



MASSACHUSETTS
DEPARTMENT OF
ENERGY RESOURCES

MA Stretch Code & Specialized Code

Summary of energy code updates
effective 14 February 2025

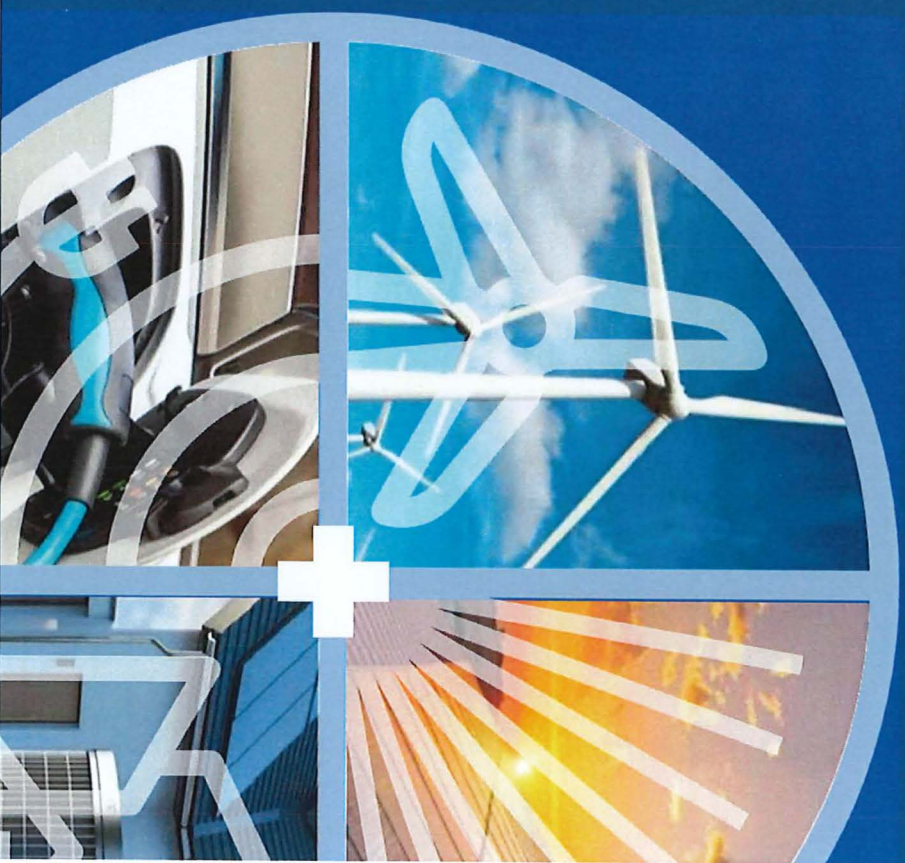


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ENERGY CODE OVERVIEW

SUMMARY OF UPDATES

225 CMR 22: Residential low rise - Stretch code

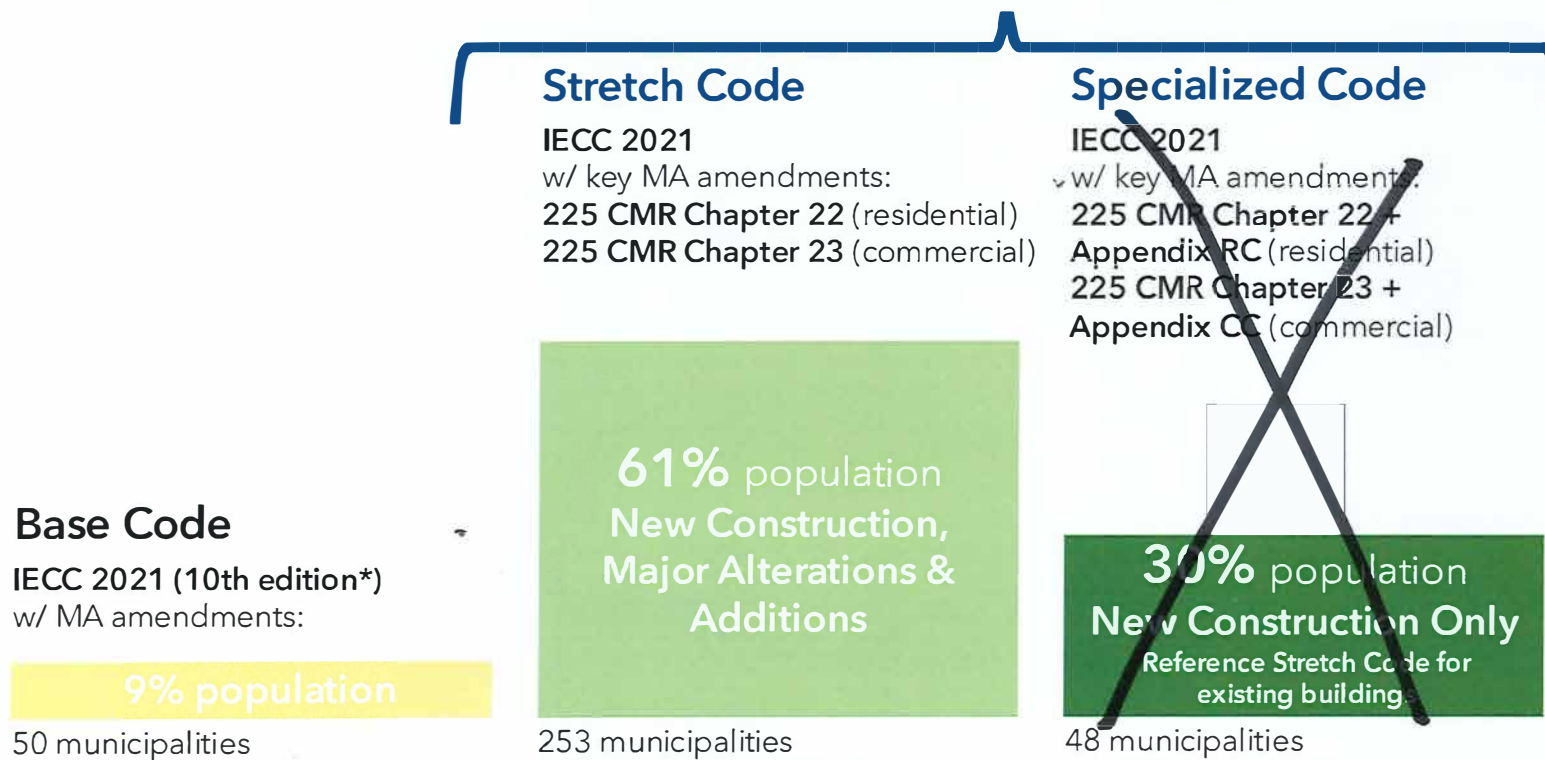
~~205 CMR 22B: 2016 Specialized Code updates~~

225 CMR 23: Commercial, and all other - Stretch code

Technical Guidance, Training and Technical Assistance

3 tiers of Energy Code available to MA towns & cities:

Massachusetts "Opt-In" Energy Codes



Residential Low-Rise Stretch Code

Compliance Pathways:

New Construction Permits - IECC/Stretch Code Chapter 4:

New Dwelling units	HERS rating
Group R1 transient use e.g. hotel/motel	Prescriptive (REScheck)
Any building	Passive House (Phius or PHI)

Existing Building Permits - IECC/Stretch Code Chapter 5:

Major additions, Major alterations, Change-of-use	HERS rating
Small additions, Small alterations, <i>Historic buildings</i> , Group R1: alterations, additions	Prescriptive (REScheck)
Any building	Passive House (EnerPHit, PHI or Phius)

Significant Updates:

Residential Low-Rise

The following are some of the more notable changes from the 2023 Stretch Code found in the **2025 Stretch Code update**:

HERS rating updates:

1. **HERS credit for embodied carbon** in new construction: 3 HERS points for either insulation or concrete
2. **ADU HERS maximum** for Accessory Dwelling Units: HERS 52-58
3. **HERS ratings for existing building** permits in Chapter 5 are relaxed: HERS 65-75
4. **Exception for historic homes** allows them to follow the prescriptive path

Prescriptive path updates:

5. **Ceiling R-value** reduced from R-60 to R-49
6. **SHGC for windows** - no maximum required

Updates to Residential HERS Rating Requirements

TABLE R406.5 MAXIMUM ENERGY RATING INDEX

Clean Energy Application	Maximum HERS Index score ^{a,b}				
	New construction until June 30, 2024	New construction permits after July 1, 2024	New Construction with R406.5.2 embodied carbon credit	Accessory Dwelling Units	Major alterations, additions, or change of use ^c
<i>Mixed-Fuel Building</i>	52	42	45	52	52 65
Solar Electric Generation	55	42	45	55	55 70
<i>All-Electric Building</i>	55	45	48	55	55 70
Solar Electric & <i>All-Electric Building</i>	58	45	48	58	58 75

^a Maximum HERS rating prior to onsite renewable electric generation in accordance with Section R406.5

^b ~~The building shall meet the mandatory requirements of Section R406.2, and the building thermal envelope shall be greater than or equal to the levels of efficiency and SHGC in Table R402.1.2 or Table R402.1.4 of the 2015 International Energy Conservation Code.~~

^c Alterations, Additions or Change of use covered by Section R502.1.1 or R503.1.5 are subject to this maximum HERS rating, except for *Historic Buildings* which may opt to follow R503.1.1 for alterations, additions, and change of use.

Updates to Residential Prescriptive changes

R503.1.1 Revise Exception 2 as follows:

R503.1.1 Building envelope. Building envelope assemblies that are part of the *alteration* shall comply with Section R402.1.2 or R402.1.4, Sections R402.2.1 through R402.2.12, R402.3.1, R402.3.2, R402.4.3 and R402.4.5.

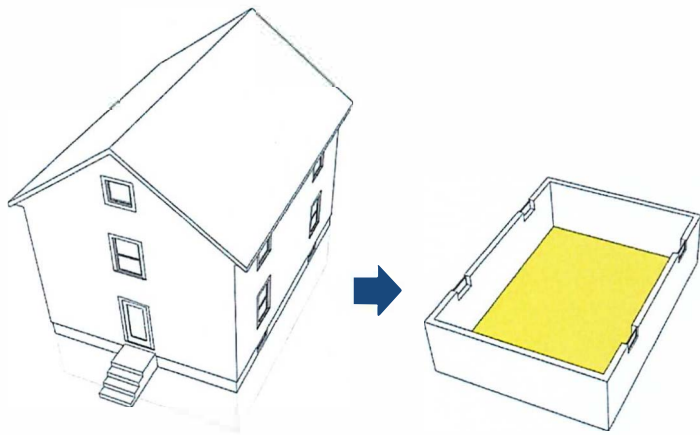
Exception: The following alterations shall not be required to comply with the requirements for new construction provided that the energy use of the building is not increased:

1. Storm windows installed over existing fenestration.
2. Existing ceiling, wall or floor cavities exposed during construction provided that these cavities are filled with insulation with a minimum of R-3.7 per inch for the depth of the cavity.
3. Construction where the existing roof, wall or floor cavity is not exposed.
4. Roof recover.
5. Roofs without insulation in the cavity and where the sheathing or insulation is exposed during reroofing shall be insulated either above or below the sheathing.
6. Surface-applied window film installed on existing single pane fenestration assemblies to reduce solar heat gain provided that the code does not require the glazing or fenestration assembly to be replaced.

