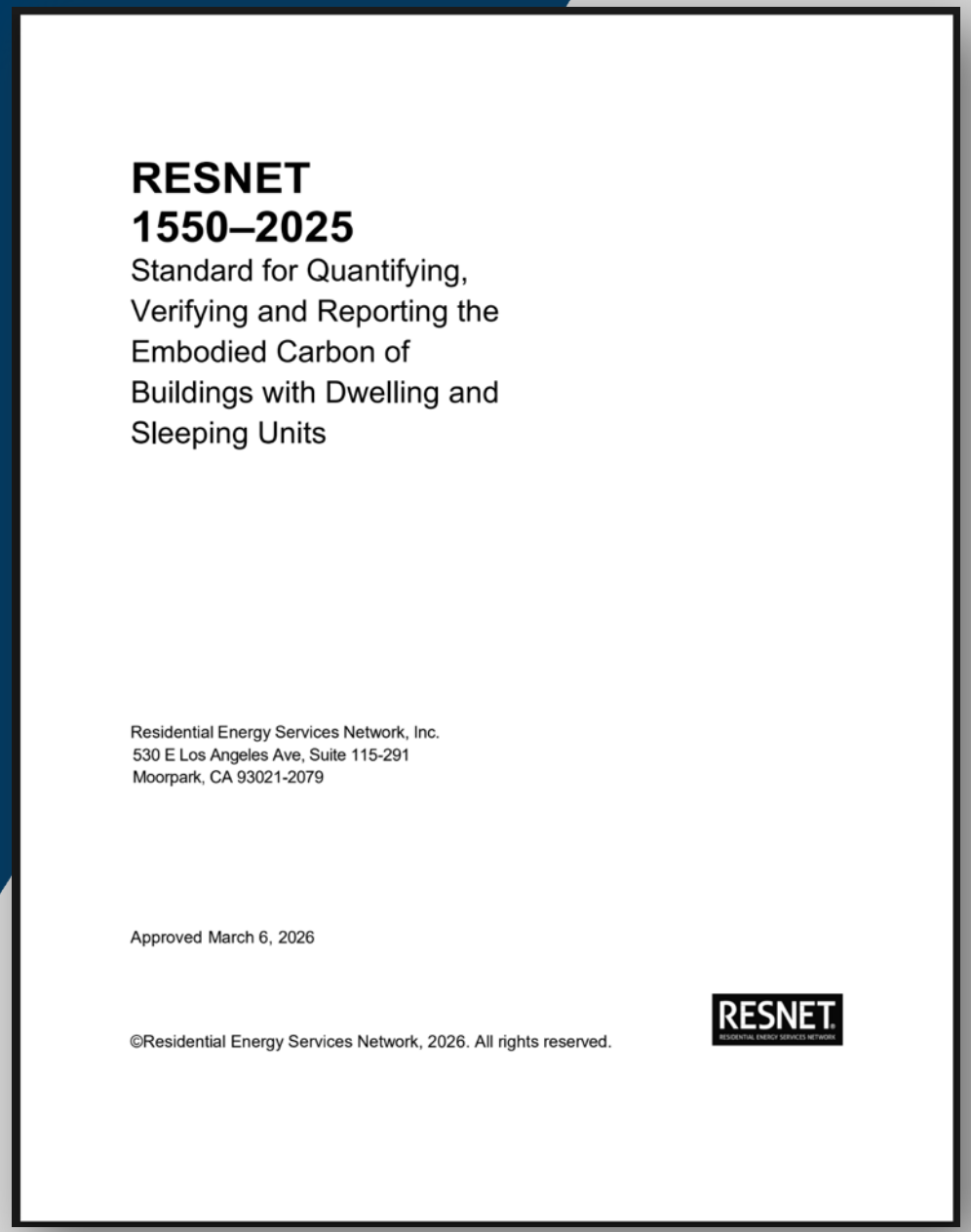
What's up with embodied carbon?

