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**DATE:** February 13, 2025

**TO:** Programs & Administration Committee  
Recycling Board

**FROM:** Heather Larson, Program Manager  
Karen Kho, Principal Program Manager

**SUBJECT:** **Technical Assistance for Low-Embodied Carbon Building Materials**

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## **SUMMARY**

Accelerating construction innovation and a clean energy transition in buildings is one of the Agency's three strategic goals. The State of California updated its 2024 building code (CalGreen) to include measures that reduce the embodied carbon of buildings, which encourages waste reduction, material reuse and circular economy strategies in the construction sector. To advance implementation of the new state code, StopWaste is offering technical assistance to municipal and multifamily design teams that seek to incorporate low-embodied carbon building materials in projects. On February 13, staff will present an overview of this program.

## **BACKGROUND**

Embodied carbon refers to the greenhouse gas emissions caused by building construction and the supply chain to produce building materials. According to the World Green Building Council (WGBC), carbon emissions attributable to buildings make up 39 percent of total global emissions, and close to a third of this amount comes from embodied carbon. California is the first state to amend its statewide building codes to include requirements to reduce embodied carbon emissions. This move rewards building reuse and the sourcing of recycled, bio-based, and other low-carbon materials. Multiple studies have shown that building reuse is associated with significant reductions in embodied carbon emissions when compared with new construction. Building and material reuse cuts down on the continual consumption of natural resources, energy and water-intensive industrial processes, and greenhouse gas emissions. Bio-based building products are made from renewable feedstocks such as wood from forest thinning for wildfire prevention, straw, hemp, and bamboo, as opposed to non-renewable resources typically used in today's construction.

## **DISCUSSION**

While CalGreen's inclusion of embodied carbon is an encouraging step, the code only addresses commercial buildings larger than 100,000 square feet and schools larger than 50,000 square feet. There is still a lag in the implementation of strategies, industry awareness, and market demand for reused and circular building products. To enable the code and other embodied carbon policies to be enforceable and reach more buildings, the Agency's Built Environment team has rolled out a new technical assistance program. Municipal and multifamily projects (new construction, major rehabilitation and interior renovation) in Alameda County are eligible to receive technical assistance to integrate low embodied carbon materials in project design.

Engaging with projects early in their design phase will enable the incorporation of recommendations in the construction specifications, bid documents and final implementation in construction. This new offering was promoted through the Energy Council Technical Advisory Group, the East Bay chapter of the American Institute of Architects and other industry partners. Staff selected four initial participants from a pool of 10 applications. Some applicants remain in the pipeline but were too early in the planning and finance stages for immediate engagement. The initial projects are:

- **Martin Luther King Jr Youth Services Center, City of Berkeley**

- Architect: Siegel and Strain Architects
- Owner: City of Berkeley
- Description: Renovation of the existing 10,655 SF Facility. Originally constructed in 1950, the community center includes a gymnasium, staff offices, and multi-function program rooms. Construction includes a seismic retrofit, accessibility upgrades, reconfiguration of program spaces, all new MEP systems and the addition of fire alarms and sprinklers.
- Scope of assistance: Low-carbon concrete specs, insulating wood roof and dew point analysis, salvaged wood, used furniture, porcelain tile options, Salvage Assessment Survey
- Phase at time of application: Design Development

- **Mixed-Use Development at 1718 San Pablo Avenue, Berkeley**

- Architect: Arkin Tilt Architects
- Owner: Celery Design Collaborative
- Description: New mixed-use multi-family residential and commercial infill project on a small lot in Berkeley targeting net zero embodied and operational carbon. The project is comprised of two new structures adjacent to the existing structure at 1718 San Pablo Ave (the existing structure will receive a few modifications).
- Scope of assistance: Low carbon concrete specifications, rice hull technical support, Life Cycle Assessment (LCA)/embodied carbon calculations
- Phase at time of application: Design Development

- **Christie Avenue Affordable Housing Development, City of Emeryville**
  - Architect: David Baker Architects (DBA)
  - Owner: EAH Housing is the developer, and the City of Emeryville is the landowner
  - Description: The project is a 3-phase affordable housing development with 362 units overall. Each phase is ~100-130 units spread across three 8-story buildings.
  - Scope of assistance: Low carbon concrete specs, insulation options, cladding options, salvage wood referral, Salvage Assessment Survey
  - Phase at time of application: Planning Entitlement
- **Embodied Carbon Purchasing Specifications, Alameda County General Services Agency**

Instead of providing consultation for an individual construction project, the scope of work for Alameda County GSA is to develop purchasing specifications that can be used throughout their portfolio. This work is being coordinated with the Recycled Content Product Purchasing project utilizing Measure D funding. Alameda County GSA will use technical assistance to develop the specifications in collaboration with other member agencies and promote their use through environmentally preferable purchasing roundtables.

This technical assistance offering is not only designed to assist individual projects with the adoption of low-embodied carbon and waste reduction strategies, it also supports a larger market development strategy for circular building materials. Case studies of flagship projects will be shared through industry networks to demonstrate the feasibility of incorporating these materials and practices. Leveraging the Agency's role in the Bay Area Regional Energy Network (BayREN), staff will coordinate embodied carbon strategies with programs targeting operational energy savings in municipal and multifamily buildings. Direct engagement with project design teams, owners and contractors allows us to better understand barriers to code adoption and the incorporation of innovative products and practices. Lessons learned from the participating projects will inform local and state policy recommendations, such as expanding CalGreen to additional building types.

## **RECOMMENDATION**

This item is for information only.