



Embodied Carbon Reporting Requirements USGBC Carbon Experts Forum

Hanjiro Ambrose, PhD | CARB

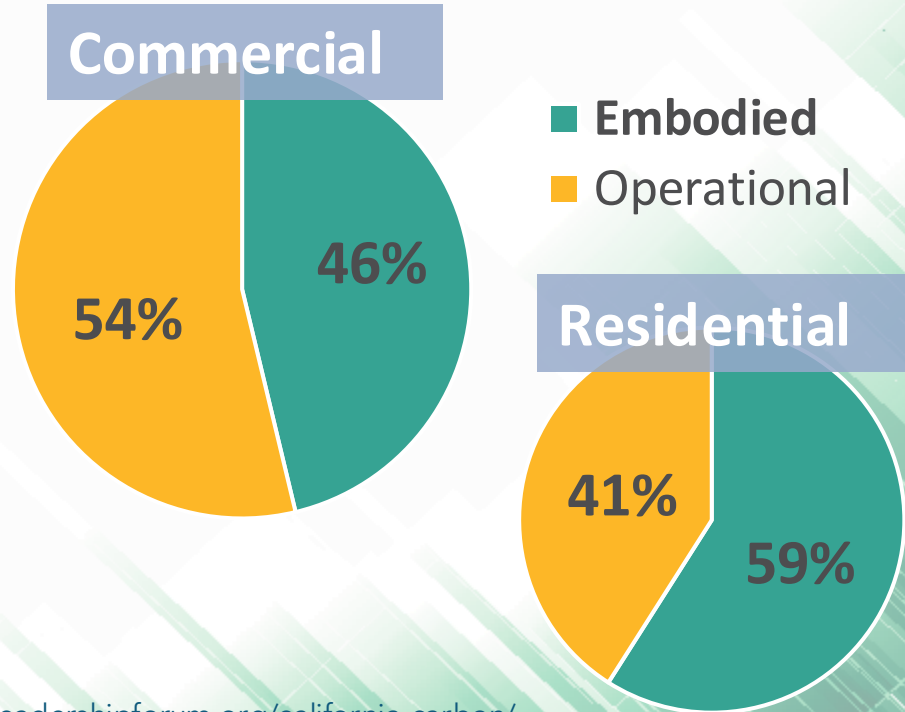
California's Climate Policy Portfolio

Mix of Regulations, Incentives, and Carbon Pricing

- **Economy-wide carbon price funding further GHG reductions:** Cap-and-Trade
- **Reduce carbon-intensity of transportation fuels:** Low Carbon Fuel Standard
- **Renewable energy requirements for utilities:** Renewables Portfolio Standard
- **Zero-emission new vehicle sale targets:** Advanced Clean Cars, Advanced Clean Trucks
- **Building energy efficiency and electrification:** Energy Code and Green Building Standards
- **Reduce short-lived climate pollutants:** Oil and Gas, HFC, and Landfill Methane Regulations
- Develop **State Strategies** for natural and working lands, cement decarbonization, carbon-capture and sequestration, and low-carbon hydrogen development

Embodied Carbon is Critical

- As operational emissions go down, embodied carbon (EC) becomes increasingly important
- Over half of the carbon footprint of new buildings in California is attributable to embodied carbon



AB 2446 and AB 43

Statutory Requirements and Dates

By December 31, 2026

Adopt a framework for measuring the average carbon intensity of materials used in the construction of new buildings

By December 31, 2028

Develop a strategy to achieve a 40% net reduction in greenhouse gas emissions of building materials

By December 31, 2035

Achieve 40% net greenhouse gas reduction target

Related Policies and Statutes

Buy Clean California Act (2017)

- Requires submittal of Environmental Product Declaration (EPD) data for eligible materials/products - Established GWP limits for four materials

CALGreen Embodied Carbon Requirements (2024)

- Whole-building life cycle assessment requirements for large non-residential and school buildings starting July 2024 - requires a 10% reduction in GWP or meet alternative compliance paths

SB 596

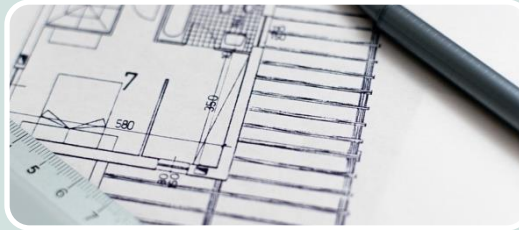
- Directs CARB to develop a strategy to achieve net-zero emissions for cement used within the state by 2045

What Drives Emissions from Buildings?



