



RESNET® Standard 1550: Calculating the “missing emissions from homes

RESNET Webinar
December 10, 2024

Draft PDS-01 **Standard RESNET C1550**

Standard for Calculating and Reporting the Embodied Carbon of Buildings with
Dwelling and Sleeping Units

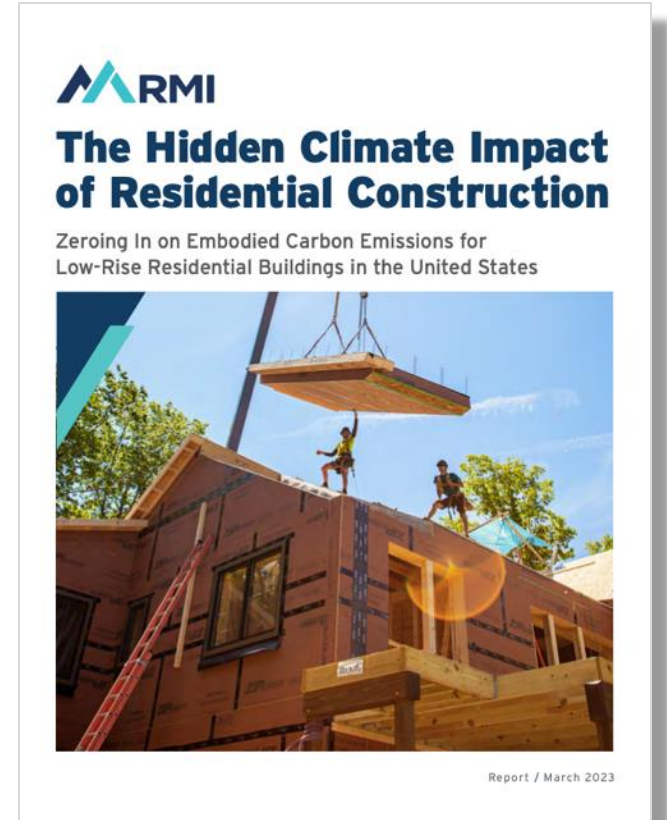
Why should we care about embodied carbon?

Initial studies of ~1,000 new homes

lb CO₂e / ft²

45

**avg. single
family house**



<https://rmi.org/insight/hidden-climate-impact-of-residential-construction/>

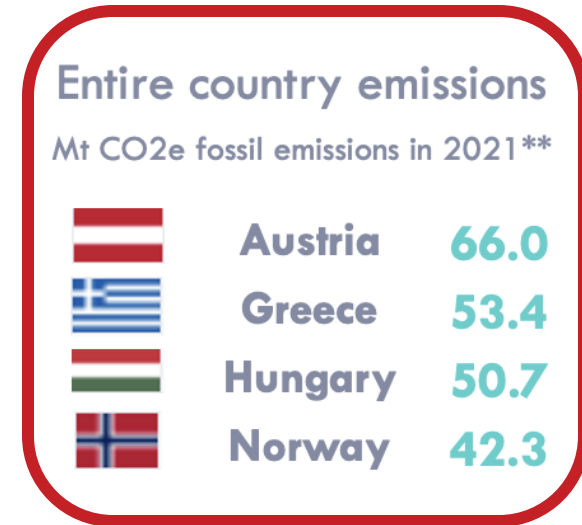
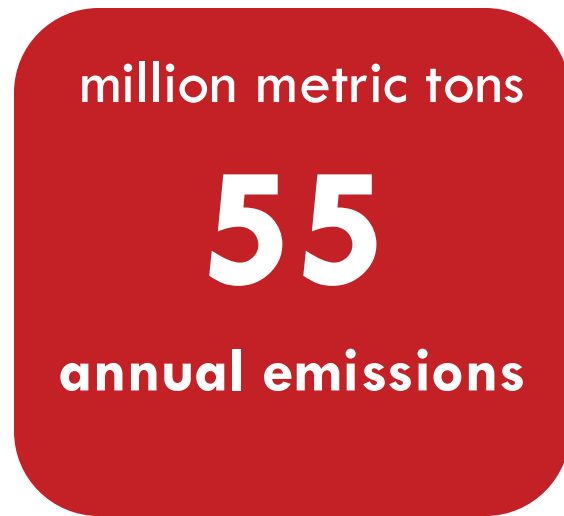
Why should we care about embodied carbon?

Initial studies of ~1,000 new homes



Why should we care about embodied carbon?

Extent of emissions from annual new home construction:



This will increase significantly if new home construction ramps up.

Forthcoming regulations

Federal



DECARBONIZING THE U.S. ECONOMY BY 2050
A National Blueprint for the Buildings Sector
April 2024

STRATEGIC OBJECTIVES



Minimize embodied life cycle emissions
Reduce embodied emissions from building materials and construction 90% by 2050 vs. 2005

Corporate Scope 3

Scope 3 reporting requirements

States

with regulations or proposals:

California
Massachusetts
Vermont

Colorado
Washington
Oregon

Codes

with embodied carbon proposals/committees:

IBC
IRC
IECC

RESNET ecosystem



RESNET ecosystem



leverage existing modeling data



Standard 1550 technical group

Exploring topics in five subgroups

MATERIALS

What material categories are included?