Chris Magwood
RMI HomebuildersCAN
BK Spring Camp, April 21, 2026

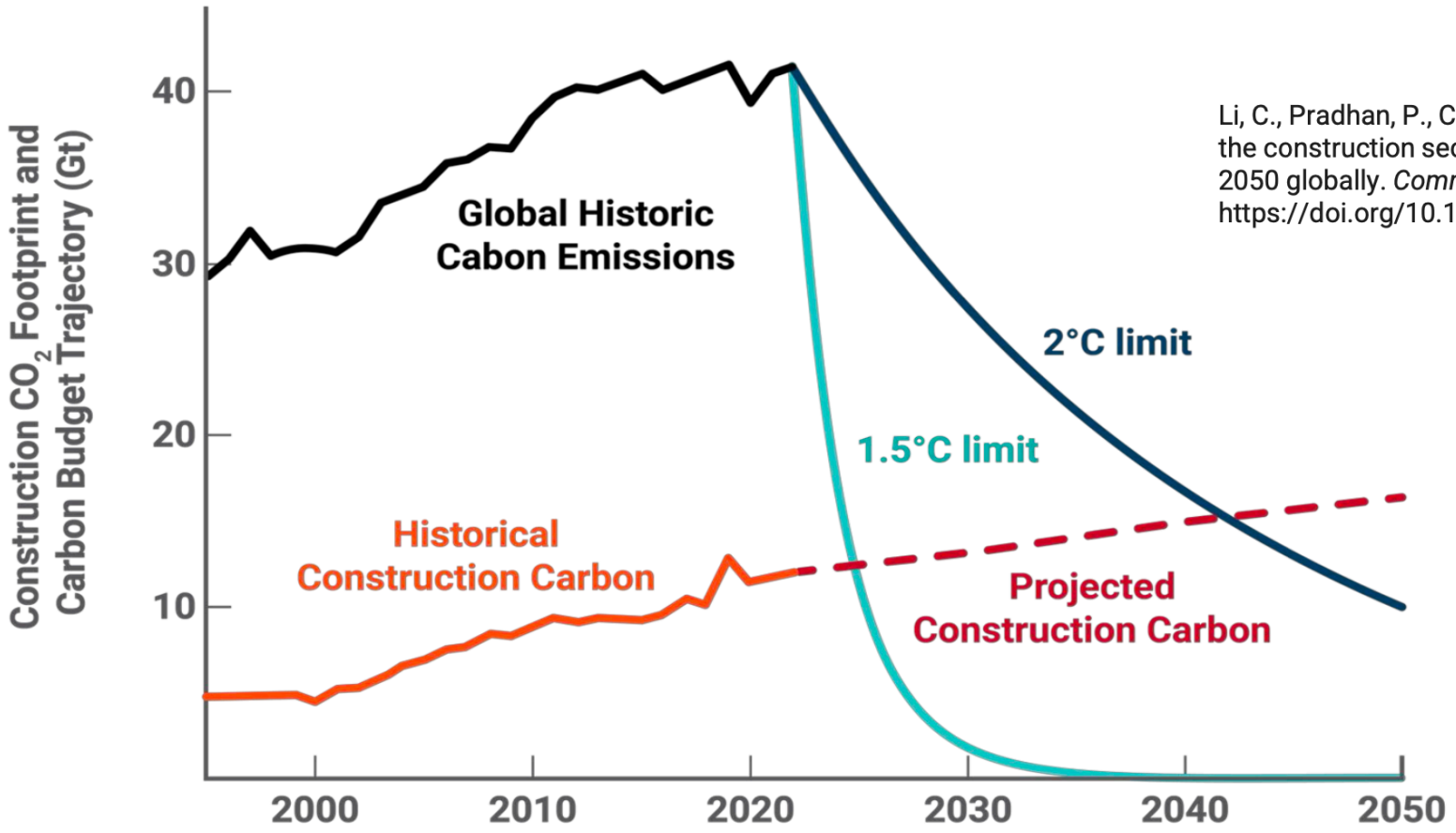


RESNET
1550–2025
Standard for Quantifying, Verifying and Reporting the Embodied Carbon of Buildings with Dwelling and Sleeping Units

Residential Energy Services Network, Inc.
530 E Los Angeles Ave, Suite 115-291
Moorpark, CA 93021-2079

Approved March 6, 2026

Why are we still talking about embodied carbon?



Li, C., Pradhan, P., Chen, G. *et al.* Carbon footprint of the construction sector is projected to double by 2050 globally. *Commun Earth Environ* 6, 831 (2025). https://doi.org/10.1038/s43247-025-02840-x

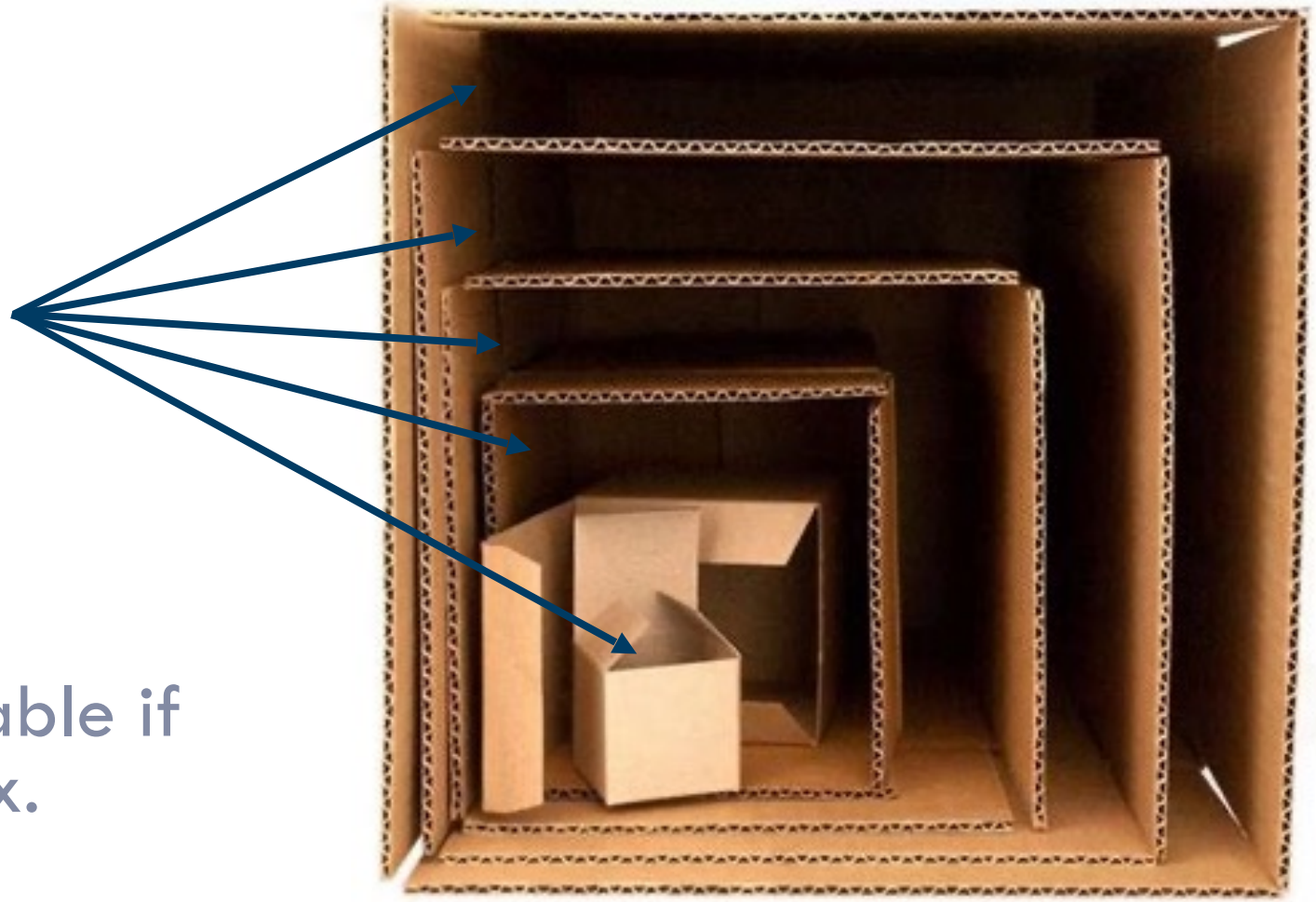
Embodied carbon will consume the planetary budget for 2.0°C if we don't bend this curve

Why do we need a standard?

