Comments to Embodied Carbon Reporting Technical Meeting October 30, 2025 (Covered Project Reporting)

Reporting Tool Feedback

1. *Do you anticipate any challenges in reporting data in the proposed format?*

Would prefer the reporting to be a web-based input with the option to download a sample Excel sheet template for bulk upload. Web-based inputs seem to be more reliable and less error prone from either user input or IT issues.

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?*

40 hours per project per submission. This estimate includes coordination time from our company with other companies. The 40 hours does not include time from other companies coordinating with us. If this tool is to be submitted twice during the lifetime of the project, we'd estimate 80 hours total to complete. If there is a way to auto-import values from other reports, it would save a decent amount of time. For example, a number of fields are to be input directly from the T24 energy report. An auto-import of this information would be quite useful. Also, if there are ways for collaboration with other industry leading tools like OneClickLCA, EC3, c.scale, etc. to export reports that are CARB compliant, that would save a lot of time.

3. *Are there additional reference datasets, life cycle inventories or optional LCA modules that CARB staff should evaluate for inclusion?*

No comment.

Requested Feedback

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?*

Collaboration with American Institute of Architects (AIA) Arch2030 goals and Carbon Leadership Forum (CLF) would be useful.

2. *How do you anticipate the proposed reporting requirements would impact the cost or feasibility of projects you construct?*

The proposed reporting requirements would add a minor cost to the project. I do not foresee projects no longer being feasible because of these requirements.

3. *How should CARB assign defaults for material transport emissions (A4)?*

It should be phased over time. The current landscape does appear to give good default assumptions. If an assumption is needed, a conservative approach could be used such as A4 is 3% of A1-A3 emissions total would be a quick approximation without adding much burden to the reporting team.

A slightly more detailed approach could include a straight-line or road distance bane (e.g.: 0-50, 50-200, 200-500, 500-1,000+ miles) to be selected from, and use a typical mode of transport (ready-mix truck, flatbed truck, rail, ship, etc.)

Usually manufacturer location plant isn't known until after permit approval though. Currently, this emissions phase represents the largest amount of effort to track down, or the most limited default emissions assumptions, and seems to represent the smaller side of total emissions associated with a project.

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?*

We track construction emissions (A5) on a limited number of projects. There are barriers to collecting the data but this is mostly due to the process being new.

- Electricity: for new construction projects, capturing this data usually isn't too difficult. Most of the project's electricity is metered by the utility and paid by the Owner. Collaboration between Owner bill data and reporting party would be needed. If bill data includes other electricity power not associated with the construction project (i.e.: campus or high rise), then individual CT meters may need to be placed on the construction electrical feed. This is an additional cost and logistics but ultimately minor in nature.
- Fuels: best practice is to collect fuel reports from suppliers and subcontractors monthly along with billing applications. The cost tracking side of fuels is well established so reporting amounts of fuels used is possible. The largest barrier is that collecting this information from suppliers and subcontractors is not currently commonplace, so there will be an initial learning curve. It seems as though this would be streamlined after the initial adjustment period.

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?*

The fuels listed for construction should be more comprehensive for all fuels that may be used. This includes B20, R99, hydrogen, etc.

6. *Are there specific types of buildings (occupancies or non-residential designations) that face unique reporting challenges or barriers to reporting?*

No comment.

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?*

Most barriers include a lack of awareness from the project Owner or lack of desire from the project Owner. Costs to prepare LCA(s) range from $6,000 to $20,000+ depending on the number of materials tracked, level of detail to track materials (industry standard vs product specific EPD), stages of LCA tracking included, and number of iterations an LCA is performed. The number of iterations an LCA is performed is the largest cost driver.