What cutoffs to use in each category?

Standards for area-based material takeoffs

LCA STAGES

Material production?

All up-front emissions?

Full life cycle?

Future emissions factors?

DATA SOURCES

As-designed and as-built pathways?

Allowable data for each material category & life cycle stage

HERS WORKFLOW

Align with HERS modeling workflow

Identify gaps & solutions

Verification

STRATEGY

Alignment with other developing standards

Integration with other programs

Education & uptake

RESNET Standard 1550

Purpose & Scope:

“ 1. Purpose

The provisions of this document establish a methodology for **quantifying and reporting embodied greenhouse gas emissions** associated with building products using data commonly gathered by energy raters and according to the system boundary and data sources defined in Section 5.

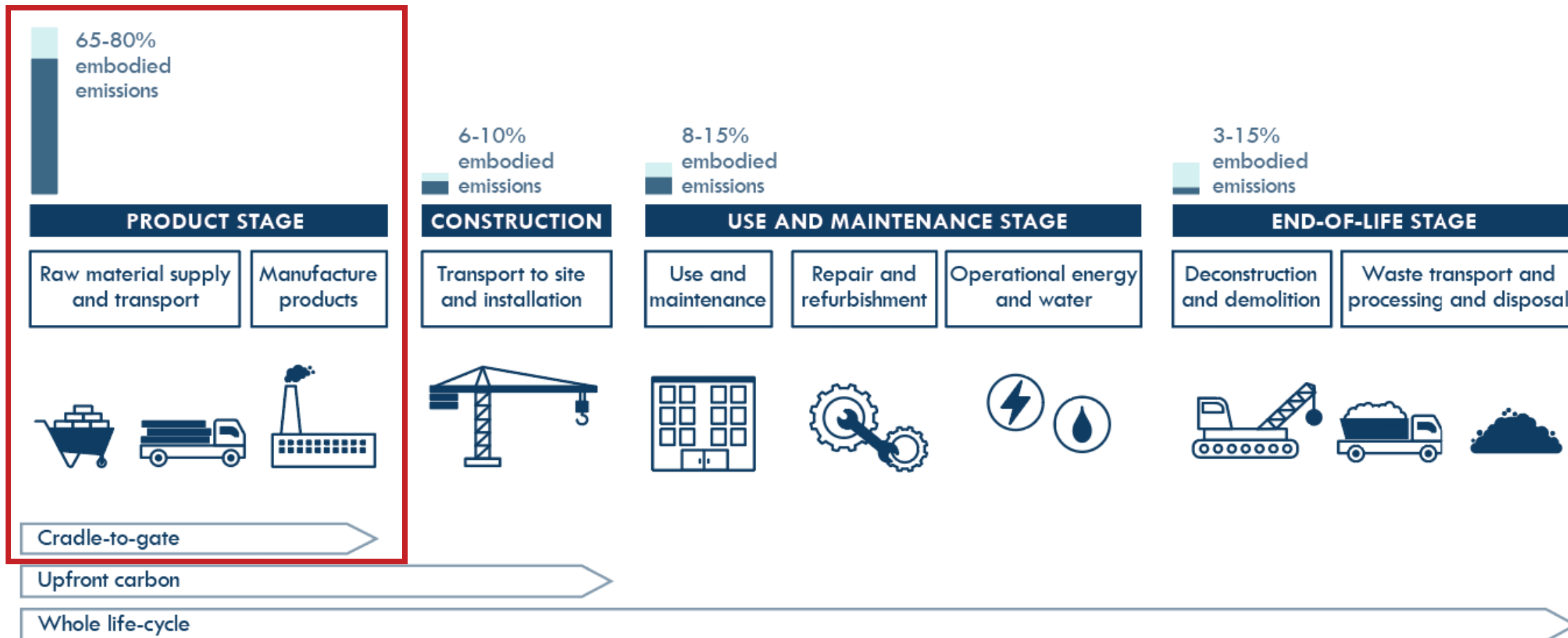
2. Scope

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.**

This standard shall not be used to circumvent any safety, health, or environmental requirements. ”

Life cycle stages A1-A3:



Basic embodied carbon math

Material
quantity



Emission
factor



Product
emissions

kg CO₂e

per life cycle
phase



From HERS models

- Area-based takeoffs



From EPDs or other
approved data source

Basic embodied carbon math

Material
quantity



Emission
factor



Product
emissions

kg CO₂e

per life cycle
phase



From HERS models

- Area-based takeoffs



TABLE 10.1.1

provides takeoff calculations



From EPDs or other
approved data source



TABLE 5.3.2

provides data hierarchy

Estimating material carbon emissions

Emission data sources



EPD – Product Impacts	
Declared Unit: 1 m ³	
Construction Material	
Amount per Unit	
Global Warming Potential	450 kgCO ₂ e
Emitted	475 kgCO ₂ e
Sequestered	-25 kgCO ₂ e
Ozone Depletion	0.00 kgCFC11e
Acidification Potential	3.01 kgSO ₂ e
Eutrophication Potential	0.15 kgNe
Smog Formation	0.63 kgO ₃ e
Primary Energy Demand	3020 MJ
Non-renewable	3045 MJ
Renewable	25 MJ

An **Environmental Product Declaration (EPD)** "quantifies environmental information on the life cycle of a product to enable comparisons between products fulfilling the same function."

