



Covered Projects Reporting (Afternoon Session)

Technical Meeting
October 30, 2025

Meeting Goals

- Share updated concepts from California Air Resources Board (CARB) staff on development of embodied carbon reporting requirements for covered new construction projects pursuant to Assembly Bills 2446/43.
- Receive feedback on proposed reporting requirements, documents, and reporting tools.
- Invite technical input from subject matter experts on data collection methods, alignment with existing reporting requirements, and opportunities for improvement.

Technical Meeting Agenda

Covered Projects Reporting

I. Previous Public Engagements

- Program Timeline
- Summary of Prior Workshops, Meetings, Voluntary Surveys
- Baseline Estimation Recap

II. Background

- Statutory Requirements
- Related Programs

III. Proposed Reporting Requirements

- Regulated Reporting Entities and Reporting Timeline
- Basic Reporting
- Whole Building Life Cycle Assessment (WBLCA) Reporting

IV. Project Reporting Tool

V. Open Discussion and Feedback

Embodied Carbon Program

I. Previous Public Engagements

Assembly Bills (AB) 2446 and 43

Codified in Health and Safety Code (HSC) sections [38561.3](#) and [38561.6](#)

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

Health and Safety Code (HSC) Requirements

Covered Projects and Building Materials Reporting

- **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** [...] to determine the **carbon intensity** of the materials used in new residential and nonresidential buildings”
- **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**”
- **HSC § 38561.3 (i)(5)**: “Manufacturers of building materials shall be required to report data to the state board to ensure that their products comply with applicable reduction targets in accordance with reporting and compliance requirements that will be established by the state board”

Public Engagements

Kick-Off Workshop

September 2024

- Introduced building embodied carbon concepts
- Presented initial thinking on framework development, statutory requirements of a potential reporting system, and the program timeline.
- Discussed alignment with existing policies, including building code (CALGreen) and Buy Clean California

Reporting & Baseline Workshop

March 2025

- Presented initial thinking on covered projects, reporting entities, and potential exemptions
- Introduced concepts for project reporting
- Define scope of LCA to life cycle stages A1-C4, including operational energy

Baseline Technical Meeting

September 2025

- Discussed staff baseline concepts
- Released draft staff baseline methodology
- Released draft baseline assessment tool

Building Materials Technical Meeting

Today's Morning Session

Embodied Carbon Industry Surveys

Information Sharing for Quantifying Embodied Carbon in Covered Projects
(Owners/Builders/Developers)

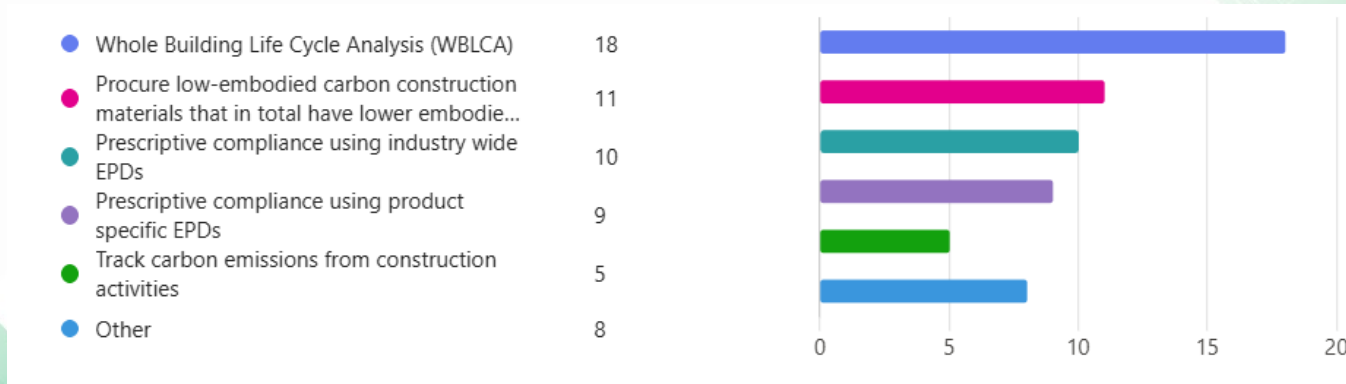
- Published on the Building Embodied Carbon (BEC) web page in December 2024
- 29 surveys were returned
- Received surveys from architects, designers, residential and commercial contractors, sustainability consultants, structural engineers, and CALGreen verifiers

[Take the Survey!](#)

CARB is interested in Bill of Quantities (BOQ) data and Life Cycle Assessment (LCA) results for your building projects.

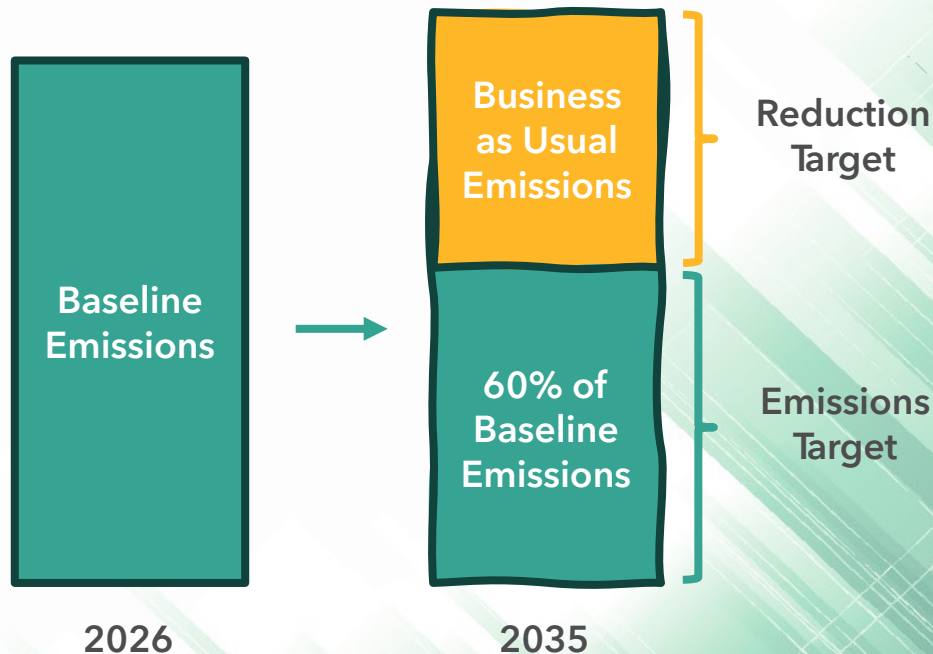
Key Takeaways from Covered Projects Survey