Life cycle stages

Project boundary

Building products



thisiswhyimbroke.com

Results are only comparable if we're using the same box.

RESNET 1550 published!

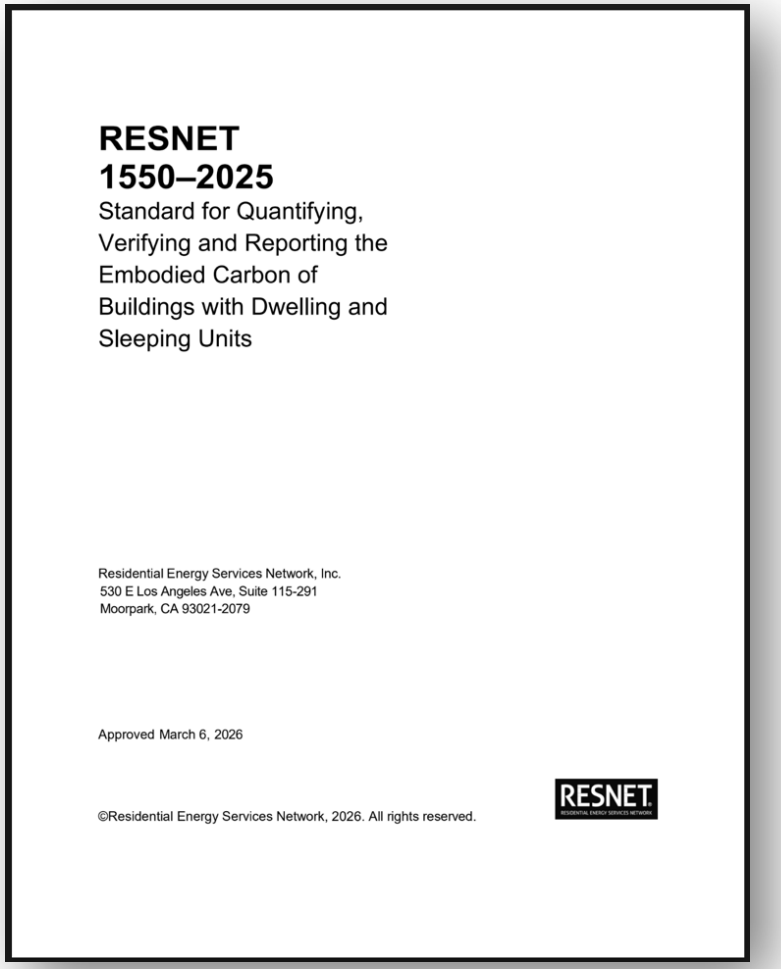
1. Purpose

The provisions of this document establish a methodology for **quantifying, verifying and reporting the embodied carbon emissions** associated with building products and buildings.

2. Scope

This standard is applicable to **buildings with Dwelling Units and Sleeping Units** in Residential or Commercial Buildings, excepting hotels and motels .

This standard **does not set benchmarks or establish levels of building performance**.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RESNET

https://drive.google.com/file/d/1S4UaMi9G5ygbWbR1-WBC5DOKh6StkWa-/view

Two types of assessment

Following HERS modeling method

Projected Assessment

Projected Assessments are generated prior to construction wherein the actual installed conditions, equipment, and systems are not yet completed or installed.

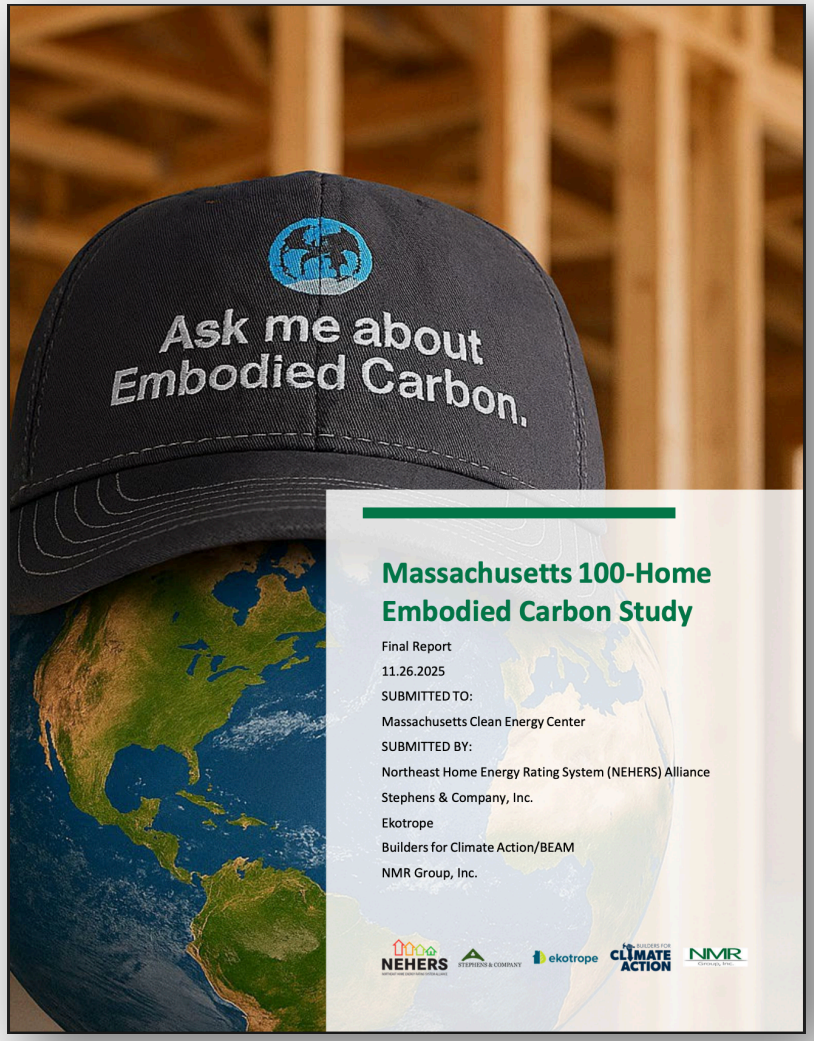
Confirmed Assessment

Confirmed Assessments are conducted, generated, and verified after completion of construction.