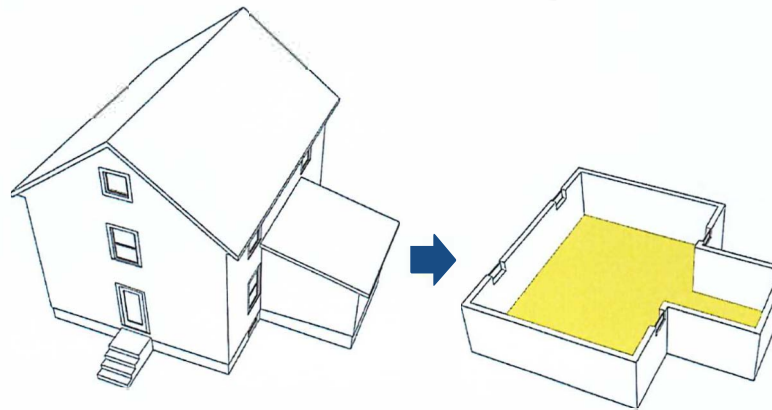
This exception for **Alterations** also applies to **Major Alterations, Additions, or Change of Use** that would otherwise trigger a HERS rating on Table 406.5 but are determined to be **Historic Buildings** by a governing authority.

Updates to Residential

Clarifying When a HERS Rating **is/isn't** Required



An existing house with an unconditioned basement will be remodeled. The basement is 1,200 SF and will be insulated and fully conditioned. This does **NOT** trigger a HERS rating because the existing basement is not growing in SF.



If an addition is added to the house with a full basement connecting to the existing basement, and the new larger basement is conditioned, the project **will** require a HERS rating.

R502.1.1 Large additions. Additions to a dwelling unit exceeding 1,000 sq ft or exceeding 100% of the existing *conditioned floor area*, shall require the **combined dwelling unit** to comply with the maximum HERS ratings for alterations, additions or change of use shown in **Table R406.5**.

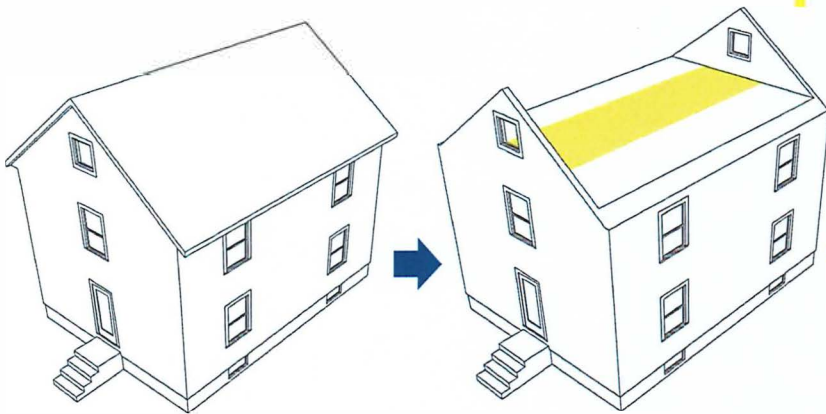
Exception: Additions that add existing basement or attic spaces to the *conditioned floor area* of an existing dwelling unit due to changing the thermal boundary but not changing the building footprint or roofline do not require a HERS rating.

Updates to Residential

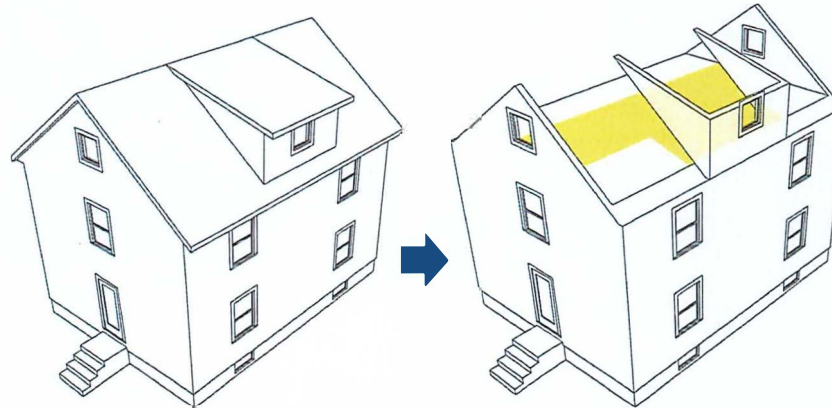
Clarifying When a HERS Rating **is/isn't** Required

R502.1.1 Large additions. Additions to a dwelling unit exceeding 1,000 sq ft or exceeding 100% of the existing conditioned floor area, shall require the **combined dwelling unit** to comply with the maximum HERS ratings for alterations, additions or change of use shown in **Table R406.5**.