- Over 90% of respondents are familiar with EPDs, and the majority say they procure and select materials with EPDs
- Most respondents (83%) track or report project embodied carbon emissions
 - Programs they report to include CalGreen, Buy Clean California, Leadership in Energy and Environmental Design (LEED), International Living Future Institute (ILFI) Certification



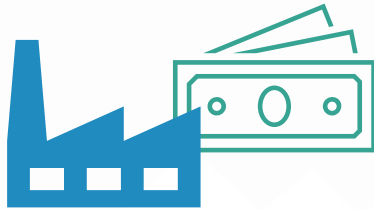
What is the Emissions Baseline and How is it Used?

- 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



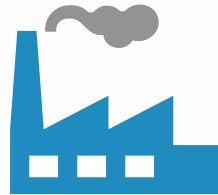
Recap: Staff Proposal for Baseline Estimation

- Baseline emissions would be determined using economic allocation methodology, which distributes emissions based on market value rather than material quantity and carbon intensity
- The economic allocation method uses economy-wide, commodity-based data, classified by North American Industry Classification System (NAICS) codes, to apportion greenhouse gas (GHG) emissions based on their relative market value
- Emissions are allocated using sector-specific emissions inventories



California Building Material
Economic Demand (\$)

X



Emissions per Economic
Output (MT CO₂e/\$)

=



California Building
Material Emissions
(MT CO₂e)

Recap: Reporting Concepts



Manufacturers & Importers of Building Materials

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



Covered Projects (Project Owners)

- General Project and Building information, Materials - Quantity, Suppliers and Cost
- Whole Building Life Cycle Assessment (WBLCA) for larger non-residential projects
- HSC § 38561.3 (c)(1)

Covered Projects Reporting

II. Background

Related Programs

Covered Projects Reporting

Buy Clean California Act (AB 262 - Bonta, 2017)

Sets GWP limits and Environmental Product Declarations (EPD) requirements for structural steel, rebar, flat glass, and insulation for state construction projects.

CALGreen Life Cycle Assessment Requirements (Title 24, Part 11, Section 5.409)

Mandates embodied carbon reductions for large non-residential and school buildings; compliance options include whole-building LCA, building reuse, or a prescriptive approach.

California Energy Commission Building Energy Efficiency Standards (Title 24, Part 6)

Mandatory operational energy performance and prescriptive building standards.

Statutory Requirements

Covered Projects Reporting

HSC § 38561.3 (c)(1) describes the submission of a life cycle assessment by the entity undertaking the construction of a project subject to this regulation (referred to as a covered project).

“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.**”

Covered Projects Reporting

III. Proposed Covered Projects Reporting Requirements

Reporting Entities and Reporting Timeline

Covered Projects Reporting

Who is the reporting entity for a covered project?

- The property owner holds all legal responsibility for all reporting (in statute)
- Reporting responsibilities may be delegated to a third party of their choice however; the property owner retains responsibility for the requirements

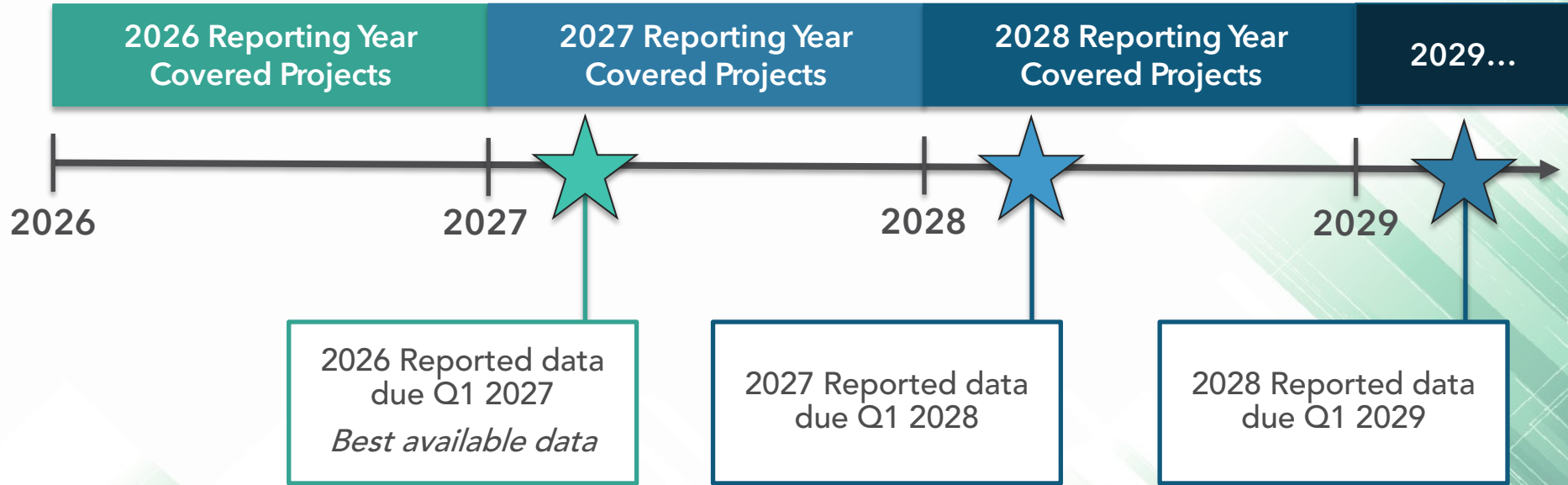
What should the timeline for reporting be?

- Covered projects report within one year of issuance of a building permit.

Staff is seeking additional feedback on the appropriate timeline for reporting.