Materials

Energy and non-energy related emissions from extraction, refining, manufacturing, transport, use, and disposal of building materials



Design

Building design influences the types and quantity of building materials used, as well as operational energy requirements

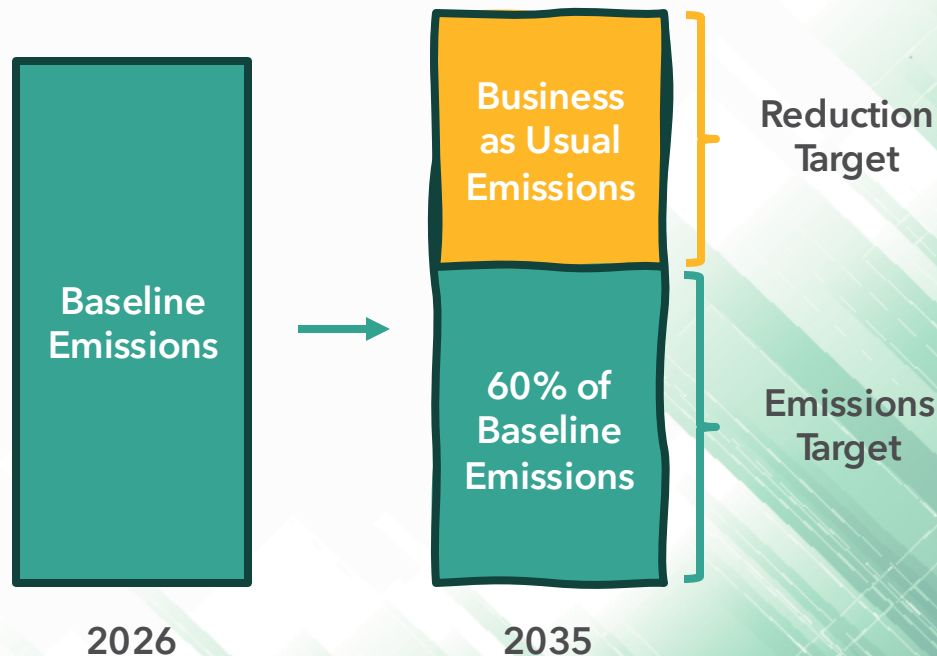


Location

Building site impacts material availability, operational energy needs, travel behavior, land-use, and construction processes

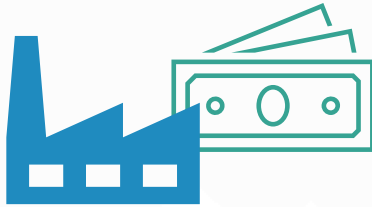
What is the Emissions Baseline and How is it Used?

- A tool to guide planning
- A snapshot of building sector emissions in 2026 by sector and material
- Estimates the magnitude of the emissions reduction target
- Informs reporting priorities and reduction strategies



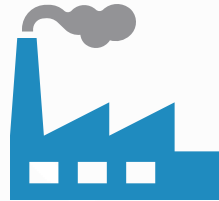
Staff Proposal for Baseline Estimation

- Economy-wide data is used to assess overall production and use of materials
- Emissions are allocated to each sector based on sector-specific emissions inventories.



**California Building Sector
Economic Demand (\$)**

X



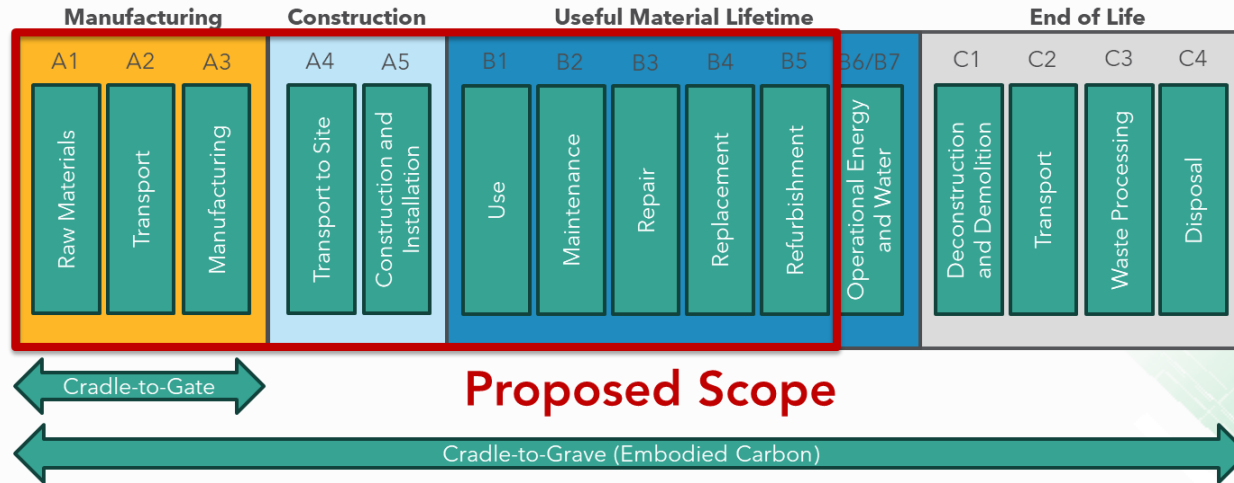
**Emissions per Economic
Output (CO₂e/\$)**