Exception: Additions that add existing basement or attic spaces to the *conditioned floor area* of an existing dwelling unit due to changing the thermal boundary but not changing the building footprint or roofline do not require a HERS rating.



An existing attic space, 1200 SF, will be finished and insulated so that it is part of the conditioned building envelope. No changes to the roof will be made to "grow" the space. This does **NOT** trigger a HERS rating.



If a dormer is added to the existing roof, thereby increasing the occupiable SF of the existing attic, and the attic is insulated and finished to become part of the conditioned building envelope, this **WILL** trigger a HERS rating.

Updates to Residential

Clarifying When a HERS Rating **is/isn't** Required

R503.1.5 Add new Subsection R503.1.5 as follows:

R503.1.5 Extensive Alterations and Level 3 Alterations. Alterations that meet either of the following criteria shall require the building or *dwelling unit* to comply with the maximum HERS ratings for alterations, additions or change of use shown in Table R406.5:

- 1) Meet the IRC definition for *Extensive Alteration* and that exceeds 1000 sq ft or 100% of the existing conditioned floor area of the dwelling unit for one- and two-family dwellings and multiple single-family dwellings(townhouses).
- 2) Meet the IEBC definition for *Level 3 Alteration* and that exceeds 1000 sq ft or 100% of the existing conditioned floor area of the building area for Group R-2, R-3, and R-4 buildings with three stories or less in height above grade plane, other than one- and two-family dwellings and multiple single-family dwellings(townhouses).

This means if a project satisfies both **a** + **b**, then it triggers HERS:

a work area is
>50% of
existing project

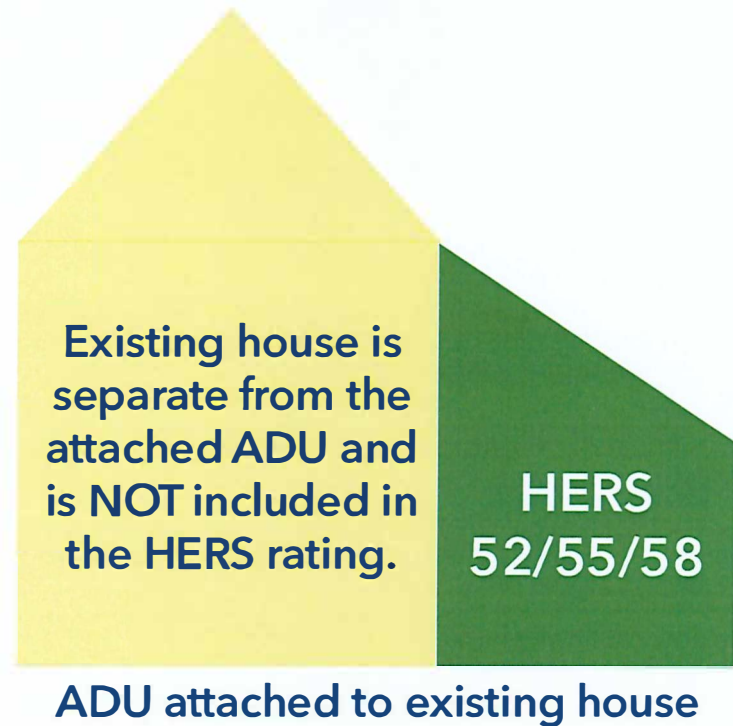
+

b Exceeds **1,000 SF**
or
Exceeds **100%** of the existing
conditioned floor area