Example Reporting Timeline

Covered Projects Reporting



Concepts for Covered Project Reporting

Basic Reporting

- All covered projects report general project information, including building sizes, occupancy types, location, materials quantities, construction costs, and structural systems for all buildings within a project
- Projects may utilize CARB defined default carbon intensity (CI) values

Whole Building Life Cycle Assessment (WBLCA) Reporting

- A Whole Building Life Cycle Assessment (WBLCA) is required for larger non-residential projects subject to CALGreen Title 24, Chapter 5, Section 5.409 (Life Cycle Assessment)
- CARB will propose standards for WBLCA reporting which would be phased in over time. WBLCA reporting would be in addition to the Basic Reporting requirement

III. Proposed Covered Projects Reporting Requirements

Basic Reporting

Basic Reporting - Who Reports?

All Covered Projects would be required to meet Basic Reporting requirements

Which Residential Projects Report?

- Any 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

Which Non-Residential Projects Report?

- Any project, with the exception of those in Residential Group R, containing structures with a **combined area of at least 10,000 sq. ft.** as described by the 2022 California Building Code, Title 24, Part 2, Section 302 "Occupancy Classification and Use Designation"

Proposed Exemptions

Covered Project Reporting

Proposed exemptions to reporting requirements for covered projects:

- Military buildings
- Hospitals
- Targeted exemptions related to rebuilds due to natural disaster accompanying issuance of permitting exemptions by the Governor and/or at the discretion of the Executive Officer

What types of data should be reported?

Basic Reporting

- **Project information:** Location, area calculations, cost, schedule, etc.
- **Building information:** Construction type, occupancy classification, structural system, etc.
- **Bill of Quantities:** Material quantities, associated costs, suppliers, and associated building element(s)

Project information

Basic Reporting

Purpose: Identifies relevant reporting parties and basic project information

Category of Data Fields	Objective
Project Reporter Property Owner Project Team	Collect contact information for entities providing reporting data
Project and Site Data	Specify project location, site area, scope and timeline
Project Costs	Identify total project cost and source of cost estimate

Building Information

Basic Reporting

Purpose: Distinguish between multiple buildings within a project site, collect data on specific building construction type, occupancy classification (per Title 24), floor area calculations and information about the structural system

Category of Data Fields	Objective
Basic Information	Name, construction completion date and phase of development
Building Type	Occupancy classification and number of residential units
Building Size	Various area calculations for the building, height, number of stories, enclosed parking area, etc.
Refrigerants	System type, refrigerant type, and refrigerant charge
Structural System	Primary horizontal and vertical gravity systems, primary lateral system and risk categories such as wildfire, seismic, wind, etc.

Bill of Quantities (BOQ) (1 of 4)

Basic Reporting

Purpose:

- To calculate carbon intensities per statute: “to determine the carbon intensity of the materials used”, and to evaluate cost impacts of the regulation
- Entities report details about the materials used in the projects; primarily **their quantity, supplier, and associated product costs**

Material Quantity Data Sources: The material quantity data can be sourced from either of the following:

- **As-Designed data:** A covered project may use modeled information in accordance with the construction documents
- **As-Built data:** The BOQ may be established using measured quantities of materials in accordance with shop drawings, as-built documentation, record documents, supplemental records, or through on-site measurement of material quantity or a combination of both

Bill of Quantities (BOQ) (2 of 4)

Basic Reporting

Building Elements: The Bill of Quantities (BOQ) must include all elements of the project, including:

- **Substructure** - Foundation, Subgrade enclosures, Slabs-on-grade
- **Shell: Superstructure** - Floors, Roof, Stairs
- **Shell: Enclosure** - Exterior vertical and horizontal enclosures
- **Interior Construction** - Interior Partitions, Interior Windows and Doors, Interior Grilles and Gates, Raised Floor Construction, Suspended Ceiling Construction, Interior Specialties
- **Interior Finishes** - Wall Finishes, Interior Fabrications, Flooring, Stair Finishes, Ceiling Finishes,
- **Equipment and Furnishings**
- **Sitework** - Site Preparation, Site Improvements, Liquid and Gas Site Utilities, Electrical Site Improvements, Site Communications
- **Services** - Conveying, Plumbing, Electrical, Heating, Ventilation, and Air Conditioning (HVAC), Fire Protection, Communications, Electronic Safety and Security, Integrated Automation

Bill of Quantities (BOQ) (3 of 4)

Basic Reporting

Recordkeeping Requirements

- Maintain records of product source disclosures for all regulated materials used in the construction of each project.
- These disclosures must be made available upon request by the Executive Officer.
- Aligns with product source disclosure requirements that apply to importers and manufacturers of building materials in California, as discussed in the Manufacturer Reporting Requirements

Bill of Quantities (BOQ) (4 of 4)

Basic Reporting

Category of Data Fields	Objective
Material Name Supplier Name Manufacturer Location Quantity and Unit Purchase Price (material cost) Building Element Installation Location: building associated with installed material	• BOQ collects data on all building materials used by the project to determine their CIs • Projects associate materials in BOQ with the building elements that it is used for and the building within the project • Default carbon intensities (CI) are generated by CARB from the USEEIO model and linked to building element classifications

III. Covered Projects Reporting Requirements

Whole Building Life Cycle Assessment (WBLCA) Reporting

Purpose of the Whole Building Life Cycle Assessment (WBLCA)

- **Informing building design:** The preparation of and results from the WBLCA should be used to inform decision-making during the design phase of a building project to reduce the life cycle greenhouse gas emissions associated with the building.
- **Meeting reporting requirements:** WBLCA's reported to CARB shall report consistent and comparable results which can support accurate tracking of emissions towards regulatory targets outlined by the statute.
- **Assessing trade-offs in embodied and operational emissions:** The WBLCA should be used to assess any potential tradeoffs and inform decisions related to decarbonizing the building over its lifetime.

WBLCA Reporting - Who Reports?

All Covered Projects would be required to meet Basic Reporting requirements, while larger, non-residential projects would also report WBLCA results.

Projects with more than 50,000 square feet of combined non-residential building space must report the results of a whole building life cycle assessment (WBLCA)

- The proposed threshold was calculated as the 80th percentile of square footage of non-residential buildings in the CIRB 2023 Building Permit Dataset.
- This threshold also aligns with the performance option of the mandatory CALGreen embodied carbon measures effective January 1, 2026 ([Section 5.409](#)).

Reporting Methodology (1 of 2)

WBLCA Reporting

Complete requirements and details on the life cycle assessment approach are documented for reporting entities in the posted materials.