=



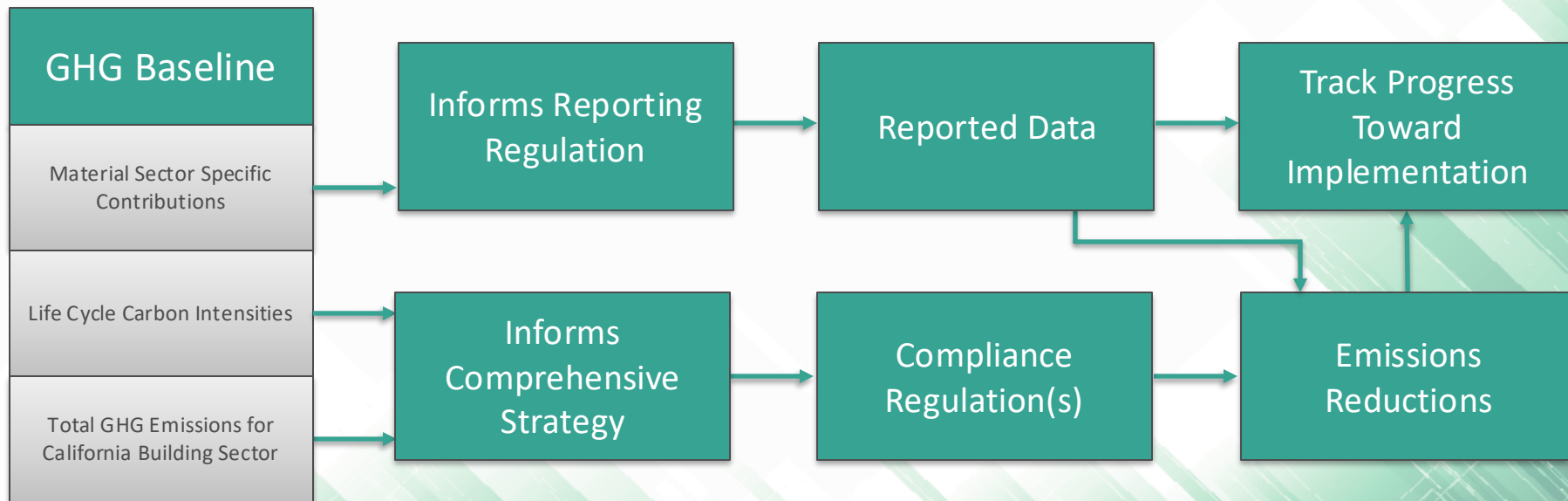
**California Building Sector
Emissions (CO₂e)**

Workshop Recap: LCA Scope for the “Baseline”



- In life cycle analyses (LCA), **embodied carbon** is the total greenhouse gas (GHG) emissions associated with a material, product, or building
- **Cradle-to-Gate** and **Cradle-to-Grave** are two common scopes for embodied carbon LCAs
- Staff are proposing including A1-B5 in the scope of the baseline

How does the baseline connect to CARB's next steps on developing an Embodied Carbon Reporting Regulation?



Statutory Requirements: Materials

- **HSC §38561.3 (c)(2):** “A requirement for the submission by the **manufacturer of a building material** of an Environmental Product Declaration [...] or similarly robust material life-cycle assessment approaches that have uniform standards in data collection consistent with ISO Standard 14025”
- **HSC §38561.3 (j):** “This section **does not apply to appliances**”

Who Reports?

- **Initial Staff Thinking:** Any firm which sells, supplies, offers for sale, or produces covered “building materials” for use in the State of California are subject to the requirement of **HSC §38561.3 (c)(2)** hereafter “building material manufacturers”
- **Potential Exemptions:** Building material manufacturers are exempt from reporting if they meet certain requirements:
 - Manufacturers under minimum annual revenue thresholds
 - Manufacturers that produce only appliances, as defined by CA 2021 Appliance Efficiency Regulations (Title 20, Part 6§1601)

Concepts for Phase-in of Manufacturer Reporting

- Manufacturing Sector Reporting (Required in 2026)*:
 - Cement and concrete
 - Iron, steel, and ferroalloy products
 - Glass and glass products
 - Asphalt pavement and shingles
 - Insulation
 - Wood and wood products
- Phased-in Manufacturing Sector Reporting (Required starting in 2028):
 - Aluminum
 - Clay and ceramics
 - Lime and gypsum products
 - Additional sectors not currently part of state or federal buy clean programs

Challenges with Environmental Product Declarations (EPD)

Currently available EPDs present the following **comparability, consistency, and data quality issues**:

- Many building materials currently lack EPDs
- Limited LCA data transparency
- Opaque data verification standards
- Bundled environmental attribute concerns (e.g., voluntary offsets)
- System boundaries may vary by Product Category Rules (PCR)
- Inconsistent or outdated data periods
- No unified emissions factor database

Statutory Requirements: Projects

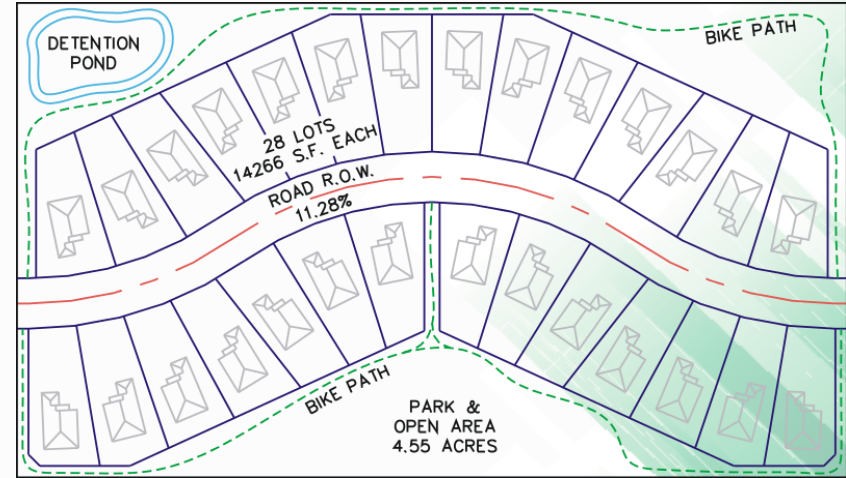
- **HSC §38561.3 (c)(1):** “A requirement for the submission by an entity undertaking the construction of a project with a minimum size of five new residential units or 10,000 square feet of nonresidential building space of **a life-cycle assessment**, as defined in the International Organization for Standardization (ISO) 14040 series of standards with a focus on the Product Stage phases (A1-A3), to determine the **carbon intensity** of the materials used in new residential and nonresidential buildings.”
- **HSC §38561.3 (i)(1):** “For buildings covered by this section, the incorporation of lower carbon materials shall be limited or excluded to the extent that it has a cost impact or is unfeasible.”

Concepts for Covered Project Reporting

- All covered projects meet **“Basic Reporting”** requirements within one year of issuance of a building permit
 - CARB estimates a default carbon intensity for the covered projects using “basic reporting” information and standardized, conservative emissions factors
 - Default covered project carbon intensity may be replaced by verified “WBLCA Reporting” data
- Whole Building LCA Reporting (**“WBLCA Reporting”**) will begin with larger projects, with requirements expanding over time

Which Residential Projects Report?

- **HSC §38561.3 (c)(1):** "A requirement for the submission by an entity undertaking the construction of a project with a minimum size of five new residential units [...] of a life-cycle assessment"
- **Initial Staff Thinking:** A project, per this statute, is the construction of five or more residential units by the same project owner within a single building or single land subdivision map submitted pursuant to California Gov. Code § 66426



Covered Project Example: Subdivision with >5 Residential Units

Retrieved from: <https://californialanddevelopment.com/blog-posts/whats-a-tentative-map-and-why-does-it-matter/>

Which Non-Residential Projects Report?

- **HSC §38561.3 (c)(1):** “A requirement for the submission by an entity undertaking the construction of a project with a minimum size of [...] 10,000 square feet of nonresidential building space of a life-cycle assessment”
- **Initial Staff Thinking:** “Nonresidential building space” includes all buildings and structures listed in the 2022 California Building Code, Title 24, Part 2, Section 302 “Occupancy Classification and Use Designation,” except for Residential Group R

Proposed Embodied Carbon Reporting Requirements



Manufacturers & First Handlers of Building Materials

- Production Quantity, Cost Data, EPDs and Background Data
- HSC §38561.3 (c)(2), HSC §38561.3(i)



Property Owners

- Project Information, Quantity of Materials, Construction Data
- HSC §38561.3 (c)(1)

Timeline and Key Milestones

Adopt Reporting Framework by December 31, 2026

2025

Workshop

Draft Reporting
Templates

Draft Baseline
Methodology

Technical
Meetings

2026

Final
Workshop

May Board
Hearing

Draft Reporting
Regulation

2027

Reporting
Regulation
In Effect

Develop Comprehensive Strategy by December 31, 2028

Achieve a 40% Reduction in Net GHG Emissions by December 31, 2035

Contact Us

Hanjiro Ambrose, PhD

Embodied Carbon Policy Development

Hanjiro.ambrose@arb.ca.gov

CARB Embodied Carbon Program

embodiedcarbon@arb.ca.gov

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