SAN FRANCISCO ENVIRONMENT DEPARTMENT

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Mayor

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Director

April 14, 2025

Dear California Air Resources Board (CARB) Embodied Carbon Team,

Attention: Comments on March 13, 2025 CARB Embodied Carbon Workshop.

Assessing baseline impacts of construction in California is critical to our shared mission of supporting responsible, sustainable construction. In alignment with AB 2446, San Francisco's 2021 Climate Action Plan aims to achieve carbon balance across the buildings and infrastructure sectors. To actualize this ambitious goal, we support projects in adopting strategies like adaptive reuse, materials reuse, and low-carbon material swaps.

Among these tactics, materials reuse is of particular concern for AB 2446 implementation. Reclaimed materials represent a significant reduction in embodied carbon emissions relative to material baselines because they do not use the linear extraction and manufacturing approaches that generally account for the majority of a product's embodied carbon emissions. However, linear carbon accounting methodologies can undervalue reclaimed materials due to limited data and ambiguity between project boundaries. To most accurately assess material reuse and maximize future opportunities to reduce embodied carbon, CARB must develop a discrete methodology to quantify reclaimed materials' embodied carbon emissions, considering the following factors:

1. **Project-level data:** Understanding the quantity of reclaimed products utilized on any particular project can be challenging. Top-down spending data will not account for cases where project teams reuse materials at no cost (e.g. donations, same site, or within project portfolio reuse, which currently make up the majority of reuse in large-scale projects). Establishing a baseline cost for reclaimed materials would also be challenging given limited available information and high variability in price. Chain-of-custody tracking would offer the most detailed data but likely requires a more in-depth material passport approach with dedicated funding and implementation strategies. As a result, we believe accurate accounting of reclaimed material re-integration must rely on a bottom-up approach where projects report the reclaimed materials they utilize.

2. **Product-level data:** Assessing product-specific GHG impacts for reclaimed materials is also difficult. Unlike their virgin counterparts, reclaimed materials are not standardized, so the exact embodied emissions (even of similar materials sold at the same outlet) vary depending on the location from which they were recovered, degree of processing needed prior to resale, etc. There isn't a clear methodology to generate EPDs for these variable products, and doing so could represent a disproportionate burden for reuse retailers/facilities, which typically operate at a small scale. Instead, we recommend adopting a standardized carbon intensity deduction for reclaimed materials. Our preliminary research and stakeholder engagement indicate that a default 90-95% reduction in GWP from the product category baseline may be appropriate.

3. **Allocation of embodied carbon impact:** Because reclaimed materials are shared across system boundaries, it is not intuitively clear how projects that salvage or re-integrate materials should claim

embodied carbon reductions. However, there is not currently a standardized approach to distributing impacts between projects across WBLCA methodologies. As a result, we highly recommend that CARB adopt an impact allocation methodology for materials shared across projects as part of baseline impact assessment. Our strongest recommendation is to utilize a modified 100:0 allocation, where the re-integrating project receives the majority of GWP reduction credit for utilizing low-carbon materials. Projects that use design for deconstruction methodologies should also receive a proportion of credit to account for contributions to future embodied emissions reductions.

We appreciate the opportunity to share input at this time: thank you for your consideration.

Sincerely,
San Francisco Environment Department