Shaping Tomorrow's Global Built Environment Today

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December 8, 2025

Chair Lauren Sanchez
California Air Resources Board
1001 I Street
Sacramento, CA 95814

Re: October 30, 2025 Embodied Carbon Reporting Technical Meeting of the California Air Resources Board

Sent via email to: embodiedcarbon@arb.ca.gov

Dear Chair Sanchez:

ASHRAE is pleased to submit comments on the California Air Resources Board (CARB) Embodied Carbon Reporting Technical Meeting Materials of October 30, 2025 pertaining to the development of a framework for measuring and reducing embodied carbon, as required in Assembly Bill 2446 (2022) and Assembly Bill 43 (2023).

ASHRAE, founded in 1894, is a technical and professional society of more than 53,000 members, including over 3,000 in California, that focuses on building systems, energy efficiency, indoor air quality, refrigeration, and sustainability. Through research, standards writing, publishing, certification and continuing education, ASHRAE shapes tomorrow's built environment today.

ASHRAE stands at the forefront in providing standards, guidance, technical resources, and education to support the decarbonization of the built environment. ASHRAE is advancing tools to support decarbonization across a building's entire life cycle, including building design, construction, operation, occupancy, and end of life. ASHRAE also established a Center for Excellence in Building Decarbonization (CEBD) in 2024, which provides strategic direction for ASHRAE's building decarbonization activities and reliable technical information on decarbonization to policymakers and the public.

ASHRAE appreciates CARB's reference to **ASHRAE Standard 240P**, *Quantification of Life Cycle Greenhouse Gas Emissions of Buildings*, in its supporting materials for the basis of the Whole Building Life Cycle Assessment as part of the embodied carbon regulations under

development. ASHRAE Standard 240P, a proposed standard, will provide a methodology to quantify and document greenhouse gas emissions associated with buildings, building systems and building equipment, over the whole life cycle.

ASHRAE is also developing **Standard 244P**, *Sustainability Assessment for Mechanical, Electrical, and Plumbing Products,* which will be particularly helpful for informing CARB's embodied carbon reporting requirements for covered new construction projects. Specifically, ASHRAE Standard 244P specifies the process for developing a lifecycle assessment-based product claim for Mechanical, Electrical, and Plumbing assemblies and is intended for use by manufacturers and by ANSI-accredited program operators and independent verifiers.

In response to the CARB Staff Presentation on Covered Building Material Reporting, ASHRAE recognizes that HSC § 38561.3(j) exempts appliances from current material reporting requirements; however, relying on the CCR Title 20 § 1601 list may omit MEP-related components that can meaningfully influence whole-life carbon (WLC) outcomes. At the same time, ASHRAE understands keeping MEP equipment excluded from product-level reporting in the initial version, because the industry will not have comprehensive environmental product declarations (EPDs) for all major MEP equipment types, and only cover only a limited portion of the market. ASHRAE appreciates CARB's leadership and encourages the Board to monitor the emergence of appliance- and equipment-related embodied carbon data so that, when feasible, future inclusion can strengthen the completeness and accuracy of WLC analyses.

Furthermore, for Covered Building Material Reporting, ASHRAE recommends considering aligning primary data reporting timelines with other existing EPD or PEP requirements already established in the marketplace under ISO 14025 and EN15978. It should be noted that those EPD requirements are an acceptable compliance path in ASHRAE 240P.

In response to CARB presentation on Covered Project Reporting, ASHRAE believes that whole building LCA would still require the generation of EPD style data for HVAC products to address requests from architects, designers and engineers. In those instances where an EPD does not yet exist for covered products, ASHRAE recommends the allowance of CIBSE TM65NA calculation methodology in order to provide A1-A3 data.

We also want you to be aware that ASHRAE's Center for Excellence in Building Decarbonization (CEBD) is working to advance a range of technical resources that may also be valuable to your efforts:

- Guidance Documents:
    - CIBSE TM65NA, *Embodied carbon in building services: a calculation methodology for North America* (when EPDs are not available.)
    - ASHRAE *Whole Life Carbon Guide for Building Systems* (and accompanying training course)
- Presentations:
    - *Whole-Life Carbon (WLC): Decarb Strategies for New Buildings*. A presentation for use at ASHRAE chapter meetings.

    - ASHRAE Tech Hour topic of *Whole Life Carbon Decarbonization Strategies for New Buildings*
- Ongoing Research Projects: There is limited to poor data in some important areas of performing a Whole Life Carbon (WLC) analysis for HVAC systems. ASHRAE is attempting to fill many of these information voids through the following series of research projects:
    - 1977-SP, *Update HVAC Equipment Service Life Data.* This project aims to gather current information on MEP equipment life for use in determining accurate equipment replacement timelines when performing WLC analysis.
    - 1988-SP, *Whole Life Carbon Gap Analysis* to identify the gaps in standards, guidelines, datasets, and tools to enable WLC across a building's entire lifecycle.
    - 2025-SP, *Whole Building/MEP Benchmarking Data Research*. This project aims to identify and collect high-quality embodied carbon data and generate new data for building typologies on MEP life carbon emissions to derive practical benchmarks that can be used for WLC analysis.
    - 2026-SP, *Standardizing WLC Calculations for Building Systems*. This project aims to establish a practical methodology guide for calculating the whole life carbon of Building Systems across various building and system types.
    - 2027-SP, *Refrigerant Emissions Management, Tracking, and Compliance*. This project aims to gather data on existing leakage rates and provide a framework for tracking this information in the future, which could lead to compliance standards.

We appreciate CARB's consideration of the comments submitted by ASHRAE. Please let us know if ASHRAE can expand on any of the points above or can be of further technical assistance by contacting me, or having your staff reach out to GovAffairs@ashrae.org.

Sincerely,

Bill McQuade
ASHRAE Society President, 2025-2026