Massachusetts 100 Homes Study

100 HERS rated homes

- Four housing typologies
- HERS and HERS Carbon index rated
- Embodied carbon assessed using draft of RESNET 1550
- MEP included in scope



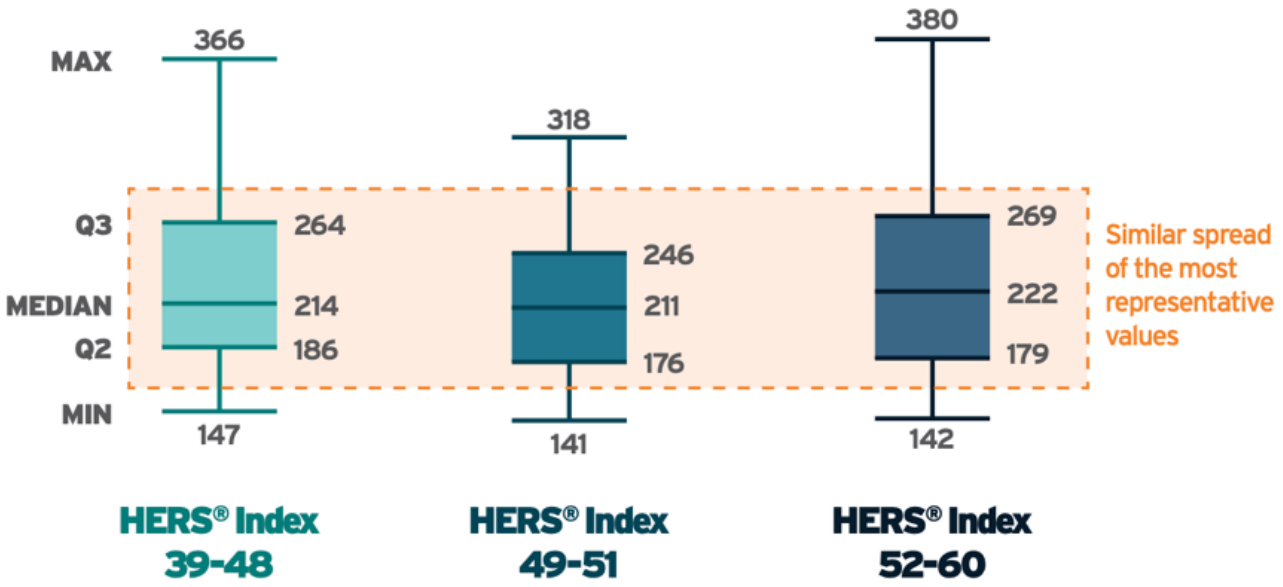
https://www.masscec.com/sites/default/files/documents/Massachusetts%20100-Home%20Embodied%20Carbon%20Study%20-%20FINAL.pdf

MASSACHUSETTS 100-HOME EMBODIED CARBON STUDY KEY FINDINGS

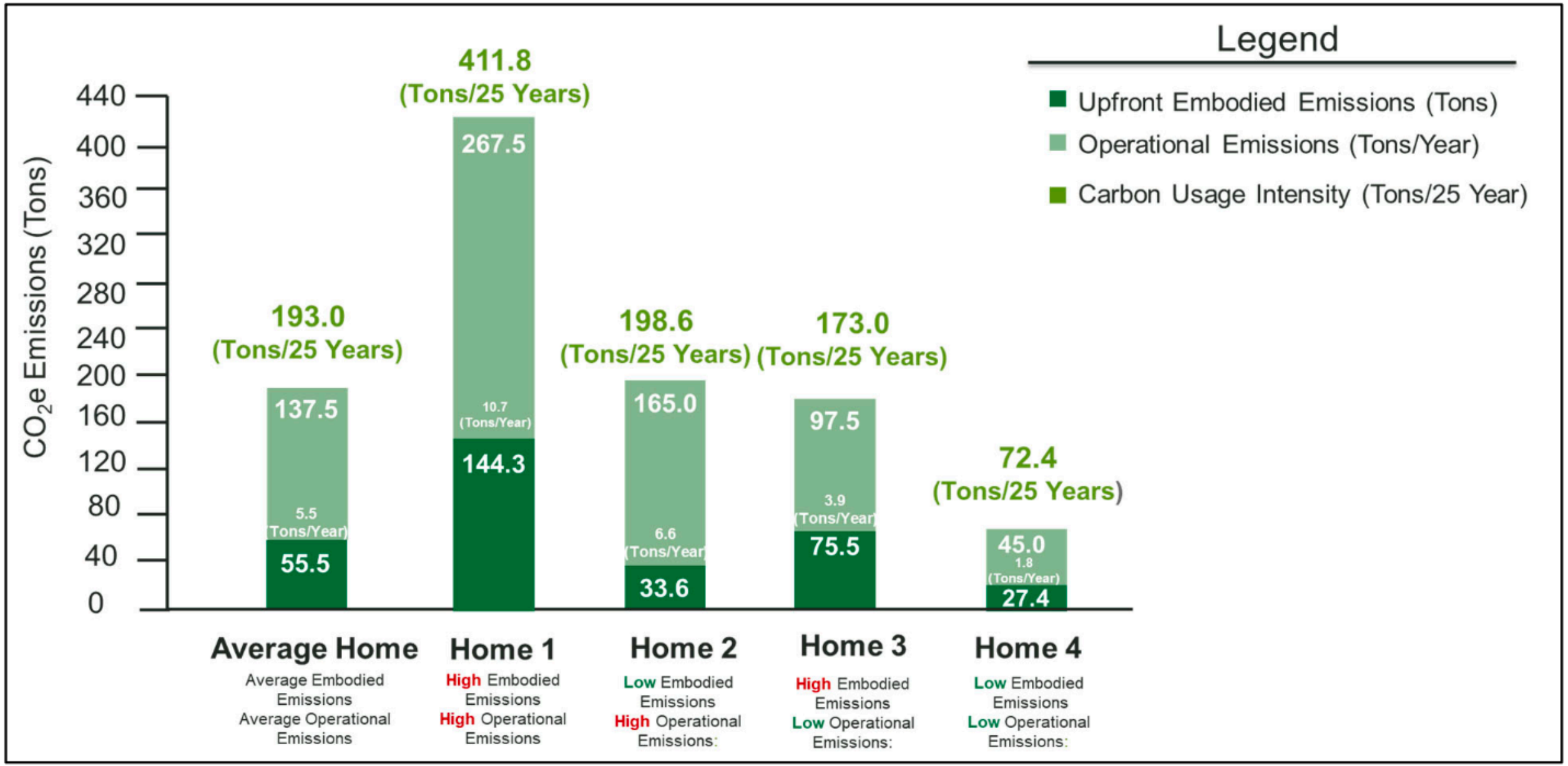
The level of energy efficiency is not a predictor of embodied carbon performance.

