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**Blue Planet Comments on the Draft 2025 California Building Energy
Action Plan**

Additional submitted attachment is included below.



February 20, 2026

Commissioner J. Andrew McAllister
California Energy Commission
715 P Street
Sacramento, CA 95814

Re: Blue Planet Comments on the Draft 2025 California Building Energy Action Plan

Dear Commissioner McAllister:

Thank you for the opportunity to comment on the January 26, 2026 Second Public Workshop on the Draft 2025 California Building Energy Action Plan (Draft Action Plan). As identified in the Draft Plan, embodied carbon emissions are a significant, and increasingly important, aspect of building decarbonization. What's more, the built environment presents a tremendous opportunity to develop a scalable and permanent carbon sink that supports California's climate goals. While energy efficiency and electrification are key strategies in the clean energy transition, buildings are responsible for a significant share of the state's greenhouse gas emissions. A coordinated pathway to decarbonization is essential to achieve the states carbon neutrality goals. We urge the CEC and other state agencies to build on this plan to put in place measures that can serve to significantly reduce embodied carbon in buildings and advance the state's climate goals.

About Blue Planet Systems

Blue Planet Systems is a California company developing technology and products related to economically viable carbon capture, utilization and storage (CCUS). Blue Planet's technology produces coarse and fine limestone aggregates made from sequestered carbon dioxide (CO₂) utilizing a biomimic-inspired carbon mineralization process. It allows lower-cost carbon capture by avoiding the need to purify and enrich captured CO₂ before use, which reduces the cost and energy needs associated with carbon capture.

Our goal is to solve the carbon capture problem by converting CO₂ into high-value building materials. Our technology is fully scalable and can be applied to any facility in any part of the state where concrete or aggregate is utilized, regardless of its proximity or access to a geological sequestration site. It can be deployed at cement facilities, power plants, or other difficult-to-decarbonize industries and captures not only CO₂, but also particulate matter, NO_x, SO_x and other pollutants hazardous to surrounding communities. It can also be deployed as a carbon dioxide removal (CDR) strategy by coupling with direct air capture (DAC) or bioenergy facilities. Our demonstration plant in Pittsburg, California has been operating for over three years, and we are currently upgrading the batch plant to incorporate automation, which should be completed over the next 3-6 months. Our carbon-sequestered aggregate has also been utilized at

San Francisco International Airport, where carbon-sequestered concrete is specified. And we recently placed the world's first carbon negative concrete slab and are happy to arrange a tour of our facility.

Carbonate Mineralization and Utilization/Storage in Concrete Offers Significant Potential Carbon Sink to Support State's Goals

Blue Planet's carbonate mineralization offers a permanent carbon storage solution that is ready for deployment today. As validated in peer-reviewed research,¹ our mineralization process permanently stores carbon in rock, which can then be used in concrete and stored in our built environment. Indeed, in 2022, the CEC identified carbonate mineralization, including carbon storage in aggregates, as one of the most promising strategies for decarbonizing the cement sector (CEC, 2024, pp 10-11):²

“The inclusion of carbon into cement has the potential to enhance the concrete's compressive strength...With almost 50 billion tons of construction aggregates produced annually worldwide (including 4 billion tons in North America) and a thermodynamically favorable reaction, mineral carbonation is among the largest and most energy-efficient routes for carbon utilization”

Capturing carbon from industrial processes and permanently embedding it into durable materials is an essential tool in overall CO₂ emissions reduction. Hard-to-abate industries, like those listed above, cannot reach net zero emissions through electrification alone. Carbonate mineralization not only reduces emissions but can deliver net-negative outcomes when the amount of carbon permanently stored exceeds the emissions associated with production.

To accurately reflect these climate benefits, embodied carbon accounting needs to adopt a comprehensive approach to its ledger. Blue Planet recommends that the CEC implement an accounting framework that transparently records both sides the emissions associated with material production and the carbon permanently stored in building materials. Such a framework would assign *positive values* to lifecycle emissions but also *negative values* where carbon is permanently stored in building materials. This approach provides a more complete calculation of building decarbonization efforts and appropriately recognizes the role of carbon sequestration in the built environment.

¹ Xi, F., Davis, S. J., Ciais, P., Crawford-Brown, D., Guan, D., Pade, C., & Shi, C. (2016). Substantial global carbon uptake by cement carbonation. *Nature Geoscience*, 9, 880–883. <https://doi.org/10.1038/ngeo2840>

² **State of California, California Energy Commission.** (2024, January). *Grant funding opportunity: Commercializing Industrial Decarbonization (2022 CID Program) — GFO-22-301 Addendum 7*. Retrieved from <http://www.energy.ca.gov/contracts/index.html>, Pages 10-11

Embodied Carbon an Essential Element of Building Decarbonization, Carbon Storage

As operational (Scope 1) emissions from buildings continue to decline, due to improvements in energy efficiency and electrification, embodied carbon is becoming an increasingly significant share of a building's total lifecycle GHG emissions. Blue Planet strongly supports the increased emphasis on embodied carbon emissions in the Draft Action Plan and appreciates the CEC's leadership in advancing the topic.

The Draft Action Plan addresses the growing magnitude of embodied carbon and addresses it via Recommendation #8:

“Strengthen alignment across agencies and levels of government to maximize the benefits of building decarbonization for all Californians”

While this recommendation is an important step, Blue Planet respectfully urges the CEC to adopt an additional recommendation that explicitly addresses the market opportunity for low-carbon and negative-carbon materials in the industrial sector. This would complement the state's broader decarbonization strategy and position California as a leader in industrial decarbonization.