=HERS

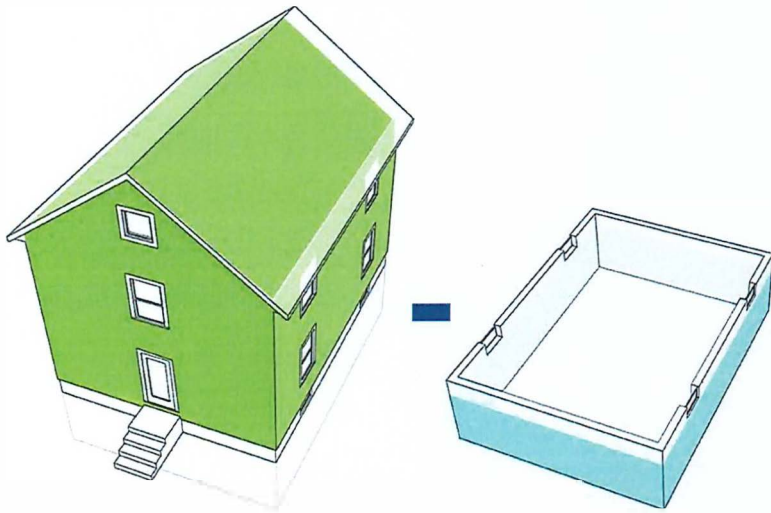
Updates to Residential

Accessory Dwelling Unit HERS Rating:



Updates to Residential

Bonus 3 HERS points for Embodied Carbon: net zero insulation



Buildings typically use one or two insulation types for above grade walls and ceilings, and different board insulation products below-grade. In order to achieve insulation that is net zero embodied carbon, typically the carbon storage above grade must exceed the carbon content embodied in the below grade insulation.

TABLE R406.5.3 DEFAULT INSULATION GLOBAL WARMING POTENTIAL VALUES

All values are from Building Emissions Accounting for Materials (BEAM)^a, unless noted.

Insulation Material	Default Global Warming Potential (GWP) in Kg CO ₂ e/ sq.m. RSI-1
Cellular glass – Aggregate	3.93 ^b
Cellulose – Densepack	-2.00
Cellulose – Blown/loosefill	-0.90
Cork – Board	-4.30
EPS/graphite – Board, unfaced, Type II – 15 psi	2.30
EPS/graphite – Board, unfaced, Type IX – 25 psi	3.10
EPS – Board, unfaced, Type I – 10 psi	2.50
EPS – Board, unfaced, Type II – 15 psi	3.40

EPS – Board, unfaced, Type II – 15 psi	3.40
EPS – Board, unfaced, Type I – 10 psi	2.50
EPS/graphite – Board, unfaced, Type IX – 25 psi	3.10

DOER will provide a standard calculation sheet, to enter values from Table R406.5.3 or from product EPDs to show the insulation products used by area (Square meters) and then calculate whether the net GWP is positive or negative. Homes where total insulation is net negative earn the 3 bonus HERS points.

Updates to Residential

Bonus 3 HERS points for Embodied Carbon: Concrete

Many of the concrete ready-mix suppliers in Massachusetts have invested in providing Environmental Product Declarations (EPDs) for their concrete ready-mix products. If a project selects ready-mixes that are lower in embodied carbon than the Eastern Region average, shown in Table R406.5.4 then they qualify for 3 bonus HERS points.

Copies of the relevant concrete EPDs must be shared with the HERS rater and building inspector.