WBLCA results shall have a data set compliant with ISO14044, ISO 21930, and additional proposed CARB requirements for EPDs, as well as conform to ISO 21931 and/or EN15978, California Green Building Code Section 5.409, in addition to CARB requirements.

The following standards may be consulted as the basis the WBLCA assessment:

- **ASTM E292-122** "Standard Practice for Minimum Criteria for Comparing Whole Building Life Cycle Assessments for Use with Building Codes, Standards, and Rating Systems"
- **National Research Council Canada** "National guidelines for whole-building life cycle assessment"
- **ASHRAE 240p** "Quantification of Life Cycle Greenhouse Gas Emissions of Buildings"
- **Royal Institution of Chartered Surveyors (RICS)** "Whole life carbon assessment for the built environment"

Reporting Methodology (2 of 2)

WBLCA Reporting

Staff recommends following the four phases of the LCA framework according to [ISO 14040:2006/Amd 1:2020](#) and [ISO 14044:2006/Amd 2:2020](#)

1. **Goal and scope definition:** Define the intended application, functional unit, system boundary, allocation procedures, LCIA methodology and types of impacts
2. **Life Cycle Inventory (LCI) Analysis:** Identify specific sources of Life Cycle Inventory (LCI) data
3. **Life Cycle Impact Assessment (LCIA):** Assign LCI results to the selected impact categories (classification); and calculate category indicator results (characterization)
4. **Life cycle interpretation:** Identify the significant issues; evaluate the completeness, sensitivity and consistency checks; and list conclusions, limitations, recommendations

Which Life Cycle Stages are included?

WBLCA Reporting

Staff proposes a cradle-to-grave system boundary for WBLCA (i.e. life cycle stages A1-C4), including user activities related to transportation (life cycle stage B8)

WBLCA shall include the following modules:

- A1-A3: Manufacturing: Emissions data for materials
- A4: Estimated transportation Emissions
- A5: Construction Emissions: Fuel usage on construction site
- B1-B5: Estimated useful material lifetime over reference study period
- B6 Operational Energy: Summary results from Title-24 Compliance Software
- B7: Estimated emissions from water use during building operation
- B8: Estimated user activities related to transportation
- C1-C4: Estimated emissions from waste flows

Concepts for Whole Building LCA Reporting

(1 of 3)

Normalization Unit: [*HSC § 38561.6 \(b\)\(2\)*](#) sets forth that “the [...] unit of measurement shall be Global Warming Potential (GWP) per gross square foot (kg CO₂e/sq. ft.²)”. Normalization of the GWP must be measured against each building’s gross floor area, as defined in Title 24

Functional Equivalency: Conform with the building occupancy classifications defined in the California Building Code, Title 24, Part 2 (Volumes 1 & 2) / Chapter 3 / Section 302 / 302.1

Reference Study Period (RSP): 60 years to fully account for maintenance and replacement

Concepts for Whole Building LCA Reporting

(2 of 3)

Impact Categories

- Must report the estimated global warming potential (GWP) expressed in carbon dioxide equivalent units (CO₂e)
- May include additional impact categories listed in the U.S. EPA's Tool for Reduction and Assessment of Chemicals and Other Environmental Impacts ([TRACI](#)) or to comply with existing voluntary standards

Verification

- Reported results should conform with verification requirements in ISO Standard 1930:2017 and Title 24, Chapter 11, Section 5.409

Concepts for Whole Building LCA Reporting

(3 of 3)

Use of Environmental Attributes:

When market-based accounting is used to estimate Global Warming Potential (for example, procurement of Renewable Energy Certificates – RECs or other market-based instruments), the primary results must also be reported without the included attributes.

Biogenic Carbon:

- Biogenic carbon is defined as the greenhouse gas emissions from natural processes by living organisms but not fossilized or derived from fossil resources.
- If biogenic carbon emissions are included in the WBLCA, it should be reported separately from fossil emissions. If biogenic carbon stored in building materials during the building's life is included in the impact results, the primary results must also be reported without stored carbon.

WBLCA Reporting: What to Report?

Initial Staff Thinking: Covered projects report

- **LCA assumptions and information:** Assessor information, software tool, Life Cycle Impact Assessment (LCIA) method, physical scope inclusions, other inclusions like refrigerants, verification process, etc.
- **LCA results:** Emissions by life cycle stage and building element
- **WBLCA Report:** Upload LCA report generated by software tool
- **All required fields for WBLCA Reporting will be submitted through the Reporting Tool**

Linking EPDs and Materials

WBLCA Reporting

Purpose: Use CARB-approved EPDs to report GWP (kgCO₂e) per Declared Unit for each building material in the WBLCA

Category of Data Fields	Objective
Environmental Product Data (as used in WBLCA)	
Material Carbon Intensity (CI) Data Source	Collects the environmental product data used for each material while conducting a WBLCA.
Carbon Leadership Forum (CLF) Data Category	
EPD Declaration Number	
Estimated Useful Life	
CI for each life cycle stage	

Staff concept: When CARB approved EPDs are not available, WBLCAs may report results using any currently available EPDs, provided results are also reported using CARB approved default material emissions factors. The requirement for use of CARB approved EPDs would be phased in over time.

Covered Projects Reporting

IV. Project Reporting Tool

Overview (1 of 2)

Project Reporting Tool

- The Project Reporting Tool estimates the greenhouse gas (GHG) emissions and carbon intensities (CI) of new building construction at the material, building and project levels.
- Results are calculated based on submitted project information, building characteristics, material quantities, cost estimates, and reference data.

This version of the Project Reporting Tool contains a complete set of project reporting data fields.

The datasets used for carbon intensity (CI) and GHG emissions calculation are still under development and are included for preliminary feedback.

Overview (2 of 2)

Project Reporting Tool

- **Basic Reporting** worksheets collect project information and BOQ data to assign material carbon intensities (CI) and to calculate project GHG emissions.
- Additional project data may be entered in **Whole Building Life Cycle Assessment Reporting** worksheets for projects required to submit WBLCA.
- The **Calculations and Results** worksheets display GHG emissions and CI results for individual buildings and at the project level. This also includes detailed breakdowns by building element and lifecycle stage.
- Additional worksheets contain **external data calculations**, **external datasets**, **data crosswalks**, and other **miscellaneous** items.