The EPD methodology follows ISO series 14040 requirements.

Reports in kg CO₂e.

Building product categories

Taking a “drip-line in” approach

Table 5.4.1 lists inclusions

Table 10.4.1 lists exclusions

- Site work
- Driveways/hardscape
- Balconies/porches/decks
- Formwork
- Appliances
- Cabinetry/millwork
- Gutters/soffit/fascia
- Fasteners/connectors
- Controls/valves
- Light fixtures



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.

Verification

Following HERS verification method

Verification

A *Certified Rater* shall complete all the tasks and gather all the required verification documents specified in Table 10.3.1.

If inspection of the *assessed home* and/or verification documents results in variations from the *construction documents* used for calculations, all variations must be documented, and all required changes made to the dimensions and/or product selection used for the *embodied carbon* assessment. The assessment calculations must be repeated using verified dimensions and/or products according to Sections 5.3.2 and 6 before a *Confirmed Assessment* report is issued.

Verification

Following HERS verification method

Verification procedure

- Measure & verify dimensions
- Determine & record sizes, specifications & brands
- Record with photos, receipts or other documents

Software

Following HERS software verification method



Software representatives

- Active participants in working groups
- Monitoring progress of standard
- Lag time between standard release and software availability

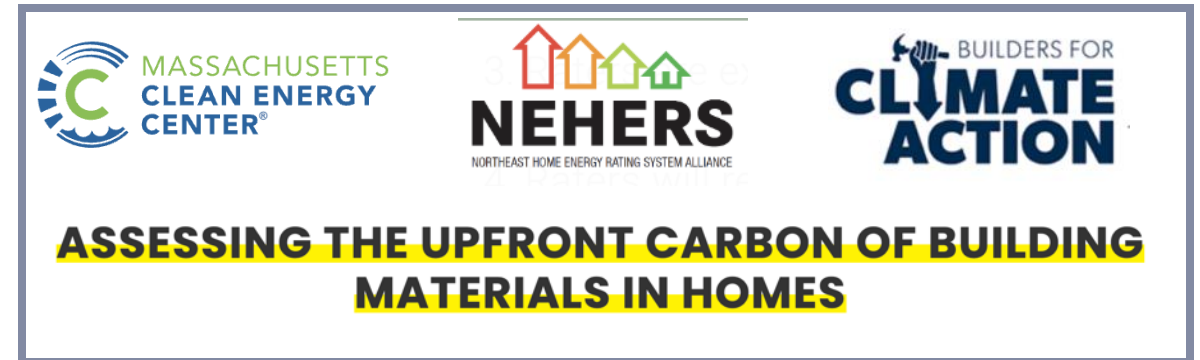
Software

Following HERS software verification method



Software connectivity

- Prototype of connectivity between HERS and embodied carbon software in MA



<https://www.masscec.com/resources/assessing-upfront-carbon-building-materials-homes>

Training & certification

Following HERS software verification method



Training & certification programs

- Entering development
- Timed to be available in conjunction with publication of standard

Public comment period

Open until January 21, 2025

<https://www.resnet.us/about/standards/minhers/draft-pds-01-resnet-1550-embodied-carbon/>

Draft PDS-01 RESNET 1550, Embodied Carbon (Comment opens November 22, 2024)

RESNET® releases draft PDS-01 of RESNET 1550, Embodied Carbon, for public review and comment. The standard provides a consistent methodology for the calculation and reporting of the embodied carbon of dwelling and sleeping units. The standard defines the scope for calculating embodied carbon and a methodology for conducting the calculations that uses the same modeling data and processes and reporting employed by standard ANSI/RESNET/ICC 301.

Comments will be accepted only on text in draft PDS-01 shown by strike-through and underline and **in red print**. To review and comment on the Draft follow the links below. The public comment period begins **November 22, 2024**, and ends **January 21, 2025**.

Comments are posted and you will be able to review comments by clicking on "VIEW COMMENTS HERE" below.

To submit your comments and view the draft Standard, click on "SUBMIT COMMENTS and REVIEW DRAFT HERE" below.

All comments are posted on the website for review.

– SUBMIT COMMENTS & VIEW DRAFT HERE

To review the draft click on [Draft PDS-01 RESNET 1550, Embodied Carbon](#)