R406.5.4 Documentation for low GWP concrete mix credit. In order to apply the low GWP concrete mix credit for one or more new dwelling units, the HERS rater of the unit must submit specific EPDs for concrete used in the unit. Where multiple concrete mixes are used, a complete calculation to summarize estimated embodied carbon emissions from at least 90% of all concrete materials used in the project is required. The output

CAPE COD READY MIX
ENVIRONMENTAL PRODUCT DECLARATION
Mix LW400 • Carver Plant

This Environmental Product Declaration (EPD) reports the impacts for 1 m³ of ready mixed concrete mix, for use in business-to-business (B2B) communication meeting the following specifications:

- ASTM C94: Ready-Mixed Concrete
- UNSPSC Code 30111505: Ready Mix Concrete
- CSA A23.1/A23.2: Concrete Materials and Methods of Concrete Construction
- CSI Division 03-30-00: Cast-in-Place Concrete


COMPANY
Cape Cod Ready Mix
4053 Main Street
Brewster, MA 02631

PLANT
Carver Plant
334 Tremont Street
Carver, MA 02330

EPD PROGRAM OPERATOR
National Ready Mixed Concrete Association
66 Canal Center Pl, Suite 250
Alexandria, VA 22314

NRMCAEPD: 20125

DATE OF ISSUE
12/28/2023 (valid for 5 years until 12/28/2028)
(Portable plant validity is limited to location specified)



ENVIRONMENTAL IMPACTS


Declared Product:
Mix LW400 - Carver Plant
Description: 4000 3/8 Lightweight
Compressive strength: 4000 PSI at 28 days

Dedicated Unit: 1 m³ of concrete (1 cyd)

Global Warming Potential (kg CO ₂ -eq)	547 (418)
Ozone Depletion Potential (kg CFC-11-eq)	2.51E-6 (1.92E-6)
Acidification Potential (kg SO ₂ -eq)	3.10 (2.37)
Eutrophication Potential (kg N-eq)	0.57 (0.44)
Photochemical Ozone Creation Potential (kg O ₃ -eq)	66.3 (50.7)
Abiotic Depletion, non-fossil (kg Sb eq)	7.07E-6 (5.40E-6)
Abiotic Depletion, fossil (MJ)	3,133 (2,395)
Total Waste Disposed (kg)	109 (83.1)
Consumption of Freshwater (m ³)	2.74 (2.10)

Product Components: natural aggregate (ASTM C33), lightweight aggregate (ASTM C330), Portland cement (ASTM C150), fly ash (ASTM C618), batch water (ASTM C1602), admixture (ASTM C494), admixture (ASTM C260)

Additional detail and impacts are reported on page three of this EPD



Example EPD



Updates to Residential Prescriptive Insulation R (& U) Values

TABLE R402.1.3 INSULATION MINIMUM R-VALUES AND FENESTRATION REQUIREMENTS BY COMPONENT^a

CLIMATE ZONE	FENESTRATION U-FACTOR ^f	SKYLIGHT U-FACTOR	GLAZED FENESTRATION SHGC ^{d,e}	CEILING R-VALUE	WOOD FRAMED WALL R-VALUE	MASS WALL R-VALUE ^b	FLOOR R-VALUE	BASEMENT ^{c,g} WALL R-VALUE	SLAB ^d R-VALUE & DEPTH	CRAWL SPACE ^{c,g} WALL R-VALUE
5 and Marine 4	0.30 ⁱ	0.55	0.40 NR	60 49	30 or 20&5ci or 13&10ci or 0&20	13/17	30	15ci or 19 or 13+5ci	10ci, 4 ft	15ci or 19 or 13+5ci

Applications: Small Additions / Alterations / Historic Buildings

Summary of Other Updates:

Stretch code: Residential Low-Rise

1. **R403.6 Ventilation requirements:** Now reference AHRI standard 1060.
2. **R404.4 EV ready spaces:** Now allows NACS(Tesla) or J1772 EV charger, or NEMA electric outlet.
3. **R405.2 Passive House certification:** Revised language/corrected wording for PHI and Phius certifications.
4. **R405.3 Near Passive House documentation:** Compliance path for projects narrowly failing Passive House certification.

Stretch code: Existing Building Alterations

1. **R501.2 & R506 Adds EnerPHit compliance option** for existing building permits.
2. **R503.1.1 Exception allows min. of R-3.7/inch insulation** in exposed cavities.