appraisers on your panel are not on this list, they can complete 14 education hours online to get started at: http://www.myappraisal institute.org/education/course_descn/Default.aspx?program_id=836&nav_type=CO

Appraisers on this list are not required to be Appraisal Institute members but must take the required courses and pass the exams to be listed.

If you have questions, please contact our representative at:


NAME: _____

PHONE: _____

EMAIL ADDRESS: _____

Valuation. The process

Qualified appraisers need information about
the subject property

	Client File #:		Appraisal File #:	
	Residential Green and Energy Efficient Addendum			
	Client:			
	Subject Property:			
	City:		State:	Zip:
Additional resources to aid in the valuation of green properties and the completion of this form can be found at http://www.appraisalinstitute.org/education/green_energy_addendum.aspx				

Valuation. The process

Appraising host owned solar PV – income

approach. It's not just about the comps

anymore!



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For more information, please visit EnergizeCT.com/passive-house
or email PassiveHouseTrainingCT@icf.com