Options for Estimating Material Emissions

Project Reporting Tool

Building materials listed in the Bill of Quantities (BOQ) may be linked to any of the following sources of emissions data for the purpose of comparison:

- **Product-Specific EPDs:** Reporters enter CI (aka GWP) results associated with product EPDs
- **CARB Default Emission Factors (EF):** USEEIO sector-level emission factors associated with CSI MasterFormat product classifications
- **Carbon Leadership Forum (CLF) Baselines:** Emission factors developed by CLF from industry and product EPDs

Data Sources for Life Cycle Emissions

Project Reporting Tool

Material Emissions Data

- Default material emission factors from the [CARB-modified USEEIO](#) model
- [Carbon Leadership Forum North American Materials Baselines](#)
- [Estimated Useful Life Studies](#) from multiple industry organizations

WBLCA Emissions Data

- Operational emissions from the [CEC Building Energy Benchmarking Program](#)
- [Caltrans Infill trip reduction data](#) and [ITE trip generation rates](#) for VMT calculations
- Refrigerant emissions from [CARB](#) and [US EPA](#)
- Water intensities from [Pacific Institute](#) and [California State Water Boards](#)
- Wildfire risk data from [USDA Forest Service](#)

Tool Walkthrough: Instructions



PROJECT REPORTING TOOL

INTRODUCTION

California Assembly Bills (AB) 2446 and 43 require CARB to develop a framework for measuring the carbon intensity of building materials, deploy a comprehensive strategy to reduce emissions from building materials, and achieve a 40% net reduction in greenhouse gas (GHG) emissions by 2035. This legislation is codified in California Health and Safety Code (HSC) §38561.3 and §38561.6.

Specifically, HSC §38561.3(c)(1) requires: "*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.*"

The Project Reporting Tool estimates the life cycle impacts of new building construction based on project information, building characteristics, material quantities, cost and environmental product declaration (EPD) data, and whole building life cycle analysis (LCA).

More information available on the [Embodied Carbon Program Website](#)

Please direct any questions to ec-reporting@arb.ca.gov

Instructions

All construction projects subject to HSC §38561.3(c)(1) are required to complete the **Basic Reporting** worksheets and report the results to CARB within one year of issuance of a building permit. Non-residential projects greater than 50,000 ft² are also required to complete the **Project LCA Reporting** worksheets. All light blue cells in the worksheet are required entries. Light yellow cells are optional. Grey cells represent either calculated values or entries that are not required due to other user inputs.

Glossary

This worksheet provides a list of common terms and acronyms used in the Project Reporting Tool.

Tool Walkthrough: Glossary

GLOSSARY

Name	Abbreviation	Description
Bill of Quantities	BOQ	A detailed, itemized document that sets out all the materials, required to complete a project, together with their quantities and cost estimates.
California Air Resources Board	CARB	CARB stands for the California Air Resources Board, a state agency within the California Environmental Protection Agency (CalEPA). CARB is California's lead agency for air quality and climate policy. It is charged with protecting the public from the harmful effects of air pollution and developing programs to fight climate change.
California's Building Energy Code Compliance	CBECC	The software suite developed by the California Energy Commission (CEC) to demonstrate compliance with Title 24 energy efficiency standards.
California Energy Commission	CEC	The state agency that develops energy policies, efficiency standards, and data systems to ensure reliable, affordable, and clean energy in California.
Carbon Dioxide Equivalent	CO ₂ e	A standardized metric expressing the global warming impact of different greenhouse gases in terms of the amount of CO ₂ that would cause the same effect.
Carbon Intensity	CI	The amount of greenhouse gas emissions per unit of activity, energy, or product – in building LCAs, it is commonly expressed as kilograms (kg) CO ₂ e per square foot of building area.
Carbon Leadership Forum	CLF	A research and advocacy organization based at the University of Washington focused on reducing embodied carbon in building materials and construction.
Construction Standards Institute MasterFormat	CSI MF	Codes set by a standard system developed by the Construction Specifications Institute (CSI) for organizing construction information, specifications, and cost data by divisions and sections, used frequently for building projects in North America
Employer Identification Number	EIN	A unique number assigned by the U.S. Internal Revenue Service to identify a business entity for tax and reporting purposes.
Emission Factor	EF	A coefficient that quantifies the emissions associated with a given activity, process, or material, similar to carbon intensity.
Environmental Product Declaration	EPD	A standardized, verified report that communicates a product's environmental impacts based on a life cycle assessment under ISO 14025
Estimated Useful Life	EUL	The expected operational lifespan of an asset or product before it must be replaced or retired.
Facility Registry System Identification Number	FRS ID	A facility identification number used in the U.S. Environmental Protection Agency (EPA) Facility Registry System database
Greenhouse Gas	GHG	A gas that traps heat in the Earth's atmosphere, contributing to climate change (e.g., CO ₂ , CH ₄ , N ₂ O, HFCs).
Gross Floor Area	GFA	Gross floor area (GFA) measures fully-enclosed spaces up to the outside face (exterior) of enclosing walls, without deductions for interior walls, columns, or floor openings like stairwells, elevators, ducts, or other apertures. This measurement includes all floors

Tool Walkthrough: Project Worksheet

PROJECT			
Section	Field	Field Description	Entry
Project Reporter	First Name	First name of project reporter (individual with signing authority submitting the project report on behalf of the property owner)	
	Last Name	Last name of project reporter	
	Email	Email address of project reporter	
	Phone Number	Phone number of project reporter	
	Company Name	Name of company associated with project reporter	
	Website	Website URL for company associated with project reporter	
	Street Address	Street address for company associated with project reporter	
	City	City of company associated with project reporter	
	State or Province	State or province of company associated with project reporter	
	Zip Code	ZIP code of company associated with project reporter	
	Country	Country of company associated with project reporter	
	Employer Identification Number (EIN)	EIN number for company associated with project reporter	
	Date of Report Submission	Submittal Date	
Property Owner	First Name	First name of property owner (individual owning the building(s) in the covered project), or primary representative of property owner	
	Last Name	Last name of property owner, or primary representative of property owner	
	Real Property Owner Type	Select type of property owner from the dropdown list	
	Email	Email address of property owner, or primary representative of property owner	
	Phone Number	Phone number of property owner, or primary representative of property owner	
	Company Name	Name of company associated with property owner, if applicable	
	Street Address	Address of company associated with property owner, if applicable	