The spread of embodied carbon intensities across different ranges of HERS® Scores mostly stays the same with similar medians and quartiles.

Net Embodied Carbon Intensities per Conditioned Floor Area by HERS® Index (kg CO_2e/m^2)



ECE and energy efficiency

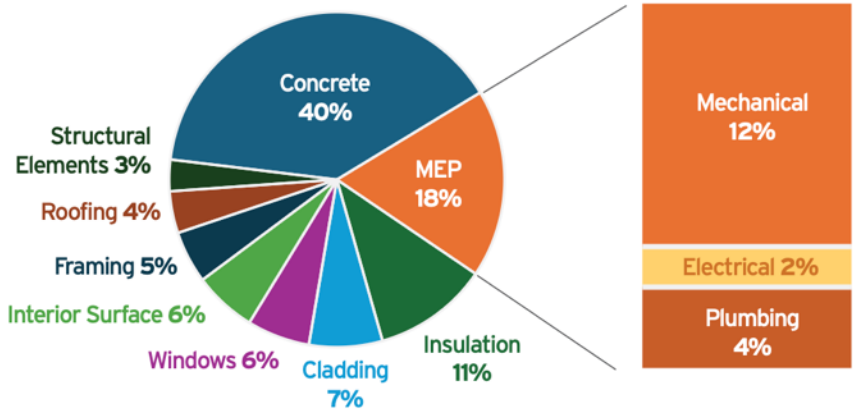


MASSACHUSETTS 100-HOME EMBODIED CARBON STUDY KEY FINDINGS

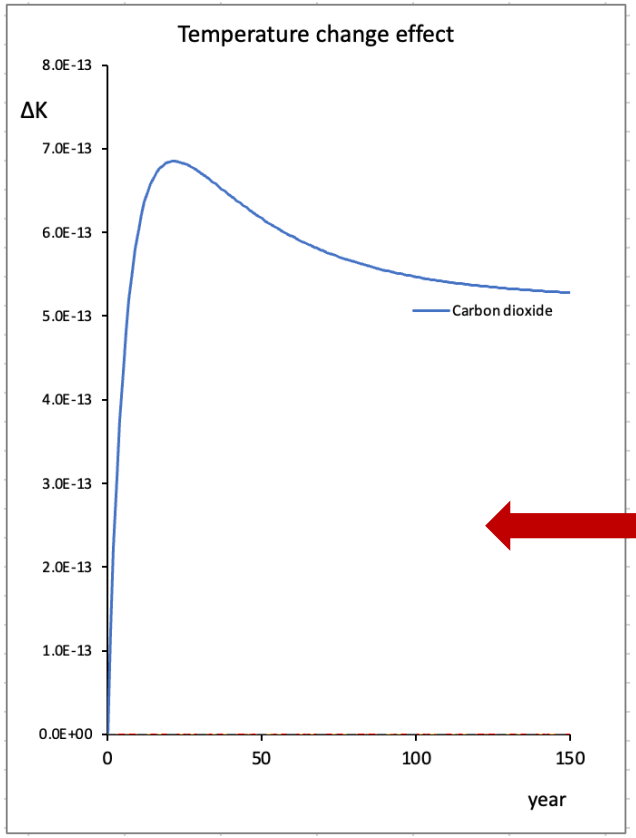
MEP systems were measured for the first time and contribute an average 18% of embodied carbon.

Mechanical systems dominate embodied carbon contributions within the category of MEP products.

Gross Material Emissions by Category (% contribution of total)

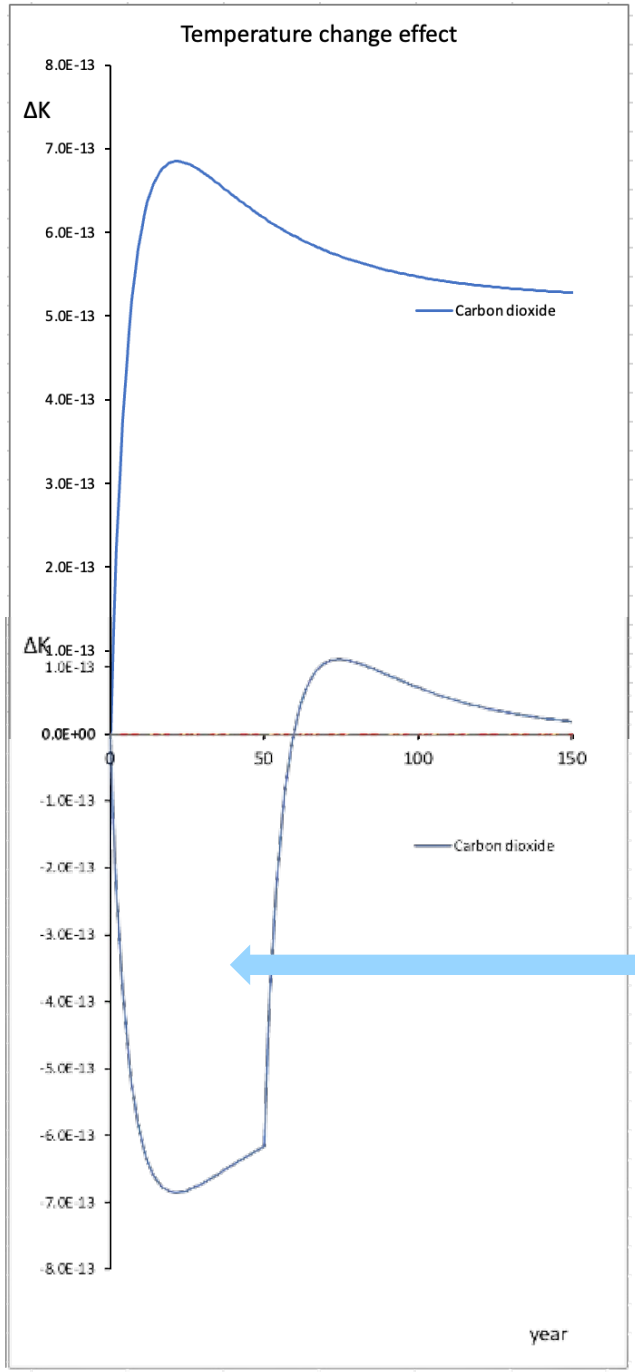


Carbon storage: Is it meaningful?



