



April 14, 2025

Pamela Gupta, Branch Chief  
Building Decarbonization and Innovative Strategies Branch  
California Air Resources Board

RE: March 13, 2025 Workshop  
Reporting and Baseline Options for Building Embodied Carbon  
Public Comment Period

Dear Ms. Gupta,

We, members of the Structural Engineers Association of California (SEAOC) Sustainable Design Committee (SDC), submit the following comments in response to the California Air Resources Board's (CARB) request for public comment following the March 13, 2025 public workshop. This workshop provided an overview of the CARB staff's proposed methods for reporting and baselining greenhouse gas emissions associated with building materials and buildings in California. We greatly appreciate the opportunity to comment on this proposal.

The members of the SEAOC SDC wish to communicate the perspective of designers who are heavily involved with the tracking and reduction of embodied carbon of buildings. Our comments are intended to be consistent with our organization's commitment to "support public policy and industry efforts to reduce embodied carbon in the built environment." Our hope is that the framework implemented by CARB can align with ongoing efforts as much as possible and support and incentivize progress towards actionable reduction strategies that ultimately achieve the 40% reduction goal by 2030.

We look forward to continuing to work with CARB as we collectively work to realize the ambitious goals set forth by the state of California.

Sincerely,

A handwritten signature in blue ink, appearing to read "JOH", is positioned below the word "Sincerely,".

John O'Hagan, P.E., Chair, SEAOC Sustainable Design Committee,  
Engineer, Forell | Elsesser Structural Engineers

**Members of SEAOC SDC**

Luke Lombardi, P.E., SEAOC  
SDC Past Chair

Lisa Podesta, SEAOC SDC  
Chair

Rachelle Habchi, P.E.,  
SEAOC SDC Chair

Marissa Visconti, P.E.,  
SEAOC SDC Vice Chair

Marisa Nolasco, P.E.  
SEAOC SDC Vice Chair

Nicholas Miley, S.E.,  
SEAOC SDC Past Chair

## Comment #1: Alternatives to USEEIO Methodology

- Presentation Reference: Slide 33
- Comment Summary: Propose a Hybrid LCA approach that uses EPDs for stages A1-A3 for specific materials that have much higher documentation of EPDs, like concrete, timber, and steel, and EIOLCA data to fill in other scopes where there is insufficient amount of data.
- Comment Details: See below

**We strongly recommended that a hybrid approach to the Baseline LCA be taken rather than only using EIOLCA data.** This may not apply to what is possible right now given the limitations on what building related data is available to you, as your input may for the interim be strictly based on raw material flows that necessitate EIOLCA data for this exercise. That being said, the following comment is intended to communicate potential issues with the application of EIOLCA data, particularly when it comes to addressing stages A1-A3. We also believe that some consideration should be made for how future reporting and/or benchmarking would be impacted by the baseline, which this comment may be more relevant to. If you use an entirely top-down approach to setting a baseline, you cannot track progress on that metric without updating the EIOLCA database, which may not even be updated again by 2035.

We propose that Stages A1-A3 be tracked using Industry Average or Product Specific EPDs for materials that are currently being tracked by the BuyClean CA and CalGreen programs, including at minimum Ready-Mix Concrete, Structural Steel (Hot-rolled, hollow, and plate), Reinforcing Steel (rebar). These materials are often the most significant contributors to a building's embodied carbon, and stages A1-A3 dominate the GWP of these materials. This would require splitting out stages A4 and A5 to be tracked separately. We assert that this separation would also allow stages A4 and A5 to be tracked annually independent of project specifics as part of other state-level efforts to track scope 3 emissions (see comments #2 and #3). CARB could contribute to statewide efforts to set up data collection processes to gather data on A4 and A5, and provide insight on how PCRs and EPD third-party review could be improved to help with EPD data quality for stages A1-A3. An example of the recommended approach is one proposed by the RMI report "Impact Accounting Methodology for Building Construction" by Magwood et Al., published in February 2025.

There are two primary motivations recommending a hybrid approach are as follows.

**The first motivation is that collecting EPD data for these products would more closely align with current and future efforts to track carbon emissions on building projects.** Every agency or organization (DGS, CLF, USGBC) setting embodied carbon limitations and collecting GWP data is doing so for stages A1-A3 by collecting EPDs for at minimum the materials referenced above. This has shown an increase in EPDs available across the state and country in recent years. While there may be concerns about the data quality or variability of EPDs, there are equal if not more concerns

Pamela Gupta, Branch Chief  
April 14, 2024



with the data quality and variability of the EIOLCA dataset for stages A1-A3. If CARB reporting methods (both to set the baseline and compare to the baseline over time) align with other reporting requirements for CalGreen, BuyClean, and other programs, it will reduce complexity of reporting and ensure that the data reported from these different programs can be utilized by multiple programs, rather than have completely different data sources.

We anticipate that one of the arguments against the use of EPDs is that EPDs are not available in regions where a significant amount of steel is imported from. However, just because EIOLCA could fix this problem does not mean it will be accurate. Our second motivation for this comment is rooted in the problems we see that the use of EIOLCA could cause *if it is used as the basis for a baseline that would in turn be used to identify areas of reduction.*

Our ultimate goal as sustainably focused engineers and designers is to work towards tangible, actionable reduction strategies that design teams can work on implementing on projects on a practical basis. **Our second motivation for this comment is our assertion that EPDs more closely align with this goal because they are able to distinguish what variations in a product result in a lower GWP. This helps designers communicate to building owners and other members of our design and construction teams how choosing certain products contributes to reducing embodied carbon on a project.** By working towards specifying low carbon products by incrementally decreasing maximum GWP targets on projects by requiring EPDs that demonstrate compliance, design teams can work towards the goal of achieving a 40% reduction by 2035.