Tool Walkthrough: Building Worksheet

[illegible]

Tool Walkthrough: Bill of Quantities

BILL OF QUANTITIES						
Material Name	Supplier Name	Manufacturer Location	Unit Quantity	Declared Unit	Purchase Price (\$USD)	CSI MasterFormat Code
Name of material or product	Name of manufacturer or direct supplier	Manufacturer location, if known	Number of material units used. If Product CI Data Source is "CLF Data", units must match the specific product units in the "CLF Data" worksheet.	Unit of measurement.	Estimated or billed price associated with the <u>total number</u> of units declared for the specific material	Enter the most appropriate CSI MasterFormat Code that represents this material.
Steel Columns		Rest of US	297.64	cu ft	\$91,660	05 12 23
Concrete Rectangular Columns		International	680.40	cu ft	\$1,244	03 31 00
Steel Rebar in Columns		Rest of US	7.60	cu ft	\$3,080	03 21 00
Steel HSS Posts		California	0.62	cu ft	\$191	05 12 23
Concrete Beams		Rest of US	2,063.60	cu ft	\$3,772	03 31 00
Steel Rebar in Concrete Beams		Rest of US	23.20	cu ft	\$9,401	03 21 00
Concrete Slab		International	18,909.60	cu ft	\$34,566	03 31 00
Steel Rebar in Concrete Slab		Rest of US	167.90	cu ft	\$68,034	03 21 00
Concrete Fill on Metal Deck		Rest of US	21,038.90	cu ft	\$38,458	03 31 00
Steel Rebar in Concrete Fill on Metal Deck		Unknown	186.80	cu ft	\$75,692	03 21 00
Metal Deck under Concrete Fill		Rest of US	42,451.00	sq ft	\$39,776	05 36 00
Bare Metal Deck		Rest of US	725.00	sq ft	\$596	05 31 00
Steel Beams		California	1,489.00	cu ft	\$458,547	05 12 23

Tool Walkthrough: Material CIs

MATERIAL CIs					
Material Name	Material CI Data Source	CLF Data Category	EPD Declaration Number	Estimated Useful Life	Raw
Name of material or product	Select CI data source. USEEIO applied as default if not selection is made.	If the material's Product CI Data Source is "CLF Data", select CLF product from dropdown	If Product CI Data Source is "Product EPD", enter EPD Declaration Number	If Product CI Data Source is a "Product EPD", enter Estimated Useful Life if available	If Product CI Data Source is a "Product EPD", enter
Steel Columns	USEEIO				
Concrete Rectangular Columns	USEEIO				
Steel Rebar in Columns	Product EPD				
Steel HSS Posts	Product EPD				
Concrete Beams	CLF Data				
Steel Rebar in Concrete Beams	USEEIO				
Concrete Slab	USEEIO				
Steel Rebar in Concrete Slab	CLF Data				
Concrete Fill on Metal Deck					
Steel Rebar in Concrete Fill on Metal Deck	Product EPD				
Metal Deck under Concrete Fill					
Bare Metal Deck	Product EPD				
Steel Beams					
Concrete Foundation					
Steel Rebar in Concrete Foundation					

Tool Walkthrough: Construction

CONSTRUCTION						
Construction Activity Type	Grid Electricity (kWh)	Diesel (gallons)	Gasoline (gallons)	Natural Gas (therms)	Propane (gallons)	Acetylene (ft ³)
Select construction activity type from dropdown list	Enter grid electricity used for specified construction activity type	Enter diesel used for specified construction activity type	Enter gasoline used for specified construction activity type	Enter natural gas used for specified construction activity type	Enter propane used for specified construction activity type	Enter acetylene used for specified construction activity type

[illegible]

Tool Walkthrough: WBLCA Results

WBLCA RESULTS

LCA Category	Field	Description	Entry
General	Upload Report from LCA Tool	Whether or not a PDF file with the results has been uploaded	
	Report Name	Filename of the LCA Results. Must be unique	
	Assessor Name	Name of person who conducted the LCA or carbon assessment.	
	Assessor Email	Email of person who conducted the LCA or carbon assessment.	
	Assessor Organization	Company, organization or affiliation of person who conducted the LCA or carbon assessment.	
	Assessment year	Year when LCA or carbon assessment was completed.	
	Assessment date	Date of assessment	
	Project Phase At Time of Assessment	The phase of the project when the LCA or carbon assessment was completed.	
	LCA Software Tool	What tool was used to conduct the assessment?	
	LCA Tool Version Type	Version of tool and type used to conduct the assessment. For cloud tools, enter the date of the analysis.	
	Assessment Life Cycle Stages	LCA stages included in embodied carbon modeling. Note that CARB default assumptions will be applied to lifecycle stages that are not included in the assessment.	
	Required Service Life	Service life required by the client or through regulations.	
	Source of Material Quantities	Main source of material quantities used in assessment.	
	LCA Method	Life Cycle Impact Assessment method	

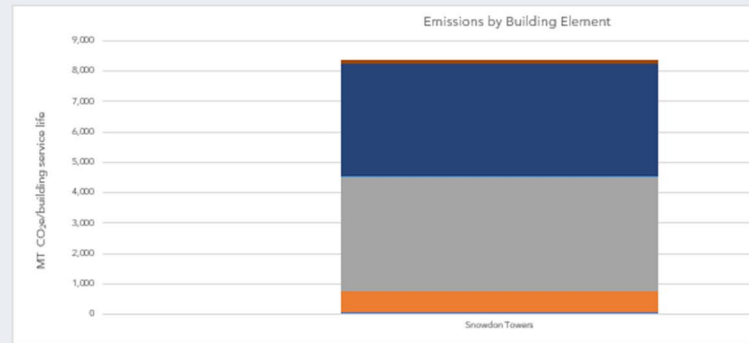
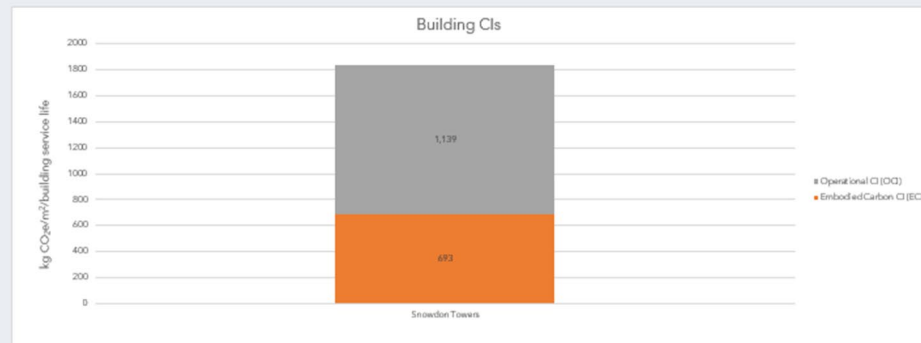
Tool Walkthrough: Embodied Carbon Calculations