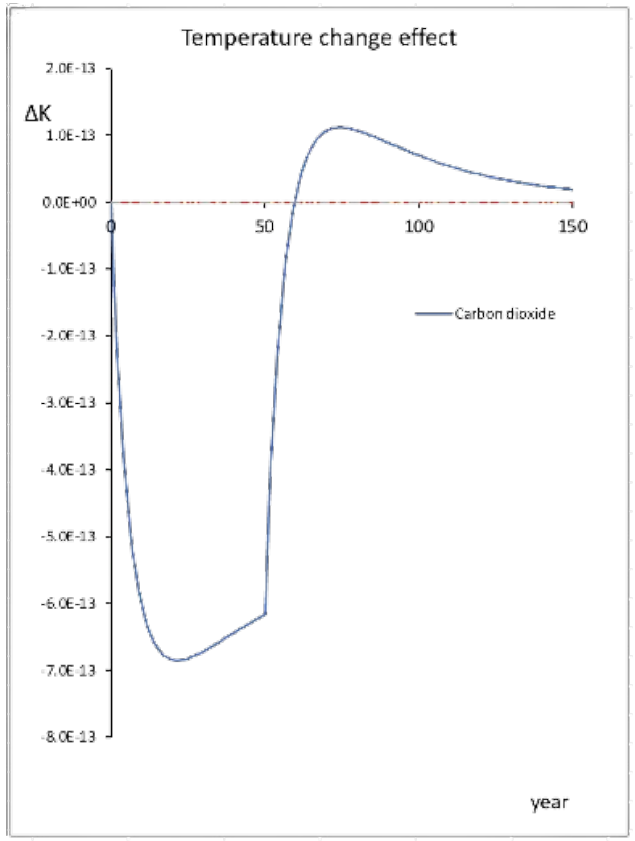
Products with embodied carbon emissions drive warming for centuries

Carbon storage: Is it meaningful?

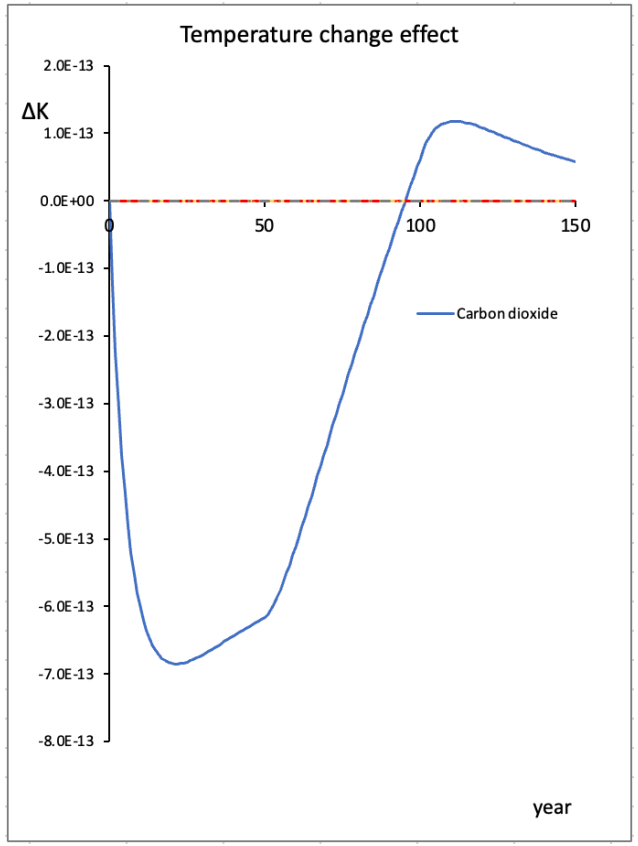


Products with carbon storage drive cooling in use and reduce warming upon emission

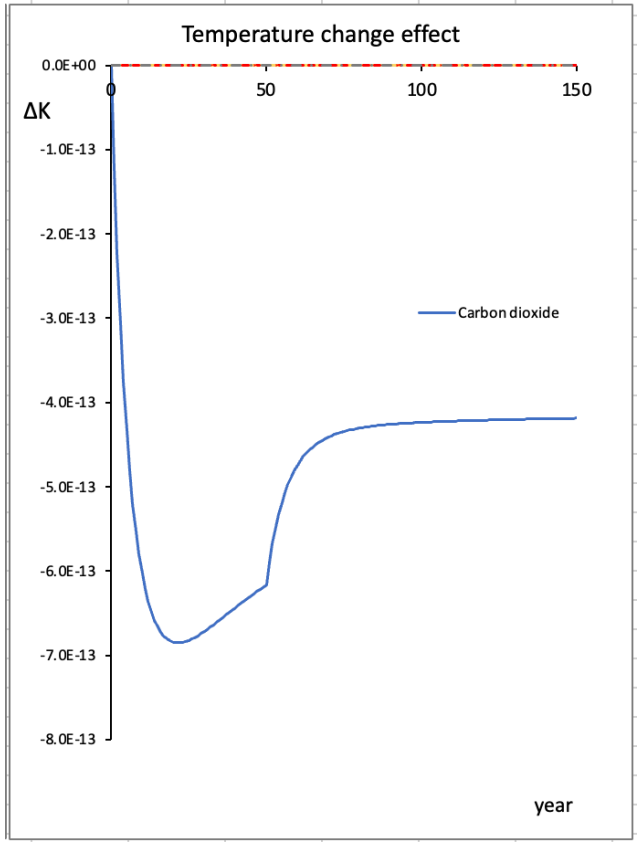
Carbon storage: Is it meaningful?