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?*
    a. *Are the changes most common from the client, subcontractors, supply chain constraints, somewhere else?*

Changes in building materials may be tracked via change order. This usually occurs when the cost for the change order must be justified. Projects do not currently reconcile total materials from permit stage to project completion (i.e.: the change order quantities exist only to justify the cost of that change order and modify the overall cost budget, but an overall material "budget" is not maintained.) Generally the changes are minor. Major material changes require approval from the authority having jurisdiction. I'd suggest that as a trigger to update materials from permit stage to project completion if needed, but generally feel as though the impact of material changes are minor and an as-built material amount isn't needed, particularly for initial implementation. Significant material changes are usually due to changes from the client, or a significant unforeseen field condition.

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.*

Absolutely. An exception for less than 5% of the total element Level 3 subcategory, in cost or mass (as selectable by the project team), would be reasonable and fair. We should allow project teams to spend time and effort to focus on the materials that have most impact rather than cumbersome reporting on minor impact materials.

10. *Should CARB encourage the submission of multiple iterations of embodied carbon data from covered projects?*

We don't necessarily want to report twice, but projects may go on hold for extended time periods. Reporting at the Certificate of Occupancy stage can help capture reporting requirements in those cases.

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.*

It does not seem as though there are significant changes in materials quantities between permit and occupancy stages. Tracking of materials after permit issuance and incorporating into a master list is not part of current industry level of care. Separate materials takeoff may be made for significant changes that require review from the authority having jurisdiction, however those takeoff materials are rarely incorporated back into the original project's total material takeoff.

Other Feedback

1. CARB is requesting a duplication of the project's operational energy to be submitted (i.e.: taking the T24 Part 6 report information and inputting into the CARB WBLCA spreadsheet). While this does give a wholistic picture of embodied carbon in materials along with operational carbon, it seems that it may detract from the purpose of AB 2446 to achieve 40% net GHG reduction in building materials. If the CARB WBLCA allows for carbon reduction swapping between embodied carbon (Stage A) and operational carbon (Stage B), we worry that progress to achieve the intent of 40% net GHG reduction in building materials will not be met. The State of California has goals to increase energy efficiency while decreasing net GHG associated with operational emissions and the State's energy grid. Since the State is already committed to net zero energy emissions, we do not want to see that progress detract from needed net GHG emission reductions associated with building materials. We recognize that buildings may achieve a net GHG reduction by using more high performing envelope materials, hence increasing the GHG emissions of Stage A, while reducing Stage B emissions, for an overall building reduction in GHG emissions. However, since the State is committed to net zero emissions for energy, we view it best that Stage A emission reductions are measured separately from Stage B emissions. For example, the baseline building and design reduction building should have the same assumed energy performance for the purposes of evaluating net GHG emissions reductions of building materials. This approach is already in place through CALGreen. We view this approach to minimize unnecessary double-entry while maximizing overall emissions in the State; to achieve both net zero GHG energy emissions and 40% net GHG reduction in building materials.
2. Construction emissions estimated should be for the entire project, with an optional amount of detail to be specific to construction activity type. Little data existing on existing construction

operations emissions for a project in general, and emissions specific to construction activity type is not currently in practice. Suppliers and subcontractors may be able to estimate fuel emissions by construction activity type since they will account for fuel costs in their estimates and budget, but estimating electricity use for a construction project, particularly by construction activity type, is prohibitive. This mainly stems from construction electricity paid for by the client, so the general contractor and subcontractors do not have visibility to electricity usage. Estimating fuel or electricity usage for different construction activity types become difficult as more equipment electrifies. Steel erection may be from a gas powered crawler crane but could be an electric tower crane. Power tools may be a mix between gas powered or electric, along with temporary heating.

3. The Bill of Quantities Purchase Price should be further defined for clarity. It seems as though for this reporting, using a subcontractor's number including material, labor, equipment, taxes, overhead, profit, etc. is acceptable. When reporting to other frameworks such as LEED, the price of line item specific materials is limited to material only and to exclude labor, equipment, taxes, overhead, profit, etc. It would be preferred to have the Purchase Price include costs other than materials, as that it is difficult in competitive bid situations to have a breakout of material cost vs all other costs associated with a material line item.