EMBODED CARBON CALCULATIONS

Material Properties	Material Emissions by Life Cycle Stage (kg CO ₂ e / building service life)										
Name	Raw Material Production (A1)	Raw Material Transport (A2)	Product Manufacturing (A3)	Cradle-to-Gate (A1-A3)	Product Transport (A4)	Construction and Installation (A5)	Use (B1)	Maintenance (B2)	Repair (B3)	Replacement (B4)	
Steel Columns	24	2,608	97,908	100,540	3,268	13,175	1,690	1,690	1,690		
Concrete Rectangular Columns	162	149	1,964	2,275	44	179	23	23	23		
Steel Rebar in Columns	399	291	7,946	8,635	110	443	57	57	57		
Steel HSS Posts	0	5	160	165	7	27	4	4	4		
Concrete Beams	490	452	5,957	6,900	134	542	70	70	70		
Steel Rebar in Concrete Beams	1,217	887	24,256	26,360	335	1,351	173	173	173		
Concrete Slab	4,494	4,146	54,586	63,226	1,232	4,968	637	637	637		
Steel Rebar in Concrete Slab	8,806	6,418	175,544	190,768	2,426	9,779	1,255	1,255	1,255		
Concrete Fill on Metal Deck	5,001	4,612	60,732	70,345	1,371	5,528	709	709	709		
Steel Rebar in Concrete Fill on Metal Deck	9,798	7,140	195,305	212,243	2,699	10,880	1,396	1,396	1,396		
Metal Deck under Concrete Fill	31	1,050	34,464	35,545	1,418	5,717	734	734	734		
Bare Metal Deck	0	16	516	533	21	86	11	11	11		
Steel Beams	95	12,135	383,340	395,570	16,349	65,912	8,456	8,456	8,456		
Concrete Foundation	3,009	2,775	36,539	42,323	825	3,326	427	427	427		
Steel Rebar in Concrete Foundation	5,895	4,296	117,517	127,709	1,624	6,547	840	840	840		
Concrete Walls	3,743	8,986	118,329	137,058	2,672	10,770	1,382	1,382	1,382		
Steel Rebar in Concrete Walls	7,571	5,433	78,463	91,467	2,140	8,626	1,107	1,107	1,107		
Brick, Dark Blend 8"	9	8	109	127	2	10	1	1	1		
Concrete, Cast-in-Place gray 4"	81	75	986	1,142	22	90	12	12	12		
Concrete, Cast-in-Place gray 6"	1,801	1,661	21,671	25,333	494	1,991	255	255	255		
Metal Stud Layer 0" - 4 3/8"	3	294	11,037	11,334	368	1,485	191	191	191		
Metal Stud Layer 10" - Laminite Finish 0" - 11 1/4"	0	39	1,468	1,507	49	198	25	25	25		
Asphalt - Light Grey Sidewalk, 1" - 0"	5	15	469	489	8	34	4	4	4		
Steel, Paint Finish - Dark Gray 0" - 0 1/4"	42	110	2,102	2,254	107	431	55	55	55		
Ceramic Tile, Wood 0" - 6"	69	225	7,107	7,401	126	508	65	65	65		
Laminate, 0" - 6"					1,223	4,929	632	632	632		
Polished Concrete, Brown 0" - 6"	769	709	9,338	10,816	211	850	109	109	109		
Polished Concrete, Grey 0" - 6"	1,224	1,129	14,862	17,215	336	1,353	174	174	174		
Terrazo, 0" - 6"					141	568	73	73	73		
Grass Lawn 0" 4"					84	338	43	43	43		

Tool Walkthrough: GHG and CI Results

Project Greenhouse Gas (GHG) Emissions and Carbon Intensity (CI) Results



Carbon Intensity (kg CO ₂ e/m ² /building service life)			
Building	Total CI	Embodied Carbon CI (ECI)	Operational CI (OCI)
Snowdon Towers	1,832	693	1,139
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-

Emissions by Building Element				
Building	Substructure	Shell: Superstructure	Shell: Enclosure	Total
Snowdon Towers	86	661	3,754	4,441
	-	-	-	-
	-	-	-	-
	-	-	-	-
	-	-	-	-
	-	-	-	-
	-	-	-	-
	-	-	-	-
	-	-	-	-

Request for Feedback

Project Reporting Tool

1. Do you **anticipate any challenges** in reporting data in the proposed format?
2. How **much time** do you anticipate it will take your entity to complete the proposed worksheets for a project? Are there ways CARB can streamline the reporting process?
3. Are there **additional reference datasets, life cycle inventories or optional LCA modules** that CARB staff should evaluate for inclusion?

Covered Projects Reporting

V. Open Discussion and Feedback

Common Public Feedback Topics (1 of 2)

Covered Projects Reporting

CARB should leverage existing voluntary efforts and industry commitments

Staff thinking:

- Reporting data fields are aligned with data schemas like [ECHO Project](#).
- Staff is also harmonizing Bill of Quantities (BOQ) data with building information modeling (BIM) tool outputs.

Varying quality of EPDs

Staff thinking:

- Projects can compare multiple data sources for material carbon intensity values, including EPDs and CARB defaults
- CARB required EPD standards were discussed during building material manufacturer reporting meeting.

Include/exclude specific life cycle stages

Staff thinking:

- The entire life cycle of a project (A1-C4) is included in the assessment.
- Project data is required for A1-A3, A5, B6 stages in WBLCA reporting.
- CARB will assign default values to life cycle stages, in lieu of project specific data.