EoL: Combustion



EoL: Landfill decay



EoL: Biochar conversion

Carbon storage: Is it meaningful?

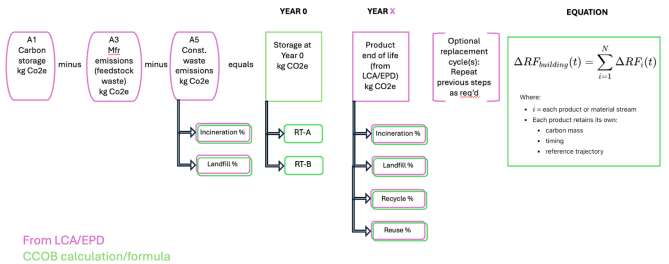
CLIMB methodology under development

- Publication in Autumn, 2026
- Simple overlay with conventional LCA
- Requirements for reporting completeness
- Provides 100 year comparison with LCA results

CLIMB

Climate Impact Model for Buildings:

A time-explicit framework for interpreting climate response to carbon flows



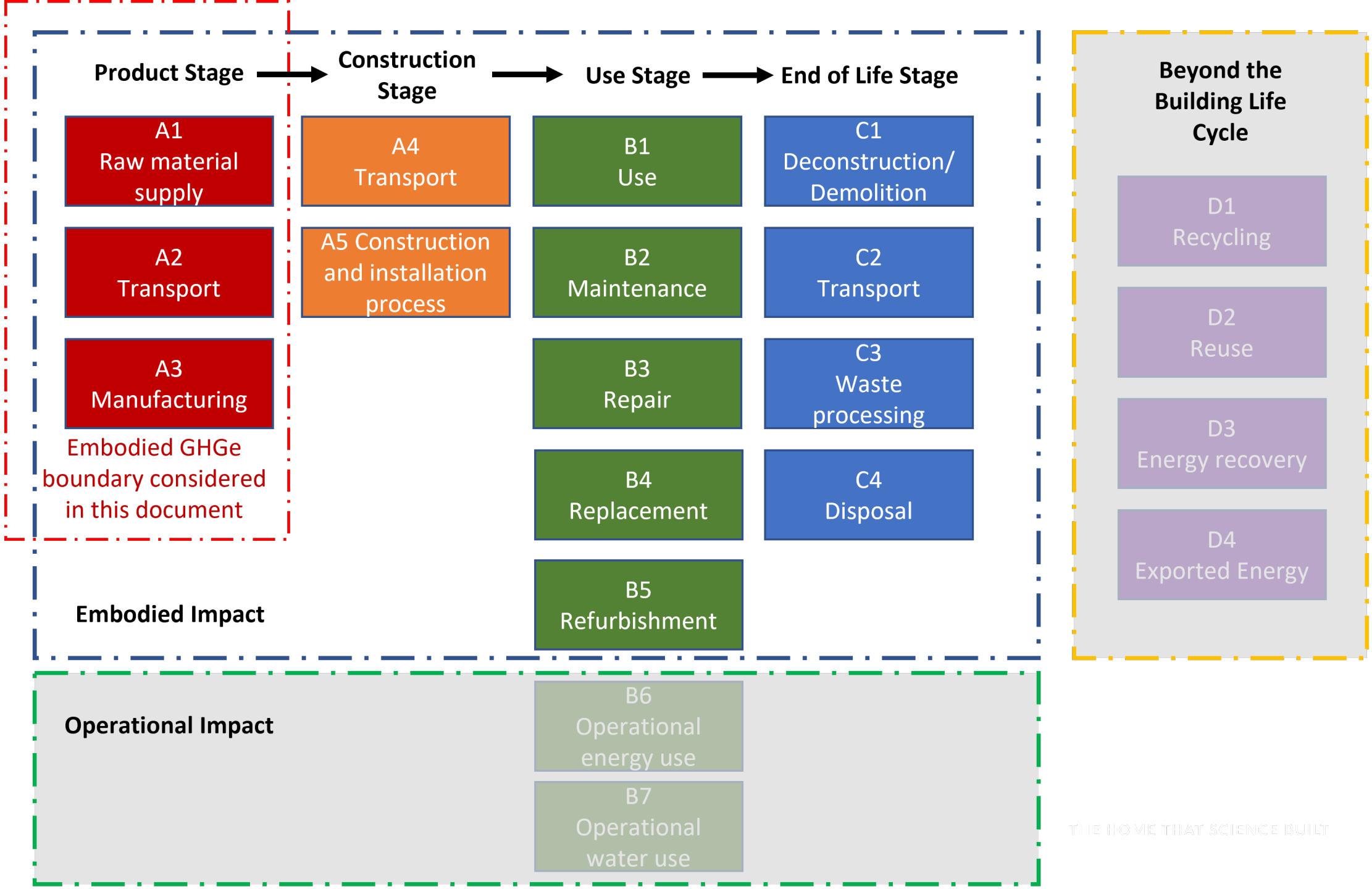
Funded by: Meta Interface® CBRE ARUP

Preparing for What's Ne

Tiered embodied GHG framework for the 2030 National Building Code

- Performance and Prescriptive options
- Most likely A1 to A3

https://cbhcc-cchcc.ca/en/phase-1-embodied-ghg-policy-positions/



Industry Observations

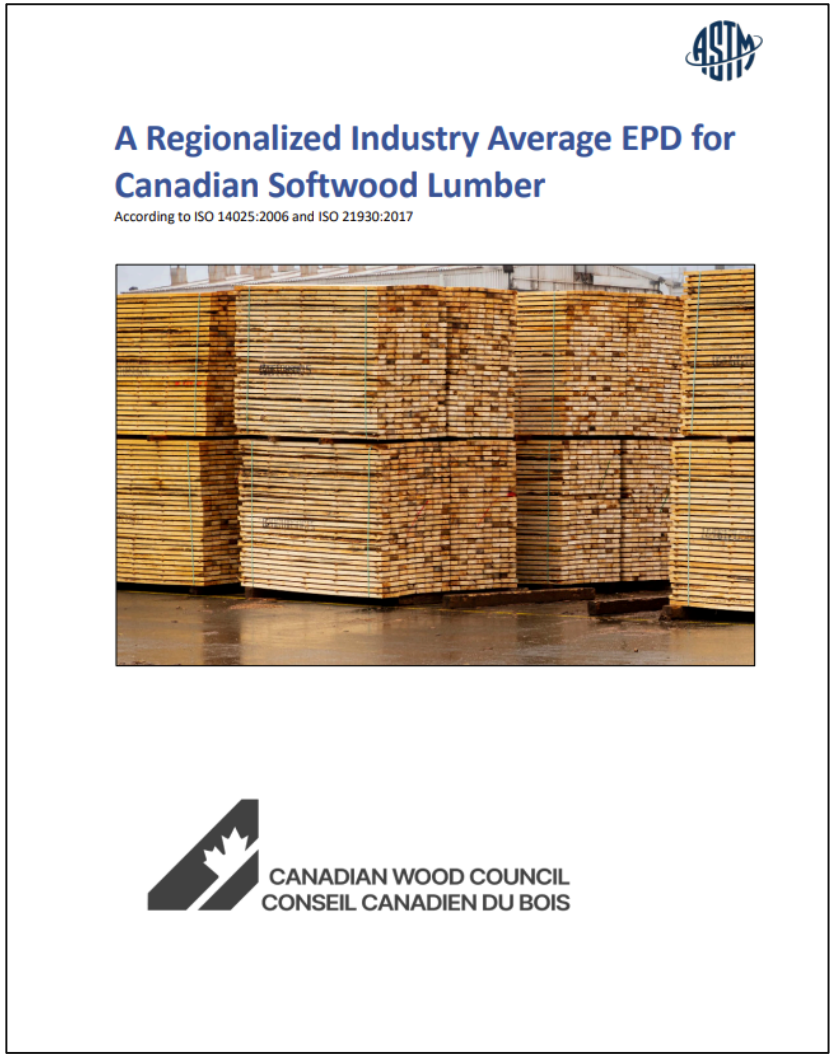
Manufacturer Involvement

- Many manufacturers have requested embodied carbon modeling of archetype homes with their products

Builder-Driven Change

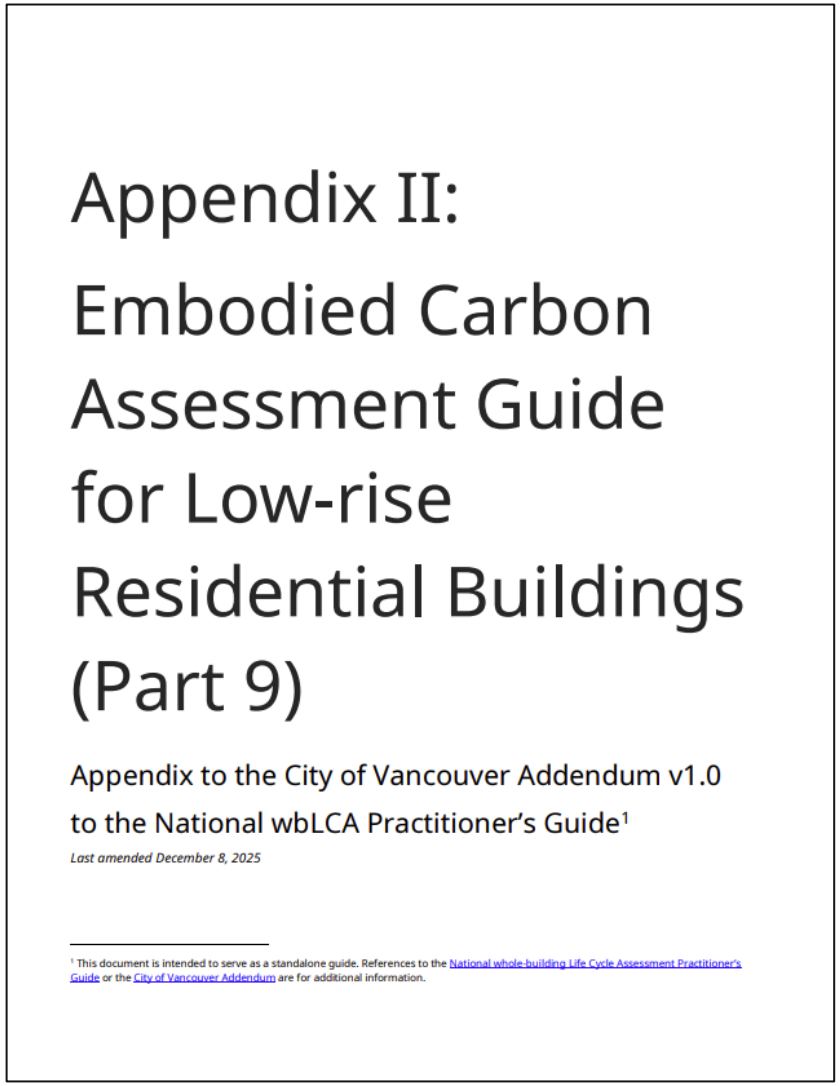
- Ask your manufacturers & suppliers for **Environmental Product Declarations (EPDs)**

- This creates demand!



Interest in Average Results

- City of Vancouver uses **200 kg CO_2e/m^2** of heated floor area as the A1 to A3 benchmark for embodied carbon in new Part 9 homes



Appendix II:

Embodied Carbon Assessment Guide for Low-rise Residential Buildings (Part 9)

Appendix to the City of Vancouver Addendum v1.0 to the National wbLCA Practitioner's Guide[1]

Last amended December 8, 2025

[1] This document is intended to serve as a standalone guide. References to the National whole-building Life Cycle Assessment Practitioner's Guide or the City of Vancouver Addendum are for additional information.

Interest in Average Results

Massachusetts 100-Home Embodied Carbon Study

Average Results	Vancouver (13 homes)	Nelson BC (34 homes)	Toronto (503 homes)	Mass. (100 homes)
ECE (tonnes CO_2e)	43.0	28.8	39.3	46.1
ECI (kg CO_2e/m^2)	193	150	191	185

*MEP is excluded

Sustainability reporting → 3rd party

Reviews inputs & outputs of:

Q&A