**We assert that the use of EIOLCA to set a baseline will conflict with this goal in two ways. Firstly, cost does not always share a linear relationship with GWP.** In many cases, significant GWP reductions can be made at very little cost, or in many other cases at slightly more cost. If the methods for best making reductions and identifying areas of improvement are determined using an EIOLCA building emissions baseline, the methods likely will not align with the strategies employed to practically make reductions. Refer to the RMI report on “Impact Accounting Methodology for Building Construction” by Magwood et Al., published in February 2025 for a deeper dive into this concern. **Secondly, EIOLCA data does not include information on the nuances that go into structural materials, and therefore is not able to adequately capture the extremely wide range in GWP.** For example, it would lump all concrete into one number based on the cost of concrete, but there is a significant range in GWP of concrete, and that range does not linearly correlate to cost with the required accuracy.

## Comment #2: Comments on Proposed Scope

- Presentation Reference: Slide 33, 23-26
- Comment Summary: Propose to set separate baselines for stages A1-A5, B1-B7, and C1-C4, and to put a focus on stages A1-A5 in the short term with eventually establishing baselines and reduction strategies for B1-B7 and C1-C4.

The scopes for stage groups A, B, and C are compartmentalized enough that it is recommended for distinct baselines to be set for each stage group, and that reduction goals and strategies are identified for each group of stages independently. This is also related to additional comments on delegating reporting in Comment #3.

Different operations of work (Design, Construction, Operations, Building Demo/Disassembly) should be measured separately for the purpose of setting a baseline, and their emissions should be gathered and reported by whatever party is responsible for the decisions that impact the carbon intensity of the solutions used.

Aligning reporting of B and C emissions at the time of those permitting activities would allow reporting of B and C stage activities to occur in the year that those emissions are actually taking place. Reporting end of life impacts at the beginning of a building's life is likely to be inaccurate with regards to how the building is actually being disposed of. It would also not be accurate temporarily to when the emissions are likely to occur and would miss the opportunity to encourage building reuse, disassembly and material reuse.

## Comment #3: Reporting Requirements

- Presentation Reference: Slide 53
- Comment Summary: Miscellaneous Comments or Concerns with Proposed Basic Reporting and WBLCA Reporting. See individual comments for reference to specific requests on slide 53.

### Basic Reporting Feedback:

- 1) General Comment:
  - Who is responsible for compiling this data, and how can you align the compiling of this data with other statewide efforts focused on embodied carbon reductions?
  - Special consideration should be given to how retrofit, adaptive reuse, and tenant improvement projects will be tracked within this framework, see WBLCA methodologies comment regarding retrofit or adaptive reuse below.
- 2) Inclusion of different projects:
  - For considering the type of residential and non-residential projects that you will be requiring basic reporting on, we recommend that you align the square footage with ongoing efforts like CalGreen to limit confusion. As CalGreen reduces their square footage requirements in coming years. Pick a size that's representative of the industry.
- 3) Feasibility of gathering data:
  - When gathering information, initially prioritize gathering information on the most carbon intensive and widely used products that are most impactful to an overall building. If you try to capture 100% of the materials, it may put unnecessary and fruitless administrative burden on CARB and projects to capture materials that do not have a high impact, or materials that are not well documented from an EIO or product based LCA data.
- 4) Delegating Reporting Responsibilities:
  - Related to the item above, prioritize the gathering of information for different stages by the party that is best suited to capture and report the relevant information:
    - Stages A1-A3 tracked by design team, reported by design team, report quantities
    - Stages A4-A5 reported later/at same time by the construction team, report transportation information and energy usage on site. For stages, A4/A5, align collection to be consistent with other state-level efforts tracking Scope 3 emissions. Additionally, separating A4 and A5 from A1-A3 may help lead to better tracking. The tracking of A4 and A5 emissions at the project level is tedious and time consuming, but tracking it programmatically

independent of project material specifics may actually have a more meaningful impact on typical means and methods.

- Stages C1-C4: require reporting of buildings undergoing demo, estimating C1-C4 emissions in design/construction is highly speculative and almost certainly would change.

### WBLCA Reporting Feedback:

- 1) Align with CalGreen for WBLCA Reporting
- 2) WBLCA methodologies for review - Stages B1-B5:
  - How do you account for emissions from Stages B1-B5 related to retrofit or adaptive reuse to buildings that would take place during scope B? How do you differentiate between more resilient structures that are designed for a longer life and are therefore higher upfront carbon but are intended to last longer and require less maintenance/retrofit? In other words, a building designed to be more seismically resilient is not necessarily functionally equivalent to a less seismically resilient building, so how could those differences be accounted for?
- 3) Barriers to WBLCA:
  - Potentially reconsider the scope of elements to be included in a WBLCA initially. Currently, CalGreen and other programs tracking embodied carbon only track structure, substructure, and enclosure. If you require to include interiors, finishes, hardscape, etc., that is beyond the scope of what most designers are typically working on
    - We recommend that you start with requiring a smaller scope of elements to help get more people responsible with reporting AND AHJs gathering information familiar with the process for the elements (structure, substructure, and enclosure) and
  - Whole Building Life Cycle Assessment (WBLCA) may not be easily achievable for some small projects, especially those without access to Revit models or detailed BIM workflows. To accommodate these cases, we recommend offering an alternative reporting pathway that allows teams to report material quantities and associated A1-A3 carbon impacts using existing tools and databases focused on product stage emissions. This approach ensures more practical and reliable carbon accounting for smaller-scale projects.
  - How are you teaching jurisdictions to manage these data submissions - work with CalGreen to rollout training for jurisdictions on how to manage this data