Common Public Feedback Topics (2 of 2)

Covered Projects Reporting

Include Mechanical, Electrical, and Plumbing (MEP) systems

Staff thinking:

- Operational emissions from services like MEP (life cycle stage B6) are included in WBLCA reporting concept.
- CARB will assign default values, in lieu of project specific data.

Clear reporting and disclosure of market-based accounting

Staff thinking:

- For WBLCA reporting concept, results are to be reported separated by life cycle stages.
- Primary results should be reported both with and without the use of any market-based carbon accounting instruments.

Accept existing EPDs to bolster the EPD market

Staff thinking:

- CARB Staff have proposed EPD standards for building materials
- Staff propose to accept EPDs that meet ISO 14025 standards for project reporting until 2030, in addition to using CARB defaults

Requested Feedback

(1 of 3)

1. Does your entity already report **similar or related data** for other purposes that CARB could build upon or use to meet reporting requirements discussed today?
2. How do you anticipate the proposed reporting requirements would **impact the cost or feasibility** of projects you construct?
3. How should CARB assign **defaults for material transport emissions** (A4)?
4. Are you tracking your project's **construction emissions** (A5)? If so, what methods do you use? Have you experienced any barriers to collecting this data?
5. Are there **additional data sources, required fields or emissions calculations** that should be considered to improve or enhance the accuracy of the reporting tool?

Requested Feedback

(2 of 3)

6. Are there **specific types of buildings** (occupancies or non-residential designations) that face unique reporting challenges or barriers to reporting?
7. Are there any **barriers** you've experienced that have prevented you from producing whole building Life Cycle Assessments (LCAs) for your projects? What were the **costs of preparing any LCA(s)** you have completed for your projects?
8. How do you **track changes in specified building materials** from the permit stage to project completion? Are the changes generally significant? Can you describe typical changes to us or submit examples?
 - Are the changes most common from the client, subcontractors, supply chain constraints, somewhere else?

Requested Feedback

(3 of 3)

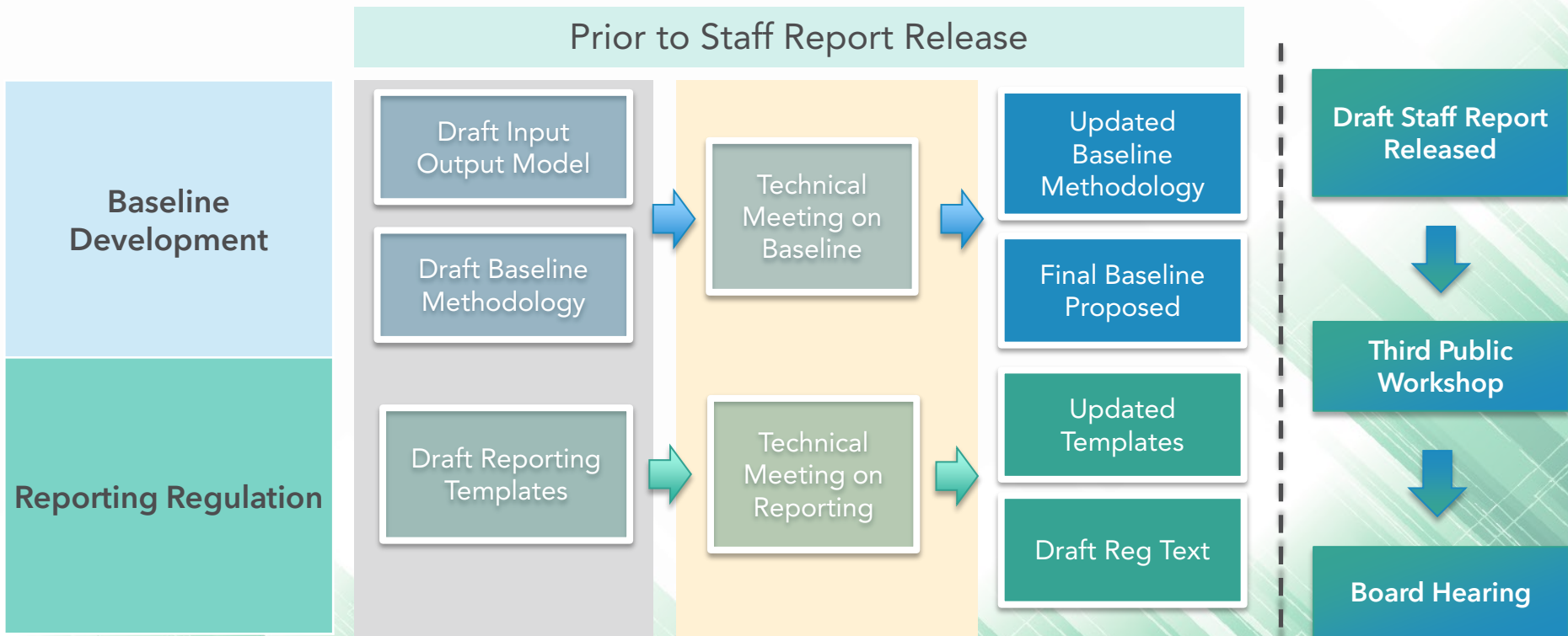
9. Should there be **thresholds or cut off considerations for materials** that are reported for BOQ documentation? Such as an exception for less than 5% of the total element Level 3 subcategory, in cost or mass.
10. Should CARB encourage the **submission of multiple iterations of embodied carbon data** from covered projects?
11. In addition to permit stage reporting, should **additional reporting be encouraged at the Certificate of Occupancy stage** to ensure accurate tracking of materials used in the completed building? Particularly, in cases where the material quantities and costs may have changed significantly from the Permit application stage.

Request for Feedback

Provide feedback and review previous workshop content:

- Previous Workshop Content: <https://ww2.arb.ca.gov/our-work/programs/building-decarbonization/embodied-carbon/embodied-carbon-meetings-and-workshops>
- Submit Feedback: <https://ww2.arb.ca.gov/public-comments/comments-embodied-carbon-reporting-technical-meeting-october-30-2025>

Next Steps



Recap of Tentative Program Timeline

Adopt Reporting Framework by December 31, 2026



Develop Comprehensive Strategy by December 31, 2028

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