Blue Planet offers the following draft language for consideration:

*“**Recommendation #15:** Create market conditions to reduce embodied carbon and advance low-carbon and negative-carbon building materials, including concrete, aggregate, and cement, as a core pathway for decarbonizing the built environment”*

In order to create those market conditions supporting the production and use of low-carbon and negative-carbon building materials, CEC and other agencies can take several important steps:

- **Advance public procurement to prioritize low-carbon and negative-carbon building materials, including cement, aggregate, and concrete.** Per the 2021 IEPR Action Plan, the CEC, CARB, Caltrans, DGS, the CBSC, HCD, and other infrastructure-focused agencies should consider establishing performance-based procurement standards that reward lifecycle emissions reductions and permanent carbon storage (CEC, 2022, pp 181-182).³ This could include setting minimum embodied carbon specification thresholds for concrete, as San Francisco International Airport has done using the CarbonStar Standard. Their procurement framework sets a maximum of 200 pounds CO₂ per cubic yard of concrete, offering a strong model for performance-based decarbonization of building materials. Other levers to provide early demand signals and accelerate commercialization

³ California Energy Commission. (2022). *Final 2021 integrated energy policy report, Volume I: Building decarbonization* (CEC-100-2021-001-V1). California Energy Commission.

of embodied carbon reduction strategies include advance market commitments, demonstration programs, and permitting support.

- **Implement SB 905 to recognize a diverse portfolio of CCRUS pathways.** In implementing SB 905, CARB should adopt a diverse suite of carbon storage and utilization protocols, including carbonate mineralization. This will enable the widest array of opportunities to capture and remove carbon from the atmosphere, including strategies to reduce the embodied carbon of buildings and sequester carbon in the built environment.
- **Integrate new CCUS and carbon removal protocols across California's climate programs.** Incorporating CCUS Protocols into programs such as Cap-and-Invest and the Low Carbon Fuel Standard will create consistent market signals, reduce overall compliance costs, and support long-term investment in scalable carbon management solutions.
- **Support feedstock access, waste diversion, and circular material flows.** Blue Planet's primary technological impact involves using Carbon Capture, Utilization, and Storage (CCUS) to permanently sequester CO₂ within sustainable building materials. A key factor in scaling this solution is the consistent availability of geomass required for the mineralization process. We encourage the Commission to support policies that enhance feedstock access and waste diversion. By incentivizing the recovery of industrial byproducts—such as recycled and returned concrete, slag, fly ash, cement kiln dust, and other alkaline-rich oxide sources—California can divert significant volumes of material from landfills. Integrating these "waste" streams into circular material flows creates the necessary market conditions to aggressively reduce embodied carbon in the built environment while promoting a zero-waste industrial ecosystem.
- **Align embodied carbon accounting, building standards, and climate reporting systems.** As the state advances embodied carbon reporting under AB 2446 and related regulations, agencies should ensure consistency across frameworks that recognize both emissions and permanent carbon storage in materials. Coordination across registries and data platforms will improve transparency and consistency.

Improved Data Collection at CEC

Accessible, performance-based reporting frameworks are essential to accelerating innovation and scaling low-carbon materials. As such, Blue Planet supports the CEC's efforts to strengthen data collection and reporting to guide building decarbonization programs. As highlighted in the Workshop and Draft Action Plan, improved data collection will allow more effective investments, improved program design, and stronger accountability.

Environmental Product Declarations (EPDs) can be very expensive for manufacturers to prepare and vary greatly for every concrete mix design. As the CEC coordinates with CARB in considering frameworks to decarbonize buildings and reduce embodied carbon, we encourage the agencies consider a wide array of validated lifecycle accounting standards to be used in the building carbon framework.

Specifically, the Standards Council of Canada (SCC), a Canadian crown corporation with a government mandate to promote standardization, funded the development of the CarbonStar Standard, and engaged the Canadian Standards Association (CSA Group), a not-for-profit association engaged in standards development and certification, to spearhead its development. CSA developed CarbonStar through a consensus standards development process approved by SCC and the American National Standards Institute (ANSI). The result is CSA/ANSI R118, CarbonStar – National Standard of Canada/American National Standard. As described in the Standard, “The Standard provides minimum requirements and recommendations for the quantification and verification of the carbon intensity in a unit of concrete, including any carbon that is permanently sequestered during the production of concrete and/or its input materials.”

CarbonStar focuses solely on global warming potential (GWP) information and provides an easy to compare quantification of embodied carbon among concrete mixes. Compared to EPDs, which account for many other impacts than embodied carbon and GWP, CarbonStar offers an easy protocol for concrete manufacturers to calculate lifecycle GWP associated with their process and product, and for builders to understand the embodied carbon impacts of products they use. Blue Planet strongly encourages the CEC to allow for CarbonStar and other potential standards that may emerge to be used in embodied carbon reporting frameworks, to provide the greatest flexibility for reporting, maximize participation and opportunities to reduce embodied carbon emissions while minimizing potential costs and burdens on reporting entities.

Blue Planet appreciates the CEC’s leadership in advancing a comprehensive and multi-agency strategy to decarbonize the building sector, including embodied carbon emissions. We welcome further opportunities to collaborate with the CEC and relevant agencies to support the state’s building decarbonization, embodied carbon and related climate goals.

Sincerely,

Kevin Davis
Vice President of Market Development
Blue Planet Systems Corporation